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National Science Foundation Report on Efficiency of Grant Size and Duration

Principal Investigator FY 2001 Grant Award Survey and Institutional Survey

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EXECUTIVE SUMMARY

This Executive Summary provides an overview of the key results of two surveys. Readers are encouraged to read the full report for more comprehensive information and additional details on the survey methodology.

Overview of Reasons for Conducting the Survey

The National Science Foundation (NSF) is responsible for advancing science and engineering in the United States. About 50 percent of the federal nonmedical fundamental research at U.S. colleges and universities is from NSF's support of nearly 200,000 scientists, engineers, teachers, and students each year. Thus, the research productivity and research training of the U.S. scientific and engineering community depend heavily on NSF funding. However, a key question that needs to be answered is: What constitutes the right size NSF grant? In addition, there is the related question: What needs to be done to improve NSF award efficiency and effectiveness?

Survey Design

The survey was designed to provide an opportunity for two key participants in the NSF grant process to answer these questions: (1) the Principal Investigators (PIs) who receive grants, and (2) the institutions that assist in preparing and administering NSF grants. In February and March 2002, surveys were conducted with each of these two groups by Mathematica Policy Research, Inc. (MPR). The study design was to (1) conduct a census of principal investigators who had received NSF grants in FY 2001, and (2) include a sample of the institutions these recipients represented. The results of this study describe the key issues NSF is considering from the perspective of these two key groups. This information will help guide NSF as it makes strategic decisions about the right amount of its grants and their duration.

Overview of Principal Investigator Characteristics

In order to have a context for understanding the answers to the key questions described above, it is important to have some background information about the FY 2001 NSF grant recipients. While the PIs have numerous diverse characteristics, the following will provide a general profile of who received NSF grants in FY 2001. The professional age of these PIs—defined as the years since their last degree—is distributed as follows: 10 years ago or less (30%), 11 to 20 years (34%), and more than 20 years ago (36%). There is variation in the number of graduate students they supervise—with 40 percent currently working with two or fewer graduate students, 25 percent with three to four, and 27 percent with more than four. The PIs describe the focus of their NSF research project as follows: laboratory (44%), theoretical (37%), field (18%). PIs currently have various sources to fund their research. Nineteen percent have only this NSF grant, compared to 9 percent who have an additional NSF grant, 37 percent who have non-NSF grants, and 35 percent who have both an additional NSF grant and non-NSF support.

Level of Proposal Effort

One measure of the use of resources that could be improved is the proposal-preparation effort: What is the extent of the resources that PIs and institutions might save if NSF grant awards were more efficient and effective? A PI who is on 100 percent soft money provided a description of the level of proposal effort needed to get sufficient support:

"For a soft money researcher needing to cover 12 months of his/her time and current budget standards pushing for 3 months (or less) coverage for senior personnel per proposal (seemingly, this is only communicated obliquely) and an average of three year research duration this results in obtaining four funded proposals per three years. This would be a limited time sink if success was 100% (4 weeks/year of proposal writing at three weeks/proposal). At 50% it is eight weeks/year writing proposals. At 33% success it is 12 week/year, and so on. It seems that a better balance can be found. Consider that many programs have funding rates of 10-33 percent."

Specifically, PIs' estimate of the time it took for them and other people—for example, graduate assistants, budget administrators, and secretaries (not including time spent by institutional personnel)—to prepare their FY 2001 NSF grant submission was, on average, 157 hours, or about 19.5 days. It should be noted this is the time for just one proposal that was successful.

When PIs lack sufficient funding for their research and educational activities, they need to prepare and submit multiple grants. For example, 38 percent of the PIs reported that they divide their ongoing body of research and educational activities into several proposals and submit them to NSF; as described earlier, overall, about 8 of 10 PIs currently have funding in addition to the FY 2001 NSF grant identified for this survey.

Award Duration and Funding Efficiency and Effectiveness

A key objective of the PI survey was to find out: What are the award durations and funding amounts that are the most efficient and effective in promoting NSF's objectives? The answer to this question is not straightforward. NSF meets multiple objectives when it awards grants. These multiple needs increase the challenge of establishing criteria in order to achieve award efficiency and effectiveness. Adding to this already complex task is the nature of scientific inquiry as described by one PI:

"The very nature of research and investigation of hitherto unexplored ideas makes it difficult to know or state future requirements. More funding generally means more personnel to help perform the intended research. However, often new and unforeseen opportunities for new research arise as a consequence of new stimulus and ideas in performing the currently-funded research. This is always difficult to assess ahead of time. It is what makes research exciting!!"

Award Duration

The information from the PIs suggests a consensus on an increase in award duration. Currently, the average grant duration for all PIs is three years. When the additional years the PIs suggest they would like are added to each current award, the average is five years. Five year awards will give PIs the most effective period of time for their research and educational activities. This period has such benefits as continuity of employment for students, particularly graduate student staff, opportunities to explore other areas of inquiry that may develop as they conduct their research, higher quality of research, and less time spent pursuing additional funding.

Award Amount

There are multiple ways to consider the appropriate amounts needed to provide efficient and effective grant awards. The information provided by the PIs can be used by NSF to consider funding needs in a variety of ways. The following are four examples of possible ways to estimate award efficiency and effectiveness from the PIs' perspective that have a range from an average of $40,000 to $230,000.

Option 1: Award Effectiveness and Efficiency—Deviations from FY 2001 Grant Request

At the most basic level, award effectiveness and efficiency can be defined as the PIs' actual experience of a reduction in funding and/or duration—from what they requested to what NSF awarded. In addition, it should be noted that the funding requests PIs make in their proposals prior to receiving any reductions may already be at the lower limit of what they need for their research and educational activities. For example, PIs who resubmit proposals that were previously rejected, request less funding than those who are submitting proposals for the first time.

In FY 2001, 51 percent of the PIs had a 5 percent or greater decrease in funding. If award efficiency and effectiveness are defined as providing all PIs what they request, what would be the additional funding that is needed? In FY 2001, these PIs requested an overall average amount of $436,000 for an average of three years and received an average of $336,000 over three years. A calculation for each PI that subtracts the actual award from the request, and averages the differences, finds $40,000 additional annual funding per grant would be required. The duration of the grant would remain the same at three years using this same type of calculation for award duration.

Option 2: Award Efficiency and Effectiveness—Percent of Research Being Funded

A second way to estimate award efficiency and effectiveness is: What percentage of the PIs' ongoing body of research and educational activities is being funded by the FY 2001 NSF grant, and what is the amount needed to fund 100 percent? Since PIs view their research and educational activities as being fluid, to provide standard criteria to answer this question, the total of what they would like to accomplish was established as 100 percent, and the time period for this accomplishment was given as five years. Using these criteria, PIs estimate that an overall average of 37 percent of the ongoing research and educational activities that they would like to accomplish in the next five years will be achieved with the FY 2001 NSF grant. Calculating this for each PI, the average additional funding needed would be $181,000 per year. Adding this to the FY 2001 average annual amount increases the possible funding to $293,000.

Option 3: Award Efficiency and Effectiveness—Additional Requirements

A third approach to estimating award efficiency and effectiveness is: What additional funding do the PIs estimate is needed to accomplish their key goals? PIs were given the following guidelines to develop their estimates: (1) the additional duration should not include the years of funding they have in the FY 2001 NSF grant, and (2) the additional funding estimate is based on their needs for the next five years and should not include the current funding they have from NSF or from any other sources. The average funding that PIs project they will need is an additional $230,000 annually. It is important to emphasize that this amount is not all the PIs require; it is an additional amount they would add to the funding they currently have from NSF and non-NSF sources, which they anticipate will enable them to achieve their five-year goals. When the current average annual award amount of $112,000 is added to what the PIs would like to have in additional funding, the average annual amount needed is $342,000.

Option 4: Award Efficiency And Effectiveness: NSF's Contribution

Another question related to NSF modifications in award efficiency and effectiveness is: Should NSF be responsible for funding all PIs research and educational activities? As defined by the focus group participants, NSF grants are distinguished from others because they do not have to be "mission-directed." Therefore, PIs may not expect NSF to fund all aspects of their research and educational agendas. PIs estimate of the amount of additional funding they need in the next five years that is appropriate for NSF to fund is an average of 67 percent. As described in Option 3, the average annual amount of additional funding PIs require is $230,000. PIs expect NSF to fund an annual average amount of $135,000. This amount is calculated by multiplying the additional funding each PI would like over the next five years by the percentage each PI expects NSF to fund. If this additional amount is added to the current FY 2001 amount, the PIs would require an annual award of $247,000.

It should be noted that, for each option, there can also be variation in the amount needed for award efficiency and effectiveness, depending on the particular characteristics of the PI, such as the type of research being conducted which NSF can consider. For example, over the next five years, PIs who have theoretical research projects expect to need less funding than those conducting field and laboratory research.

Although determining those changes that will best meet the needs of the country's scientific community is complex, there are clearly benefits to making changes. As summarized by one of the PIs:

"As I said above, I think NSF is the greatest. But the size of the individual grants is just too small to really accomplish anything significant in my field. At [name of institution] 200K per year will get you one post-doc and one student, and some materials and supplies and that is it. So you need at least three of these grants to run a decent sized group. This is a lot of grant-writing. I wish the NSF budget could be multiplied by 10. Then we might have something to work with."

Benefits of Changes in NSF Funding and Duration

How might NSF changes in their grant-funding levels and/or duration influence ongoing research and educational activities in this country? This question can be answered from two perspectives. First, by assessing the impacts reported by PIs whose FY 2001 NSF grant proposal was funded, but the amount and/or duration was altered; and, second, by PIs' speculation on how their research and educational activities might be affected if NSF were to increase its grant funding and/or the duration of its grants.

Using a list of 18 areas where changes in funding and/or duration potentially could affect a research project, PIs identified what they are experiencing as a result of award cuts. Following are the key negative impacts they reported:

- Ability to achieve their research objectives within the specified time (67%)
- Ability to obtain quality personal (55%)
- Ability to pursue high-risk ideas (51%)
- Collaborate with researchers in their area of research (50%)

One PI summarized what happened as a result of a decrease in the FY 2001 award:

"A major impact of the shortened funded period was the lack of continuity. It had a dramatic effect on training students and attracting new students or postdocs. One cannot plan or attract good students and postdocs if you only have 1.5 yr of funding. The best training and research is accomplished when you have a dynamic group of people interacting. The synergisms are incredible. To do this one needs to be able to constantly recruit new people and this cannot be done without some guarantee of support."

Using the same 18 areas, the PIs speculated on the positive consequences if they were provided additional funding and duration. The following are the most broadly perceived benefits:

- Ability to pursue high-risk ideas (96%)
- Collaboration with researchers in area of research (92%)
- Ability to achieve research objectives within the specified time (92%)

When asked how they would spend additional funding for securing the resources needed to conduct high-quality research, "student support" is top among 16 resources presented to the PIs. These areas are where PIs are very likely to expend additional resources:

- Number and/or months of graduate students (78%)
- Number of experiments, tests, subjects (54%)
- Number and/or months of undergraduate students (50%)
- Number and/or months of postdoctoral associates (48%)

To summarize, support for students is a major focus of what PIs view as a benefit of increases in NSF funding and/or duration. A change in funding that gives PIs what they request in their grant proposals would provide an additional average amount of $40,000 per year. At many schools, this difference alone could support at least one additional graduate student. In addition to improving PI productivity, hiring additional students has the benefit of funding highly qualified students whose talents would be lost if they have to leave the sciences to support themselves in alternative careers.

From the PIs' perspective, it is not only the additional funding and duration that is attractive, it is also NSF's unique contribution to the development of students.

"Clearly more money helps, but it is the TYPE of funding that NSF provides that is unique. So many other sources (including federal agencies) have a short-term focus on technological or economic deliverables More NSF funds opens *up a spectrum of possibilities: working on new ideas, allowing students to drive some of the research, building infrastructure and a base from which more funds can be obtained from other sources, more freedom to focus of graduate and undergraduate educational goals rather than "research" goals. The NSF is different than industry, and needs to stay that way; and it needs to be a bigger part of academic funding."*

"My main concern with NSF is the 3 year cap on funding for grants as I mentioned before This 3 year cap is not enough to have a student finish a project. Even if the project is renewed, then the renewal often does not come in time to support a graduate student's stipend working on the original project. As a result, the student has to TA or find a scholarship or just borrow from other grants for obtaining money to finish and graduate. Consequently, I would be very much in favor of extending grants to 4 years rather than 3. If this reduces the award amount slightly, so be it. But I do not think that has to be true since people would just get fewer grants but for

longer periods of time. Since NSF is in the business of education scientists and engineers, I would think that NSF would be most interested in obtaining continuous funding for our hard-working graduate students. These students often sacrifice personal rewards for the opportunity to do research and we shouldn't punish them by making them go get more money to finish out their thesis since the NSF grant is out after 3 years."

Benefits to the PI's Field of Research

In addition to the individual benefits described above, PIs reported that increased NSF funding or duration had broader implications for their field of scientific research and education. Among the top four areas most likely to be affected if NSF provides additional resources, two focus on students. Following are the key changes expected in the PIs' field:

- Decrease interruptions in funding (70%)
- Attract more graduate students (65%)
- Widen the focus of research in the field (63%)
- Attract better graduate students (62%)

Summary

The results of the surveys indicate that, at the present time, NSF is not meeting the needs of a diverse group of researchers and research and educational activities. PIs underscore the benefits to education that can be achieved by NSF award changes. In particular, awards of longer duration will provide continuity and avert the problems associated with the disruption of graduate student education. Additional funding can provide important benefits such as the PIs pursing their more innovative ideas and reducing their need to spend time preparing multiple proposals. These PIs send a clear message that there is a need to make changes to improve award efficiency and effectiveness. How that need can be met is more complex. Just as there is variation in the types of funding NSF currently provides, there are choices about how to maximize award efficiency and effectiveness.

I. INTRODUCTION AND BACKGROUND

A. INTRODUCTION

In June 2001, the National Science Foundation (NSF) received instructions from the Office of Management and Budget (OMB) to prepare for the FY 2003 Budget by determining the right size grant for "the myriad types of research the agency funds."[1] Subsequently, OMB and NSF recognized that the process of meeting OMB's objective could not be completed in time for consideration in the FY 2003 Budget; so the goal is to provide information that can be used to inform the development of the NSF FY 2004 budget.

To provide information that will help answer OMB's primary question of what constitutes the right size grant needed, as well as the related issue of what needs to be done to improve award efficiency and effectiveness, NSF contracted with Mathematica Policy Research, Inc. (MPR) to conduct surveys with two key participants in the NSF grant process: (1) the Principal Investigators (PIs) who receive grants, and (2) the institutions that assist in preparing and administering NSF grants. This report presents the results of those surveys.

B. BACKGROUND INFORMATION

Through the support of nearly 200,000 scientists, engineers, teachers, and students each year, NSF supports about 50 percent of federal nonmedical fundamental research at U.S. colleges and universities. Thus, the research productivity and research training of the U.S. scientific and engineering community depend heavily on NSF funding.

[1] "Document the efficiency of the research process. With the assistance of U.S. academic research institutions, NSF should develop efficiency measures of the research process and determine what is the right grant size for the myriad types of research the agency funds. These metrics and grant size determinations should be developed for consideration in the FY 2003 Budget". June 7, 2001, letter from OMB to Dr. Rita Colwell.

The concept of "fully-enabled" investment levels was used in the early discussions about research funding changes that took place in the focus groups and the cognitive pretest conducted for this study. The three key objectives for fully enabled awards were to: (1) provide researchers and institutions sponsoring the research with resources adequate to complete the work for which the grant was awarded, (2) address the efficiency of the proposal and award processes, and (3) increase the awards' benefits and outcomes to the nation. These surveys were commissioned to assist NSF in understanding these objectives from the perspective of the communities that receive funding.

While the objectives of what NSF wants to achieve are clear, identifying a term that summarizes these objectives is more complicated. The PIs who were selected to assist in the development of the questionnaire agreed that the concept, fully enabled, did not accurately describe the goals of their grant awards. These PIs described their research as an "ongoing body of research," not a finite project that had a specific product or end that could be fully enabled. In the survey, a PI summarized the difficulty of describing "fully enabled":

"The very nature of research and investigation of hitherto unexplored ideas makes it difficult to know or state future requirements. More funding generally means more personnel to help perform the intended research. However, often new and unforeseen opportunities for new research arise as a consequence of new stimulus and ideas in performing the currently-funded research. This is always difficult to assess ahead of time. It is what makes research exciting!!"

Since the PIs assisting with the questionnaire rejected the concept of fully enabled, for the purpose of this report, the NSF goal for changes in the funding structure in both size and duration of awards will be referred to as award efficiency and effectiveness. This description of awards has also been referenced in other NSF reports. As noted in the *Report to the National Science Board on the National Science Foundation's Merit Review Process Fiscal Year 2001*: "Larger awards increase the efficiency of the system by allowing scientists and engineers to devote a greater portion of their time to actual research rather than proposal writing and other

administrative work" (page 8). And, "Longer award terms are important in increasing the effectiveness of principal investigators and graduate students" (page 9). Although this example uses these concepts to refer to the system, and not to individual grants, it can also be applied to the experiences of individual PIs. Throughout the report, the term "award efficiency" will be used to summarize the PIs' experiences that are related to changes in NSF funding and "award effectiveness" that will be used to summarize the experiences related to grant duration.

C. OVERVIEW OF METHODOLOGY

As noted above, this research project included two surveys: the Principal Investigator FY 2001 Grant Award Survey (PI Survey) and the Institutional Survey. The research design for the PI Survey called for conducting a census of all PIs included in NSF's data file of recipients of grants in FY 2001.

A questionnaire for the PIs was developed that uses information from two focus group discussions conducted by MPR in August 2001, with 23 NSF representatives. Cognitive pretesting of the initial draft questionnaire was completed in December 2001, with eight principal investigators from grants that year. Two questionnaire modes were developed: a Computerized Self-Administered Questionnaire (CSAQ) for use on the World Wide Web, and a mail questionnaire. A copy of the questionnaire is included in Appendix B. Invitations to participate in the survey were sent by e-mail beginning January 30, 2002, and PIs had an opportunity to respond until March 8, 2002.

The total number of PIs invited to participate was 5,793 (PIs with multiple awards were selected for their response to only one grant), and 5,221, or 91 percent, returned a questionnaire. Among these returns, fewer than 1 percent were completed by mail. The data analysis file includes 4,989 PI questionnaires that met the quality assurance completion criteria. These

criteria included such standards as providing a response to key questions and having appropriate information about the FY 2001 grant. Appendix A contains a detailed description of the survey process.

The Institutional Survey research design defined the universe as the 582 institutions that awarded NSF grants to PIs in FY 2001. The questionnaire for this survey was developed from individual interviews conducted with institutional representatives and with cognitive pretesting of the survey instrument. All institutional representatives were invited to complete a self-administered mail survey. As part of the study design, among all these institutions, a representative sample of 105 institutions was selected to be targeted for data collection and analysis. Among all 582 institutions—359, or 62 percent—returned questionnaires. In the sample—95, or 90 percent—completed questionnaires. The institutional analysis reported here is based on information from the sample. It should be noted that the results from the sample institutions have been statistically weighted to ensure that they are representative of the universe of institutions. The appendices provide a complete description of the survey methodology, the weighting procedure, the standard errors, and a copy of the questionnaire.

Information from the non-sample institutions is not included in the text of the report. Appendix C has information for the 264 non-sample institutions that participated in the survey.

It should be noted that information from NSF's grant data file for FY 2001 for the PIs and the institutions is also used in this report.

In addition to this report, readers should be aware that *Ruts in "The Royal Road"* written by Deborah Shapley, also describes information from the PI survey. It provides additional information about the PIs' qualitative responses to the open-ended questions and their perspectives on possible NSF award changes. It should be noted that the verbatim comments included in both reports are used with permission from the PIs.

D. ORGANIZATION OF THIS REPORT

The goal of this report is to inform NSF's effort to improve award efficiency and effectiveness. Chapter II provides a profile of NSF grant receipt characteristics for FY 2001, as well as giving an overview of the grant experience from the perspective of the PI and the institution. This will give readers a context for the information that is reported in the following chapters. Chapter III describes the NSF grant proposal process for FY 2001 as experienced by the PIs and institutions. It provides insights into the level of effort needed to compete for an NSF grant. The multiple dimensions of award efficiency and effectiveness are outlined in Chapter IV. Chapter V summarizes the costs and benefits of potential changes in NSF awards.

Following are specific terms that will be used throughout the report:

PI:	Refers to the Principal Investigators who received NSF grants in FY 2001.
Award efficiency and effectiveness:	As described above, this refers to the broad NSF objective of identifying the changes that are needed to ensure grant awards provide adequate resources for PI research and educational activities. In addition, for this report, the term focuses specifically on PIs' perceptions of the resources needed to achieve their key research and educational goals.
Institutions:	Refers to the institutions that had PIs who received FY 2001 NSF grants.

In addition, it should be noted that the text and the tables in this report that refer to the NSF directorates do not include two that had a small number of PIs in the classification: (1) Education and Human Resources Directorate (16 PIs) and (2) the directorate (O/DD) that includes primarily the Office of Polar Programs (130 PIs).

Readers should note that percentages may not always add to 100 because they have been rounded to the nearest whole number and means are also rounded to the nearest whole number. Percentages are reported for all survey participants unless specific subgroups are referenced in the discussion. In addition, means[2] are used to report numeric results, and dollar amounts are reported to the nearest 1,000.

E. OTHER CONTEXTUAL CONSIDERATIONS

There are other considerations readers should be aware of as they review the information from these two surveys. The competitiveness of the grant process, the range of economic and administrative challenges being confronted by academe, and the salaries that need to be supported are examples of the situational factors that have an impact on PIs and institutions as they consider the issues addressed in this survey that are related to NSF reforms in award efficiency and effectiveness.

The information provided in this report is limited to those who received NSF grants in FY 2001. During FY 2001, NSF took action on 31,942 reviewed proposals and funded approximately 31 percent. NSF estimates that approximately $1.25 billion was requested for declined proposals that received at least as high as the average rating for an awarded proposal. (*Report to the National Science Board on the National Science Foundation's Merit Review Process Fiscal Year 2001*.)

Higher education is experiencing many changes that can have an impact on both faculty and institutional resources. In particular, reduced budgets can result in institutions providing less

[2] The use of means to describe values was decided after careful consideration. As a general comparison, the mean uses more information than the median since the exact scores are used in the computation, while the median uses the relative position of the scores. However, the mean is effected by extreme values while the median is generally unaffected by extremes. For some items there are calculated means which are described in detail in Appendix A.

support for research and graduate education, as well as an increase in the number of faculty expected to provide substantial portions of their own research funding. These types of dynamics increase the risk of cutbacks in research that can affect the scientific community.

When considering funding amounts for award efficiency and effectiveness, a key question is: How many professional staff and students can be supported? One approach to estimating the personnel costs for research and educational activities is to know the range of typical faculty salaries and fees for graduate students. According to the College and University Professional Association for Human Resources (CUPA-HR) salary survey for FY2000-FY 2001, the average faculty salary at a private institution is $58,700, and $59,123 at a public institution (*Chronicle of Higher Education,* July 27, 2001). However, depending on the specific discipline, it may be lower or higher. For example, the salary for bioengineering and biomedical engineering is $79,857 (private) and $72,250 (public), chemical engineering is $82,878 (private) and $82,254 (public), and for the social sciences the average faculty salary is $49,894 (private) and $54,560 (public).

Stipends for graduate assistants vary *(Chronicle of Higher Education,* September 28, 2001). However, a typical NSF fellowship of $21,000 provides a standard to use when calculating the fees associated with staffing an NSF grant project in FY 2001. Concerns about having enough funding to support a research staff and the consequences are summarized by a PI:

"As I said above, I think NSF is the greatest. But the size of the individual grants is just too small to really accomplish anything significant in my field. At [name of institution], *200K per year will get you one post-doc and one student, and some materials and supplies and that is it. So you need at least three of these grants to run a decent sized group. This is a lot of grant-writing. I wish the NSF budget could be multiplied by 10. Then we might have something to work with."*

II. PROFILE OF FY 2001 NSF FUNDED GRANT PROPOSALS

NSF is known for providing awards that meet the needs of principal investigators (PIs) with diverse backgrounds and that support a range of varied research and educational activities. We use information from the FY 2001 NSF grantee database and from the survey to give a description of the PIs' characteristics and an overview of the NSF grant awards for FY 2001 and other funding currently supporting PIs' research. A discussion of these characteristics will assist in understanding the different experiences that can influence perceptions of award efficiency and effectiveness.

A. PRINCIPAL INVESTIGATOR CHARACTERISTICS

Table II.1 gives a profile of the PIs' characteristics. The average professional age measured by the number of years since the PIs received their highest degree is 18 years, with 30 percent having completed their highest degree to date within the past 10 years.

PIs have a range of experience in being the primary author on peer-reviewed articles. Over the past five years, 31 percent have published more than 13 peer-reviewed articles; 30 percent have published 7 to 13 articles; and 36 percent report being the author of 6 or fewer. PIs conduct their research in the following types of institutions: 25 percent are from one of the top 20 NSF-funded institutions, 26 percent from the top 21 to 50 NSF-funded institutions, and 22 percent from the top 51 to 100 NSF-funded institutions. It should be noted that these categories of funding are based on the total amount an institution receives from NSF, not just the amount from these individual grant awards.

TABLE II.1

PROFILE OF FY 2001 NSF GRANT PRINCIPAL INVESTIGATORS
(Percentages)
N = 4,989

Professional Age: Date of Last Degree	
10 years or less	30
11 to 20 years	34
More than 20 years	36
Publication Experience: Number of Articles in the Past 5 Years	
Low (6 or less)	36
Medium (7-13)	30
High (more than 13)	31
PI Student Supervision	
Undergraduates	
Low (1 or less)	41
Medium (2)	18
High (more than 2)	24
Graduates	
Low (2 or less)	40
Medium (3-4)	25
High (more than 4)	27
Postdoctural	
Low (none)	33
Medium (1)	25
High (more than 1)	22
Type of Institution	
NSF funded top 20	25
NSF funded top 21 to 50	26
NSF funded top 51 to 100	22
Other Ph.D.	18
Non-Ph.D.	5
Non-Academic	4
Gender	
Male	83
Female	17
Race	
White	85
Non-white	15

Most PIs supervise undergraduate and graduate students, as well as postdoctoral fellows. The average number of undergraduate students assisting PIs with their current research projects is two, graduate students four, and postdoctoral fellows one (Figure II.1). More than half of the PIs supervise three or more graduate students, compared to 22 percent of PIs who have more than one postdoctoral student working with them. With respect to individual characteristics, 8 of 10 PIs are white and male.

B. GRANT CHARACTERISTICS

Seventy-one percent of the FY 2001 awards were reported as first-time submissions of this grant to NSF. Among the NSF directorates, the largest percentage of the awards (26 percent) were funded in Mathematical and Physical Sciences (Table II.2). We asked the PIs to classify the research for which they were funded in one of the following categories:

> **Theoretical research** can be accomplished with minimal physical resources beyond the investigator's institutional research library, computing capability, and office space.
>
> **Laboratory research** requires an equipped laboratory, for example, research often found in chemistry, biology or engineering university laboratories requiring research and/or testing equipment, plumbing.
>
> **Field research** requires fieldwork, specimen collection, sample survey, location of sensors, etc. away from the principal investigator's institution, for example, some science activities in geosciences, biology, social sciences.

Among these classifications, 44 percent of the PIs categorized their FY 2001 NSF grant as laboratory research, 37 percent as mostly theoretical, and 18 percent as field research.

Table II.3 shows the proportion of grants in each research category for the different directorates at NSF. Not surprisingly, more than half of the grants awarded in the Computer and Information Science and Engineering (CISE) directorate and the Mathematical and Physical

FIGURE II.1

CURRENT STUDENT SUPERVISION
AVERAGE NUMBER OF STUDENTS AND POSTDOCTORALS

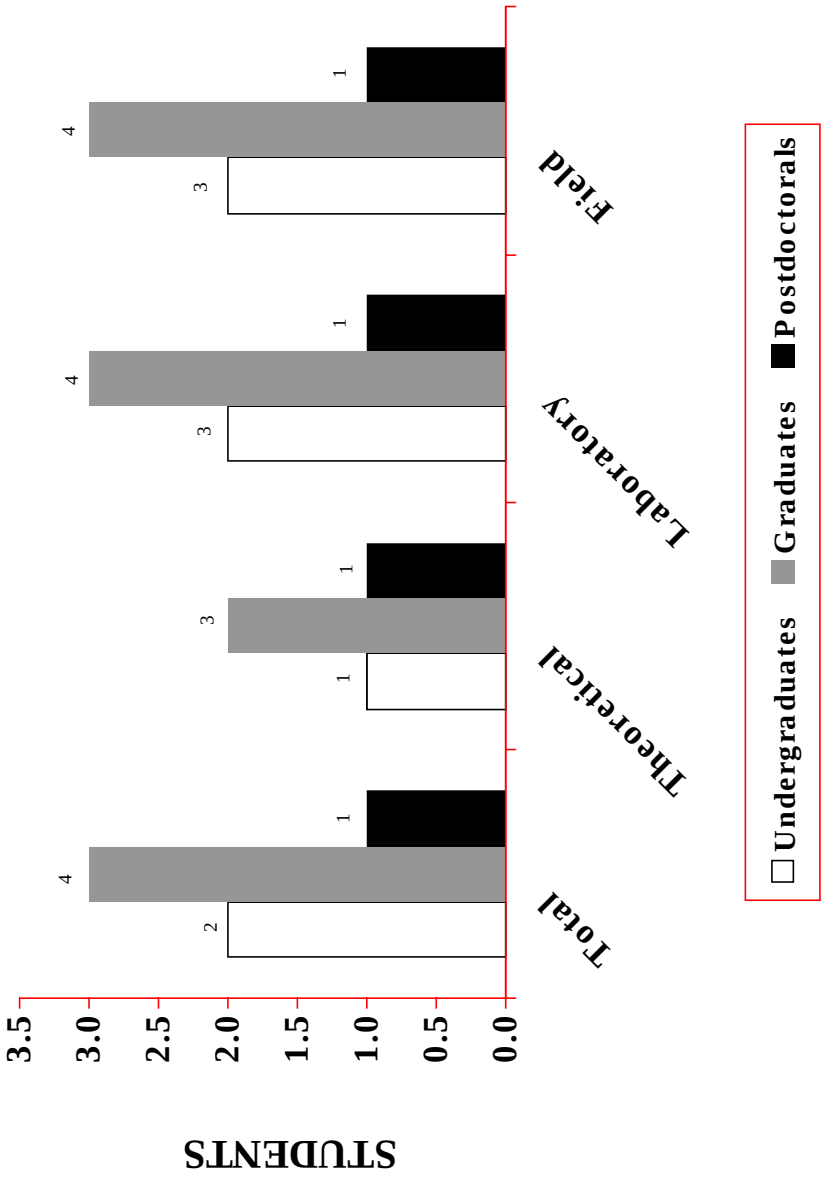


TABLE II.2

PROFILE OF 2001 NSF GRANT AND OTHER FUNDING
(Percentages)
N=4,989

Grant Request	
First time submission	71
Revision of previously declined submission	29
Type Of Research	
Theoretical research	37
Laboratory research	44
Field research	18
Project Requirements For National Or International Research Facility	
Yes	16
No	83
Change In 2001 NSF Grant Amount From Request To Award	
Increase 5% or greater	2
All others	47
Decrease 5% or greater	51
Change In 2001 NSF Grant Duration From Request To Award	
Increase 1year or greater	2
All others	88
Decrease 1 year or greater	10
FY 2001 NSF Grant Amount	
Low ($162,000 or less)	33
Medium ($162,000+ to $330,000)	34
High (more than $330,000)	33
NSF Directorate	
Biological Sciences	16
Computer and Information Science and Engineering	12
Engineering	13
Geosciences	16
Mathematical and Physical Sciences	26
Social, Behavioral, and Economic Sciences	14
Current Funding	
Other NSF grants	
Yes	44
No	55
Non-NSF grants	
Yes	72
No	27
Total Funding Profile	
Only 2001 NSF grant	19
2001 NSF grant and other NSF funding	9
2001 NSF grant and non-NSF funding	37
2001 NSF grant, other NSF, and non-NSF funding	35

TABLE II.3

TYPE OF FY 2001 NSF GRANT BY DIRECTORATE
(Percentages)

	Type of Research				
	Theoretical Research	Laboratory Research	Field Research	Total	(N)
Total	**37**	**44**	**18**	**99**	**(4,989)**
Directorate					
Biological Sciences	7	76	17	100	(819)
Computer and Information Science and Engineering	62	32	5	99	(602)
Engineering	35	61	3	99	(646)
Geosciences	28	30	41	99	(803)
Mathematical and Physical Sciences	55	40	5	100	(1,290)
Social, Behavioral, and Economic Sciences	37	29	33	99	(683)

Sciences (MPS) directorate were classified as theoretical research. In the Biological Sciences (BIO), Engineering (ENG), and Education and Human Resources (EHR) directorates, the majority of grants were classified as laboratory research; while in the Geosciences (GEO) and the Social, Behavioral, and Economic Sciences (SBE) directorates, the grants were closer to being equally divided among all three research categories. When asked about international research facilities—such as an accelerator, light source, ship, major telescope, or supercomputer—about one of five PIs require the use of such facilities.

C. AMOUNT AND DURATION OF FUNDING

Based on the NSF grantee database, the average NSF grant for the year FY 2001 was $336,000, and the average award duration was three years. A third of the PIs received total awards of $162,000 or less, another third received awards of more than $162,000 but less than $333,000, and the final 33 percent received more than $333,000 (Table II.2).

D. CHANGES IN FUNDING AND DURATION

Overall, NSF did not request any changes of 5 percent or greater in the proposed award amount for nearly half (47%) of the funded proposals (Table II.2). However, 51 percent of the grants had a decrease of 5 percent or greater in the amount of funding awarded, compared to the amount of funding requested, while 2 percent had an increase of this amount. Chapter IV describes these funding changes in greater detail.

When awarding a grant, NSF is much less likely to change the requested duration of the proposed grant for research and education. Close to 9 of 10 PIs (88%) reported no change in the grant duration they requested for conducting their research and educational activities, compared to 10 percent who reported a decrease of one year or greater and 2 percent who reported an increase of one year or greater in the duration of their award (Table II.2).

E. OTHER FUNDING

In addition to their FY 2001 NSF grant, most PIs report other funding for their research and educational activities. For 19 percent of the PIs, the FY 2001 NSF grant is the only source of current funding; 9 percent of the PIs have this grant and other NSF funding, 37 percent have additional non-NSF funding, and 35 percent have other NSF and non-NSF funding (Table II.2). Among the 44 percent of the PIs who have other NSF grants, based on the resources they currently have (which may not be the total amount and duration of these other grants), the average number of other NSF grants is two, and the current amount is $207,000. Among the 72 percent who now have non-NSF grants, the current average number is two, and the average amount is $199,000.

F. PROFILE OF INSTITUTION GRANT MANAGEMENT

The Institutional Survey complements the Principal Investigator FY 2001 Grant Award Survey by providing information on how institutions manage the grant process. It should be noted that the process of applying for and administering NSF grants varies greatly from institution to institution. In our discussions with institutions while developing the questionnaire, it was clear that there is no "typical" administrative organization or grant process. For example, depending on the institution, there is variation in how many or what type of grant activities are centralized, versus their location in various different institutional units and departments. The responses to this survey are from the contact person nominated by that person's institution as "the most knowledgeable about the overall grant process from the proposal phase to grant administration. And, who has final administrative responsibility for this process."

We asked these institutional representatives about the way they are organized in general to handle the various aspects of grant management, and specifically about the use of resources for a "typical" FY 2001 NSF grant. The representatives provided information on the administrative

offices and individuals who are assigned to grant proposals, grant proposal revisions, and the administration of grant awards. The number of administration offices involved in these three types of grant activities are as follows: grant proposal—an average of 2; grant proposal revisions—an average of 2; and grant administration—an average of 2 (Table II.4). The individuals assigned to each of these activities are: grant proposal an average of 6; grant proposal revisions—an average of 5; and grant administration—an average of 8.

As a context for the level of institutional management used for NSF grants, compared to the total number of grants administered in FY 2001, we asked institutions what percentage of the total grant awards and total award dollars are from NSF grants. For the total number of grants, 16 percent is the average. This estimate is similar for the total FY 2001 budget, with 18 percent the average percentage of the funding that comes from NSF. Another dimension of the level of effort expended is the institution's number of NSF proposal awards and declines. Using the institutional information from the FY 2001 NSF grant data file, the average number of FY 2001 NSF grant awards is 12, compared to an average of 32 proposals that were declined. Chapter III goes into detail about the estimated number of hours institutions devoted specifically to FY 2001 NSF grants.

Forty-four percent are PH. D granting institutions that are not among the top 100 funded by NSF in FY 2001. They also include 5% who are the 20 top FY 2001 NSF-funded institutions, 3% rank in the top 21 to 50, and 9% are in the top 51 to 100 (Table II.4).

TABLE II.4

PROFILE OF INSTITUTION LEVEL OF GRANT EFFORT
N = 95

	Mean*
Number of FY 2001 NSF Grant Awards	12
Number of FY 2001 NSF Grant Declines	32
Percent of FY 2001 Grants from NSF	16
Percent of FY 2001 Total Grant Dollars from NSF	18
Individuals Assigned to:	
Grant proposals	6
Grant proposal revisions	5
Grant administration	8
Administrative Offices Assigned to:	
Grant proposals	2
Grant proposal revisions	2
Grant administration	2
Type of Institution (Percentages)	
NSF funded top 20	5
NSF funded top 21 to 50	3
NSF funded top 51 to 100	9
Other Ph.D.	44
Non-Ph.D.	28
Non-Academic	11

* Standard errors for the means are in the Appendix

III. THE PROPOSAL PROCESS

The level of effort the PI expends to submit an application to NSF is an important factor to consider in assessing the funding and duration of NSF grants. While there may be some benefits to the PI in using the NSF proposal process as an opportunity to clarify research and educational goals and objectives, PIs are more likely to view the process as one in which resources are expended in preparing a proposal that may or may not be funded. Both the time and the money needed to prepare proposal submissions could be used to support research and educational activities. It should be noted that the questionnaire did not explicitly ask the PIs to evaluate the costs and benefits of the proposal process. However, among the PIs who volunteered verbatim comments about the proposal process, those who discussed the cost of time and resources expended were more numerous than those who mentioned the benefits. The study did, however, obtain information with which to determine the extent of the resources PIs and institutions use in submitting proposals. This information provides an estimate of the amount that could be saved if NSF grant awards were more efficient and effective. This chapter summarizes the level of effort PIs and institutions use to obtain grant funding.

A. LEVEL OF PRINCIPAL INVESTIGATOR NSF PROPOSAL EFFORT

One measure of proposal preparation effort is the total hours PIs estimate they needed to prepare their FY 2001 NSF grant submissions. This estimate includes the time spent by the PI and other people (such as graduate assistants, budget administrators, and secretaries) preparing the submission. The measure does not include time spent by institutional personnel. On average, PIs estimate 157 hours, or about 19.5 days (assuming an 8-hour day) for total proposal preparation. Assuming 235 working days in a full year, on average, about 8 percent of days in a working year is estimated as needed to prepare this one proposal. Overall, 33 percent of the PIs

estimated hours for this proposal preparation in the low range of less than 80 hours; 29 percent are in the medium range of 80 to 150 hours; and 29 percent are in the high range of more than 150 hours used for proposal preparation (Table III.1). As summarized by one of the PIs, this level of effort can detract from other activities:

> *"…Raising funding is almost a full time job for me. If I didn't have to do that, I could spend more time mentoring women and minority students, and I could do my "dream projects"—those that are either too high risk, or too expensive to do in the current funding environment."*

Another PI, who is on 100 percent "soft money" provides a description of the level of proposal effort that is needed to get sufficient support:

> *"For a soft money researcher needing to cover 12 months of his/her time and current budget standards pushing for 3 months (or less) coverage for senior personnel per proposal (seemingly, this is only communicated obliquely) and an average of three year research duration this results in obtaining four funded proposals per three years. This would be a limited time sink if success was 100% (4 weeks/year of proposal writing at three weeks/proposal). At 50% it is eight weeks/year writing proposals. At 33% success it is 12 week/year and so on. It seems that a better balance can be found. Consider that many programs have funding rates of 10-33 percent. (You tell me, I only hear these numbers, perhaps they are a worst case)."*

Contrary to what might be expected, PIs who submitted a revision of a previously declined NSF proposal (36%) are more likely than those with a first-time submission (26%) to be in the high range of proposal preparation hours (Table III.1). In addition, PIs who describe the research funded by this grant as laboratory (35%) and field (33%) are more likely to report hours for proposal preparation in the high range than those who describe their grant as theoretical (19%).

Overall, most grant preparation time is spent on the intellectual content of the proposal, compared to proposal mechanics. On average, PIs report that 69 percent of the time was devoted to intellectual content, compared to 31 percent on the mechanics of proposal preparation. The

TABLE III.1

PI LEVEL OF PROPOSAL EFFORT
(Percentages)

	Low 80 or Less Hours	Medium 81 to 150 Hours	High More Than 150 Hours	Don't Know	Total	(N)
Total	**33**	**29**	**29**	**8**	**99**	**(4,989)**
Grant Request						
First time submission	36	28	26	9	99	(3,521)
Revision of previously declined submission	25	31	36	8	100	(1,449)
Type of Research						
Theoretical	43	27	19	10	99	(1,863)
Laboratory	25	32	35	8	100	(2,186)
Field research	31	28	33	7	99	(902)

ranges for the percentage of time spent on preparation of intellectual content are: low, 65 percent or less (35%), medium, 66-80 percent (47%), and high, more than 80 percent (18%). In comparison, the range for mechanics is: low, 20 percent or less (37%), medium, 21-35 percent (30%), and high, more than 35 percent (32%). This suggests that a majority of the preparation time is expended by the PIs, since they are the main contributors to the intellectual content of the proposal.

Another level of proposal cost and effort is the PIs interaction with NSF to develop the grant proposal. Overall, about half of the PIs got advice from NSF about the amount of funding (57%), the substance of the grant (51%), and the grant duration (48%). Consultation with NSF resulted in 27 percent of the PIs decreasing the grant amount requested in their proposal, and 4 percent making an increase. PIs were less likely to change their duration request. Six percent decreased, and 3 percent increased, the duration of their grant request.

PIs who do not have sufficient funding for their research and educational activities need to prepare and submit multiple grants. For example, 38 percent of the PIs reported that they divide their ongoing body of research and educational activities into several proposals and submit them to NSF. More PIs conducting field research (44%) and laboratory research (40%) than PIs doing theoretical research (32%) reported dividing their work and submitting multiple proposals.

To summarize, just for the grant that the PIs submitted to NSF, proposal writing itself took about 20 days, and the key person in preparing the grant is the PI. As noted by some PIs, this time they might have used more effectively for research and educational activities.

B. OTHER PROPOSAL SUBMISSIONS

For this discussion of the level of effort required for proposals, it is important to review the extent to which PIs prepared submissions other than for their FY 2001 NSF proposal that was described in Chapter II. In addition to submitting multiple grants to NSF, the PIs reported

funding from other sources where proposals were submitted. To summarize, overall, about 8 of 10 PIs currently have funding, in addition to the FY 2001 NSF grant identified for this survey (Table III.2). It should be noted that depending on characteristics such as their type of research, some PIs spend more time on additional proposals than others.

With some PIs reporting that they have been awarded an average of four additional grants, an estimate can be made of the extent of PI time spent annually on proposals. Assuming the same number of hours used for each grant proposal that PIs estimated for the FY 2001 NSF grant, there could be an estimated 628 additional hours, or 79 days spent on preparing successful proposals. However, it should be noted that PIs may also be spending time preparing unsuccessful proposals, and this effort is not included in these estimates.

The level of effort devoted to proposal preparation can have an impact on award efficiency and effectiveness, as described by this PI:

> *"The trend of NSF to fund longer time periods is a great and useful change. It reduces the time spent preparing proposals, increases the time doing research and provides stability for ongoing research programs."*

C. LEVEL OF INSTITUTIONAL PROPOSAL EFFORT

In addition to the hours spent by the PIs and their proposal assistants, there is proposal preparation time expended by the institutions where the PIs do their research and conduct their educational activities. From the institution's perspective, this level of effort includes both proposals that are funded and those that are not. Among the institutions, there is variation in the

TABLE III.2

TOTAL FUNDING PROFILE
(Percentages)

	Only FY 2001 NSF Grant	FY 2001 NSF Grant and Other NSF Funding	FY 2001 NSF Grant and Non-NSF Funding	FY 2001 NSF Grants, Other NSF and Non-NSF Funding	Total	(N)
Total	19	9	37	35	100	(4,989)
Type of Research						
Theoretical research	27	9	36	28	100	(1,863)
Laboratory research	14	8	40	39	101	(2,186)
Field research	13	12	34	41	100	(902)
Additional Funds to Accomplish Goals						
Low ($300,000 or less)	27	11	38	23	99	(1,616)
Medium ($300,000+ to $750,000)	16	10	37	37	100	(1,377)
High (more than $750,000)	6	7	37	50	100	(1,352)
Do not know	29	7	34	30	100	(644)
Research Divided Into Several Proposals						
Yes	8	12	23	56	99	(1,895)
No	25	7	46	22	100	(3,069)
Directorate					100	
Biological Sciences	19	8	46	27	100	(819)
Computer and Information, Science, and Engineering	16	12	31	41	100	(602)
Engineering	8	7	38	47	100	(646)
Geosciences	12	11	26	52	101	(803)
Mathematical and Physical Sciences	29	8	39	24	100	(1,290)
Social, Behavioral, and Economic Sciences	23	8	45	24	100	(683)

level of institutional proposal involvement. For the purpose of describing the hours spent on proposal preparation, only those hours spent by the initial office are included. This may be an underestimate because as noted earlier, for some institutions, more than one office is involved in the proposal effort; but one office is typical. For a typical FY 2001 NSF proposal, the institutions estimate an average of 6 hours for preparation (Table III.3). Using the institutional information from the NSF data file, 44 is the average number of accepted (12), and declined (32) NSF proposals; the total average number of hours spent on proposal activity by the institutions can be estimated at 264 hours, or about 33 days (assuming an 8-hour day).

There is an additional level of effort when the institutions are included in the proposal revision process—that is, when NSF does not accept the original proposal, and the institution is involved in preparing the revision. Overall, from the institutions' perspective, the average number of hours for each proposal revision is three.

Changes in award efficiency and effectiveness, which reduced the number of proposals needed for preparation, would have multiple benefits as described by one institution:

"This could change the number of proposals submitted which would require less time for the PI Department and proposal review and submission from the Administrative Offices. This would help the grant administration as the same amount of time per year would be required, yet there would be additional funds."

TABLE III.3

INSTITUTIONAL LEVEL OF EFFORT FOR TYPICAL FY 2001 NSF GRANT ACTIVITIES
(Based on Hours Per Grant)

	Mean*
Grant Proposal	
Number of hours	6
Grant Proposal Revision	
Number of hours	3
Grant Administration	
Number of hours	21
Grant Report Requirements	
Number of hours	6

*Standard errors for the means are in the Appendix.

IV. MEASURES OF AWARD EFFICIENCY AND EFFECTIVENESS

A key objective of the PI survey is to find out: What are the award duration and funding amounts that are most efficient and effective in promoting NSF's objectives? The answer is not straightforward. NSF has multiple objectives when it awards grants. As identified in the focus groups used to develop the survey, NSF grants contribute to the enhancement of the country's scientific community by: (1) providing the only funding source for some scientific fields; (2) giving researchers the freedom to pursue unique ideas that reflect their own interests and expertise; (3) providing support for fundamental research; (4) playing a central role in establishing the careers of young researchers; (5) supporting the education and training of students; and (6) providing intellectual and scientific benefits through the review process. PIs who received the FY 2001 NSF grant awards are carrying out these diverse objectives. This diversity underscores what was said in the initial focus group discussions—that, at NSF, one size does not fit all. It also increases the challenge of establishing criteria to achieve award efficiency and effectiveness. This chapter summarizes the information that can be used to meet this challenge.

A. DIFFERENT MEASURES OF AWARD EFFICIENCY AND EFFECTIVENESS

As described in the PI cognitive group discussion, asking about the extent of additional funding and duration needed to support ongoing research and educational activities is like "trying to measure a dream." Because the question of what is the "appropriate" funding amount for award efficiency and effectiveness is critical, the questionnaire used multiple approaches to get the PIs' perspectives. In the following, we describe each measure of award efficiency and effectiveness (Table IV.1). It should be noted that, for the discussion of the amounts of funding

TABLE IV.1

PROFILE OF AWARD EFFICIENCY AND EFFECTIVENESS ATTRIBUTES
(Means)

	Award Request	Duration Request	Award Amount	Award Duration	Additional Funding for Next 5 Years	Additional Duration for Next 5 Years	Percent of Additional Funding From NSF
Total	**$436,000**	**3**	**$336,000**	**3**	**$1,149,000**	**3**	**67**
Type of Research							
Theoretical	$373,000	3	$276,000	3	$740,000	2	71
Laboratory	$507,000	3	$390,000	3	$1,190,000	3	63
Field	$395,000	3	$331,000	3	$1,839,000	3	71
Directorate							
Biological Sciences	$585,000	3	$436,000	3	$1,135,000	3	67
Computer and Information Science and Engineering	$635,000	3	$447,000	3	$1,342,,000	2	66
Engineering	$378,000	3	$315,000	3	$1,255,000	2	56
Geosciences	$309,000	3	$270,000	3	$1,871,000	3	71
Mathematical and Physical Sciences	$459,000	3	$350,000	3	$751,000	3	70
Social, Behavioral and Economic Sciences	$229,000	2	$177,000	2	$715,000	3	71

and or duration needed for award efficiency and effectiveness, the means include those for single variables and those for constructed variables as described in Appendix A.

OPTION 1. Award Effectiveness and Efficiency: Deviations from Requested Award Amount

At the most basic level, award effectiveness and efficiency can be defined as the PIs' actual experience of a reduction in funding and/or duration from what they requested to what NSF awarded. In FY 2001, 51 percent of the PIs had a 5 percent or greater decrease in funding, and 10 percent had a one year or greater decrease in duration. If award efficiency and effectiveness are defined as providing all PIs what they request, what would be the additional funding that is needed?

In FY 2001, these PIs requested an average amount of $436,000 for three years, and received $336,000 over three years. Defining award efficiency and effectiveness as providing PIs the funding they requested in their original proposal, a calculation for each PI that subtracts the actual award from the request and averages these differences finds $40,000 additional annual funding per grant would be required. The duration of the grant would remain the same at three years using the same type of calculation (Table IV.1 and Figure IV.1).

Using the same definition, there are variations in award efficiency and effectiveness among different types of PIs. For example, from the funding perspective, PIs conducting laboratory research and education would require $48,000 additional funding compared to those doing theoretical ($34,000) or field ($29,000) research and education (Figure IV.2).

There may be a caveat when these estimates are used to calculate award effectiveness and efficiency. The amounts the PIs request in their proposals may already have been adjusted to a lower amount because of advice the PIs receive when they submit or re-submit their budgets or because of perceptions of the amount of funding NSF is expected to support.

FIGURE IV. 1
AWARD FUNDING OPTIONS
ANNUAL PROJECTED AMOUNTS
(Means)

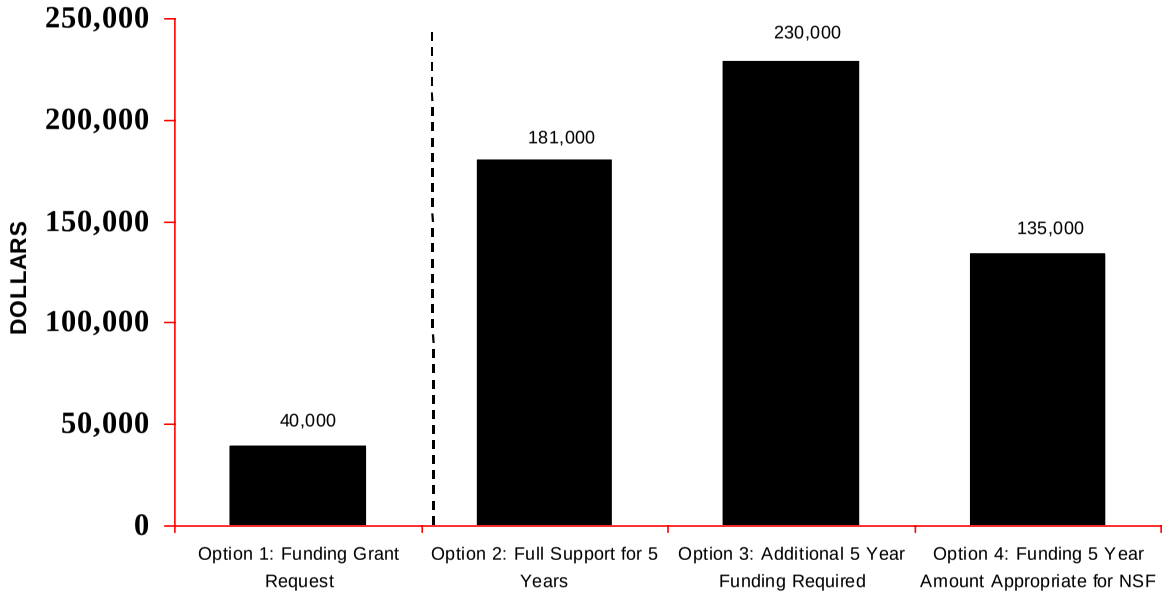
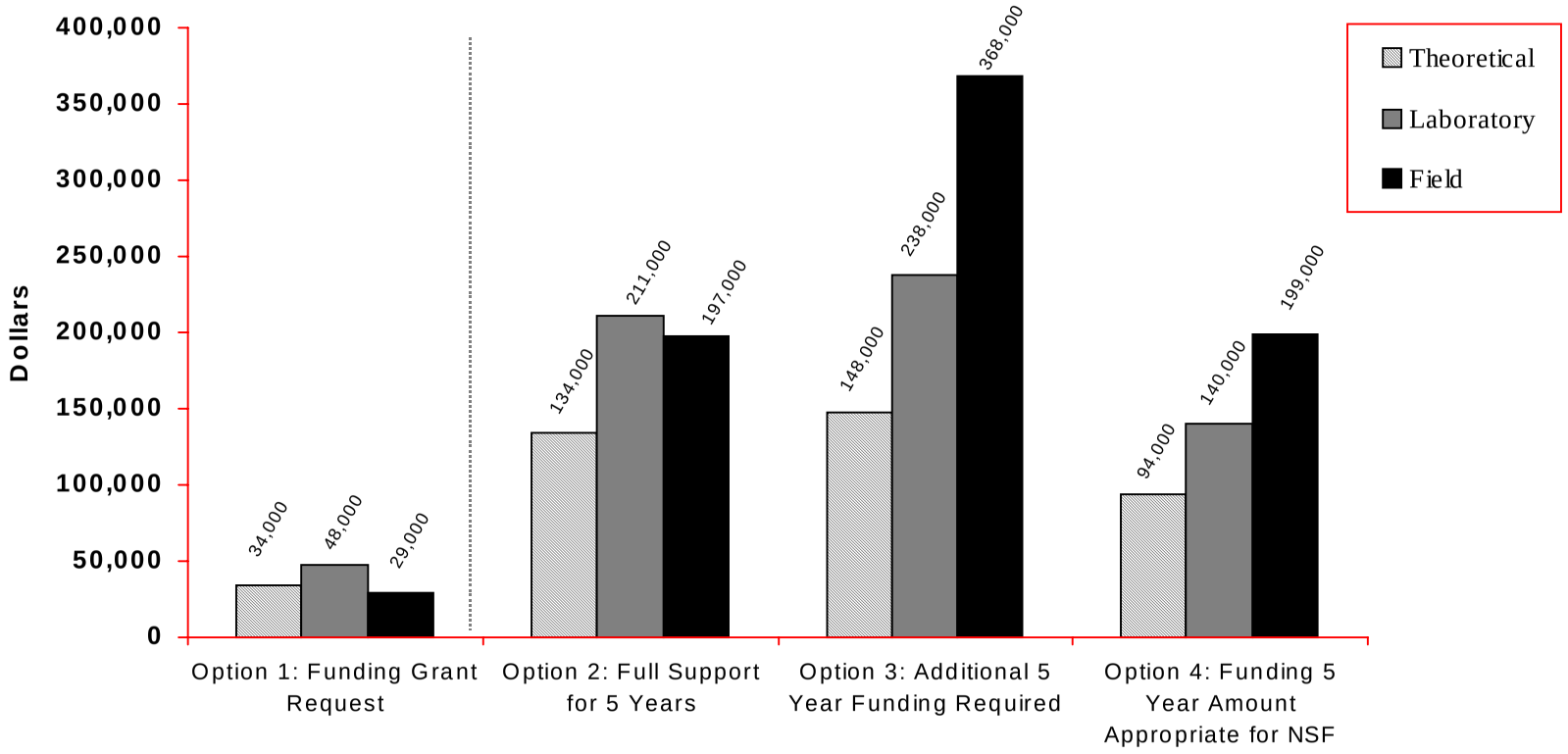


FIGURE IV.2

AWARD FUNDING OPTIONS ANNUAL PROJECTED AMOUNTS
(Means)



OPTION 2. Award Efficiency and Effectiveness: Percent of Research Being Funded

Another way to estimate award efficiency and effectiveness is to consider what percent of PIs' ongoing body of research and educational activities is being funded by their FY 2001 NSF grant, and the amount needed to fund them 100 percent. Since PIs view their research and educational activities as being fluid, to provide standard criteria to answer this question, the total of what they would like to accomplish was established as 100 percent, and the time period for this accomplishment was given as the next five years.

Using these criteria, PIs estimated an average of 37 percent of the ongoing research and educational activities they would like to accomplish in the next five years will be achieved with the FY 2001 NSF grant (Table IV.2). Calculating the amount that would equal 100 per cent and subtracting the PIs current funding, there is an average difference of $904,000 additional funding. Over a five-year period, this equals $181,000 per year (Figure IV.1).

PIs conducting field research and education (34%) have a lower average estimate of what the current NSF grant can contribute in the next five years, compared to those doing theoretical (39%) and laboratory (37%) research and education. However, using this definition of award efficiency and effectiveness, the actual funding amounts required are greater for PIs conducting laboratory research and field research than for those doing theoretical research (Figure IV.2).

OPTION 3. Award Efficiency and Effectiveness: Additional Requirements

A third approach to estimate award efficiency and effectiveness is: What additional duration and funding do the PIs estimate is needed to accomplish their key goals? PIs were given the following guidelines to develop their estimates: (1) the additional duration should not include the years of funding they have in the FY 2001 NSF grant, and (2) the additional funding estimate is based on their needs for the next five years, and should not include the current funding they have from NSF or from any other sources. Using these criteria, PIs estimates that they need an

TABLE IV.2

AWARD EFFICIENCY AND EFFECTIVENESS
FUNDING AMOUNT TO ACCOMPLISH A 100 PERCENT IN FIVE YEARS
(Means)

	Award Dollar Amount	Percent Achieved with FY 2001 Grant	Dollar Amount for 100%*	5-Year Additional Dollar Amount Needed for 100%*
Total	**336,000**	**37**	**1,240,,000**	**904,000**
Type of Research				
Theoretical Research	276,000	39	946,000	671,000
Laboratory Research	390,000	37	1,443,000	1,055,000
Field Research	331,000	34	1,315,000	985,000
Directorate				
Biological Sciences	436,000	39	1,561,000	1,122,000
Computer and Information Science and Engineering	447,000	36	1,680,000	1,222,000
Engineering	315,000	36	1,211,000	900,000
Geosciences	270,000	30	1,076,000	812,000
Mathematical and Physical Sciences	350,000	45	1,124,000	782,000
Social, Behavioral, and Economic Sciences	177,000	32	790,000	608,000

*Constructed variables created for each PI and then averaged. See Appendix A for additional information on the calculation.

average of three additional award years. When the additional years the PIs suggest they would like are added to the years for each current award, five years is the average estimate to accomplish their key goals.

The questionnaire asked the PIs to focus on their needs for the next five years. The additional average funding of PIs' project that they need in the next five years is $1,149,000 (Table IV.1) or an annual amount of $230,000 (Figure IV.1). It is important to remember that the $230,000 is not all that the PIs require; they would add this amount to their current funding from NSF and non-NSF sources to enable them to achieve their five-year goals.

The diversity of types of research funded by NSF is underscored by the need for additional duration and funding described by the PIs (Table IV.1). For example, using the means, PIs conducting laboratory and field research and education want three additional years, compared to those conducting theoretical research and education, who want an average of two years (Table IV.1). Over the next five years, PIs conducting theoretical research and education expect to need an average of about $148,000 per year, which is less than the $238,000 average for laboratory research and the $368,000 average for field research and education (Figure IV.2).

OPTION 4. Award Efficiency and Effectiveness: NSF's Contribution

Another question related to NSF modifications in award efficiency and effectiveness is: Should NSF be responsible for funding all the PIs' research and educational activities? As defined by the focus group participants, NSF grants are distinguished from others because they do not have to be "mission-directed." Therefore, PIs may not expect NSF to fund all aspects of their research and educational agendas. PIs gave an estimate of the amount of additional funding they need in the next five years which they consider appropriate for NSF to fund.

The average percentage of funding that PIs suggest for NSF to fund is 67 percent. As described in Option 3 above, the annual amount of additional funding that PIs require is

$230,000. The annual average amount each PI expects from NSF is $135,000 (Figure IV.1). This amount is calculated by multiplying the additional funding each PI would like over the next five years by the percentage that each PI expects NSF to fund and computing the mean.

Not all PIs agree on the percentage of funding appropriate for NSF. For example, PIs conducting theoretical (71%) and field (71%) research and education, expect NSF to pay a higher average percentage of the additional funds they require over the next five years, than for those doing laboratory (63%) research and education. These differences probably are based on PIs' perceptions of NSF's mission and of the typical type of research project NSF funds. The PIs conducting theoretical research and education projects ($94,000) expect the lowest amount of additional average annual funding from NSF, compared to laboratory ($140,000) and field ($199,000) research and education (Figure IV.2).

B. SUMMARY OF DIFFERENT METHODS TO ESTIMATE AWARD EFFICIENCY AND EFFECTIVENESS

These four examples demonstrate the different choices to be made in determining the appropriate funding and duration for improving NSF award efficiency and effectiveness. Information from the PIs suggests that there is a greater consensus on award duration than on the amount. An average of five-year awards will, PIs feel, give them the most effective period of time for their research and educational activities. These awards would have such benefits as continuity of employment for students, particularly graduate student staff, opportunities to explore other areas of inquiry that may develop as they conduct their research, higher quality of research, and less time spent pursuing additional funding. However, NSF has a greater number of choices in deciding about additional dollars per year needed to fund grants that are efficient and effective. The previous examples of four possible ways to estimate award efficiency and effectiveness from the PIs' perspective have averages that range from $40,000 to $230,000 per

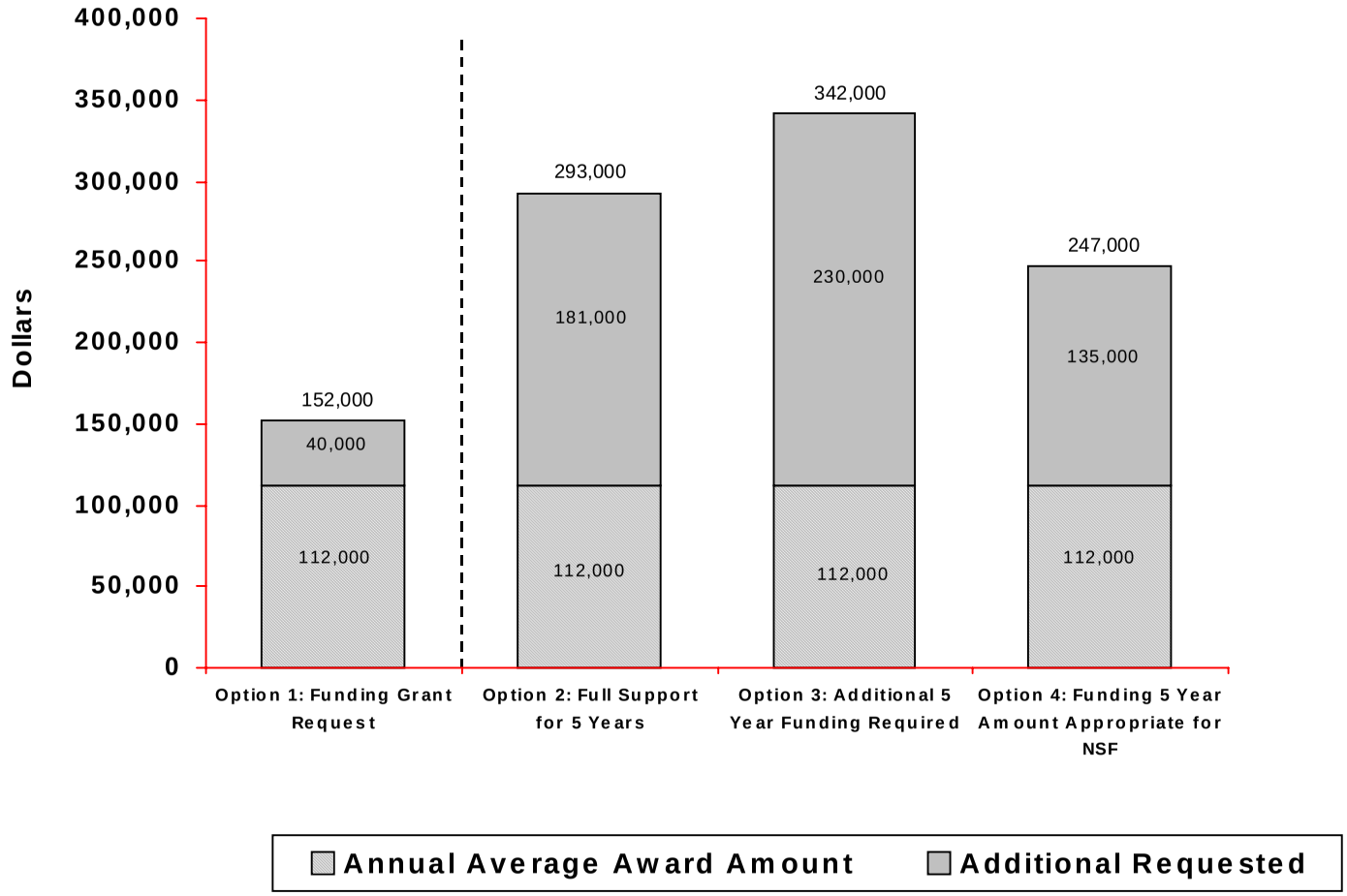
year (Figure IV.1). In addition, there is variation in these amounts, depending on particular characteristics of the PI, such as the type of research being conducted. NSF can use this information to identify which funding approach best meets the needs of the country's scientific community. In Chapter V, we go into detail on the benefits of NSF improving award efficiency and effectiveness.

As described above, the requests for additional funding do not include their FY 2001 NSF grant or any other current funding. Figure IV.3 illustrates the projected total annual amounts when the calculations for the different options are added only to the average FY 2001 NSF grant amount. Overall, possible changes in annual funding amounts could range from $152,000 to $342,000 for an average NSF grant.

The four approaches to estimating award efficiency and effectiveness, focus on contributions expected from NSF, based on the FY 2001 grant identified for this survey. However, additional calculations could be made if NSF wanted to explore supplementing or replacing other PI funding sources. Obtaining the necessary funding from a single or few sources frees up PIs' time, enabling them to conduct more research and to work more with students.

The survey included information on two additional current funding sources: (1) other NSF funding and (2) current non-NSF funding. As described in Chapter II, 8 of 10 PIs currently have other funding. Among those who have other NSF funding (44%), the current annual average amount is $207,000 (Figure IV.4). Currently 72 percent of the PIs have non-NSF funding that has an annual average of $199,000 (Figure IV.5). Depending on NSF's decision on such criteria as the types of proposals they want to fund and what they want to achieve with award efficiency and effectiveness, these are additional estimates of funding that can be used to develop a budget for future awards.

FIGURE IV. 3
Award Funding Options Added to FY 2001 Award
Examples of Total Per Year Funding
(Means)



*Note: The $112,000 average FY2001 award is based on all PIs; the amount additional for each option is a constructed variable based on the PIs providing the information needed for the calculation.

FIGURE IV.4
CURRENT OTHER NSF FUNDING
(Means)

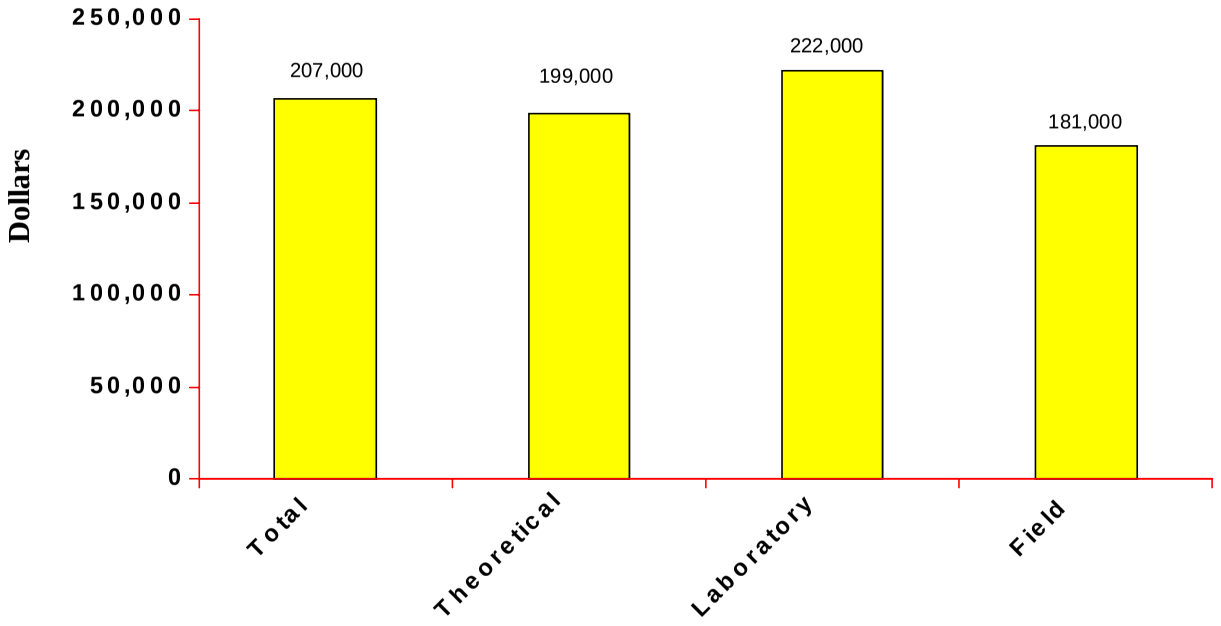
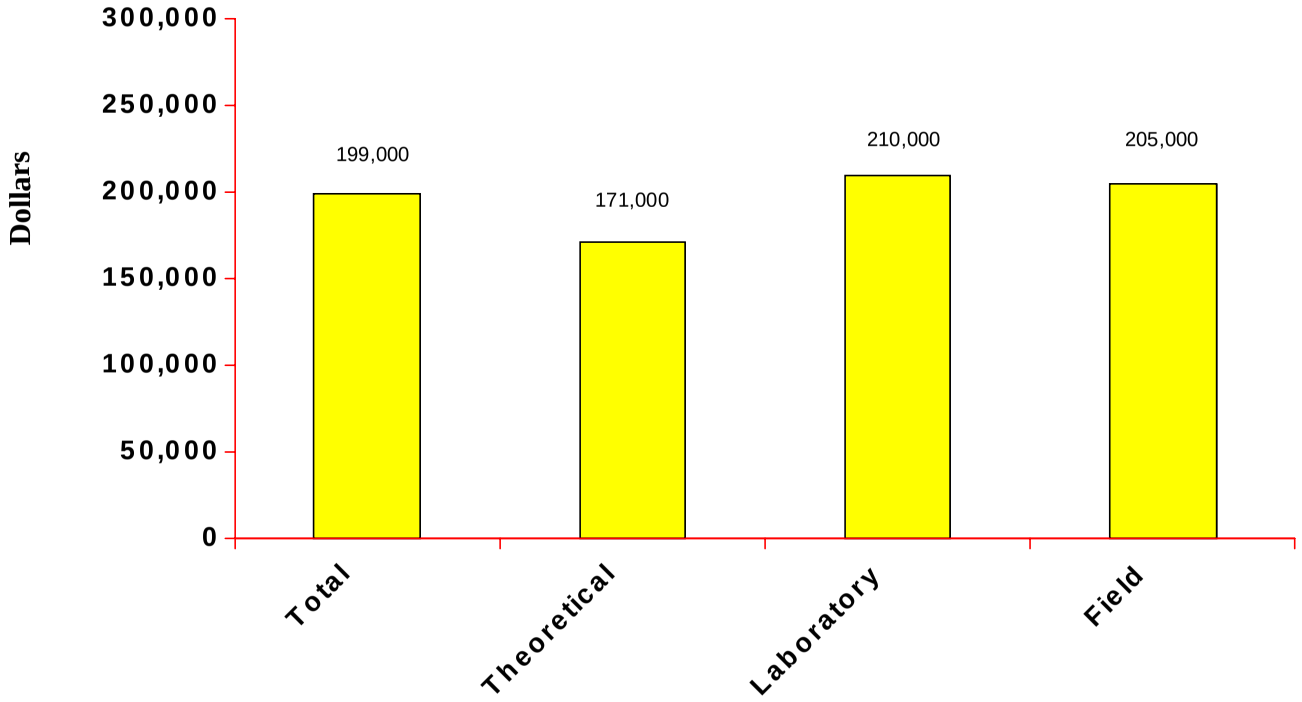


FIGURE IV.5
CURRENT NON-NSF FUNDING
(Means)



C. PRIORITY ACTIONS FOR AWARD EFFICIENCY AND EFFECTIVENESS: PI PERSPECTIVE

The diversity of needs was reinforced when PIs were asked about their preferences for their own research. Thinking about what they specifically would like to accomplish, for about half of the PIs, more funding would have the greatest impact on their ongoing body of research and educational activities, while, for one-third, a longer duration would provide the more important resource. One of 10 PIs did not respond to this question because they did not make a request for a specific amount of additional funding or duration.

D. PRIORITY ACTIONS FOR AWARD EFFICIENCY AND EFFECTIVENESS: FIELD OF RESEARCH

As NSF considers ways in which to improve award efficiency and effectiveness, resources may be used in three key ways, to: (1) increase the amount of funding, (2) increase the length of time per award, and (3) increase the total number of awards per year. For this question, the PIs were asked to change their focus and think about their general field of research, rather than their own specific grant. From the PIs' perspective, there is no consensus as to which of these actions NSF should take if more funding is available. Among the three choices for their field of research, more PIs consider additional funding (40%) as their first choice, while an almost equal percentage prefer increasing the total number of awards (36%), and 24 percent would increase only the duration of the award (Table IV.3). The variation in PIs' selection of choices underscores the multiple research and educational needs that NSF grants meet, which may require different types of resources. For example, PIs who describe their area of research and education as theoretical (35%) are less likely than those who do field work (39%) or laboratory research (43%) to select an increase in the award amount as their first priority for their field.

TABLE IV.3

MOST IMPORTANT NSF AWARD REFORM FOR PI AREA OF RESEARCH
(Percentages)

	Increase Only the Amount of Funding Per Award	Increase Only the Length of Time Per Award	Increase Only the Total Number of Awards Per Year	Total	(N)
Total	**40**	**24**	**36**	**100**	**(4,989)**
Change in 2001 NSF Grant Funding					
5% or greater increase	32	20	47	99	(123)
5% or greater decrease	44	24	31	99	(2,533)
All others	35	24	40	99	(2,333)
Change in 2001 NSF Grant Duration					
1 year or greater increase	43	22	34	99	(92)
1 year or greater decrease	40	29	30	99	(485)
All others	39	23	36	98	(4,412)
Type of Research					
Theoretical	35	26	38	99	(1,863)
Laboratory	43	25	31	99	(2,186)
Field research	39	17	42	98	(902)
Additional Funds to Accomplish Goals					
Low (less than $300,000)	32	24	43	99	(1,616)
Medium ($300,000 + to $750,000)	40	26	33	99	(1,377)
High (greater than $750,000)	52	22	26	100	(1,352)
Do not know what amount is needed	31	23	45	99	(644)

V. POTENTIAL IMPACT OF INCREASED FUNDING OR DURATION

How might NSF reforms in its grant funding levels and/or duration influence ongoing research and educational activities in the United States? We looked at this question from two perspectives. First, we looked at the impacts reported by PIs when the FY2001 NSF grant they had requested was awarded but the funding level or duration had been altered. Second, we asked the PIs to speculate on how their own research might be affected if NSF increased the funding and/or duration of their grant awards. The results of these questions are described below.

A. THE CONSEQUENCES OF REDUCTIONS IN FUNDING OR DURATION

As described earlier in this report, among the FY2001 NSF grantees, almost half (47%) were funded within 5 percent of the amount requested. Of the remaining 53 percent, 51 percent of the grantees had their funding cut by 5 percent or more, while 2 percent had their funding increased by more than 5 percent or more. Changes to the grant duration were even less frequent, with 88 percent remaining unchanged. Of the 12 percent with changes, 10 percent had their duration decreased by more than one year, and 2 percent had it increased by more than one year.

The questionnaire listed 18 areas where changes in funding or duration could potentially affect a research project. PIs whose NSF grants for FY2001 included changes in funding or duration were asked whether, for each area, the change had proven to be positive, of no consequence, or negative. Not surprisingly, most PIs reported some type of negative impact. As shown in Table V.1, approximately half (55%) said the change had affected their ability to obtain quality personnel, and another 50 percent said it had limited their ability to collaborate with researchers in their area of research. Close to half (51%) felt that the change had restricted their ability to pursue innovative or “high-risk” ideas. Again, not surprisingly, about two-thirds (67%)

TABLE V.1

NEGATIVE IMPACT OF FUNDING AND/OR DURATION AWARD CHANGES
(Percentages)

		Negative Impact	
		Total (N=4,989)	5% or Greater Decrease in Funding (N = 2,533)
1.	Achieve the research objectives within the specified time	34	67
2.	Obtain quality personnel	28	55
3.	Collaborate with researchers in your area of research	26	50
4.	Pursue high-risk ideas	26	51
5.	Pursue innovative ideas	23	45
6.	Collaborate with researchers in different areas of research	21	41
7.	Establish mentoring or other research-based education activities	21	41
8.	Develop instrumentation or other enhancements for the research and education infrastructure	20	40
9.	Integrate research activity into your teaching and training	18	36
10.	Broaden participation of under-represented groups in the research activity	18	34
11.	Access state-of-the-art equipment	17	33
12.	Disseminate research findings	17	33
13.	Develop partnerships with industry, other educational institutions, or national laboratories	13	25
14.	Improve public understanding of the project	11	20
15.	Access facilities	10	20
16.	Nurture connections between research activity and its potential for: health benefits, economic benefits, and national security benefits	10	20
17.	Develop programs with K-12 teachers and/or students	7	13
18.	Obtain other funding	6	12

indicated that the change had negatively affected their ability to "achieve their research objectives within the specified time."

PIs were given the opportunity to describe any other impacts they had experienced due to changes in their award. Overall, 48 percent of those who had a grant change provided a verbatim response. Table V.2 contains a summary of these comments. It should be noted that these percentages are based on the number of responses given, not on the individual PIs. The key impact described in 35 percent of the responses was the negative impact on building a project team. Among the responses on this topic, a main concern was the ability to recruit and retain staff (22%). The second most mentioned consequence of award changes was the impact on meeting the goals and objectives of what had been proposed. Nine percent of the comments about goals and objectives were focused on a reduction in the scope of the project. Thirteen percent of the responses mentioned an impact on aspects of the project process, with 8 percent focused specifically on the increased time spent seeking funding, rather than working on their research and educational activities.

Several PIs summarized their experience resulting from the decreases in their FY2001 awards:

"A major impact of the shortened funded period was the lack of continuity. It had a dramatic effect on training students and attracting new students or postdocs. One cannot plan or attract good students and postdocs if you only have 1.5 yr of funding. The best training and research is accomplished when you have a dynamic group of people interacting. The synergisms is incredible. To do this one needs to be able to constantly recruit new people and this cannot be done without some guarantee of support."

"The question before addressed well the negative impact that the decrease in funding has on my research program. Having funding for 5 years instead of three would have allowed me to have a broader focus and to be somewhat more ambitious in my long term research goals. Also, a considerable amount of effort goes into the preparation of a grant proposal, and so longer periods between submissions could benefit the research output. It is clear that there is a positive side to the writing of grant proposals, the need

TABLE V.2

IMPACT OF CHANGE IN AWARD FUNDING AND/OR DURATION
(Percentages)

Response Categories	Total Responses (1,835)
Negative impact on team building – staff, student, collaborators	35
Reduction in meeting goals and objectives	27
Negative impact on project process	13
No impact or impact not known	8
Limited research tools	7
Comments on positive impact	6
Other comments	4
TOTAL	**100**

to clarify one's ideas and to plan ahead with scientific vision, but this is also well achieved through the annual progress reports."

It is useful to contrast the experiences of PIs who had a decrease with those of the small number of PIs who received increases in funding and/or duration.

"Increased funding level has allowed increased flexibility in how we approach our research, which should have a positive impact on our productivity and which is having a very positive effect on graduate student training."

B. THE POTENTIAL BENEFITS OF ADDITIONAL NSF FUNDING OR DURATION ON THE PIs CURRENTLY ONGOING RESEARCH

Switching from the limitations that a reduction in funding or duration might bring, the PIs were asked to describe the impact of receiving additional funding and/or time on their ongoing body of research and educational activities. This leads to a key question: If funding and duration increases are implemented, what are the potential benefits? When PIs who specified a specific additional amount of funding and/or duration were asked this question with respect to 18 areas related to research goals, outcomes, processes or team-building, about half of them indicated a positive impact for all but 1 of the 18 areas (Table V.3). The most broadly perceived benefit, indicated by 96 percent, was the freedom to "pursue more innovative ideas." Moreover, 92 percent also felt that additional support would facilitate greater collaboration among researchers, as well as help them achieve their research objectives within a specified time frame.

About half (47%) of the PIs took the opportunity to describe in their own words the impact of receiving an award that would provide them with what they needed to accomplish their research and educational goals (Table V.4). Thirty-five percent of the responses described improvements and increases in the applications and outcomes of their research and educational activities; among these 9 percent were a description of a specific scientific advance that would

TABLE V.3

POSITIVE IMPACT OF ADDITIONAL AWARD FUNDING AND/OR DURATION
(Percentages)

		Positive Impact	
		Total (N = 4,989)	Gave Funding/ Duration Amount (N = 4,489)
1.	Pursue innovative ideas	87	96
2.	Collaborate with researchers in your area of research	83	92
3.	Achieve the research objectives within the specified time	83	92
4.	Collaborate with researchers in different areas of research	76	84
5.	Obtain quality personnel	76	85
6.	Pursue high-risk ideas	76	85
7.	Disseminate research findings	74	82
8.	Integrate research activity into your teaching and training	73	81
9.	Establish mentoring or other research-based education activities	71	79
10.	Broaden participation of under-represented groups in the research activity	62	69
11.	Develop partnerships with industry, other educational institutions, or national laboratories	62	69
12.	Develop instrumentation or other enhancements for the research and education infrastructure	61	67
13.	Access state-of-the-art equipment	60	67
14.	Improve public understanding of the project	58	64
15.	Obtain other funding	54	60
16.	Access facilities	49	54
17.	Nurture connections between research activity and its potential for: health benefits, economic benefits, and national security benefits	48	54
18.	Develop programs with K-12 teachers and/or students	32	35

TABLE V.4

IMPACT OF ADDITIONAL FUNDING AND/OR DURATION
(Percentages)

Response Categories	Total Responses (3,857)
Improved and increased applications and outcomes	35
Enhanced goals and objectives	23
Improved team building with staff and students	21
Process for funding improved	11
Research tools enhanced	6
No impact	3
Other comments	2

result from having additional resources. Twenty-three percent of all responses were related to enhanced goals and objectives; these included 13 percent who described the ability to explore new, high-risk ideas and the chance to be more innovative. Comments on improved team-building (21%) included 13 percent who specifically mentioned enhanced opportunities for students.

When asked how they would spend additional funding for securing the resources needed to conduct high-quality research—personnel, equipment, travel, the size and quality of experiments or tests—the PIs indicated that they would be most likely to spend additional resources on hiring students. Among the 16 resources listed in Table V.5, three of the top five choices indicated that PIs would spend additional funding on increasing the number and/or time of graduate students, undergraduates, or postdoctoral associates—in that order of preference. More specifically, 78 percent said they would "very likely" increase the number of graduate students hired or the duration of their students' work period. Increasing the quality and number of experiments or tests rounds out the other two top choices.

PIs who indicated that additional funding would benefit their work were asked the extent to which they felt this additional funding would affect the quality, duration, or number of experiments they performed or their ability to recruit the highly qualified labor needed to conduct high-quality research. As shown in Table V.6, more than half said that additional funding would help them in their efforts to recruit postdoctoral and graduate students "a great deal." Close behind, nearly half thought the additional support would improve their research by allowing for a substantial increase in the number of experiments, tests, or subjects.

TABLE V.5

ADDITIONAL NSF AWARD FUNDING AND/OR DURATION:
POTENTIAL INCREASES IN RESEARCH AND EDUCATIONAL ACTIVITIES
(Percentages)

		Very Likely	
		Total (N = 4,989)	Gave Funding/ Duration Amount (N = 4,489)
1.	The number and/or months of graduate students	70	78
2.	The number of experiments, tests, subjects	49	54
3.	The number and/or months of undergraduate students	45	50
4.	The number and/or months of post doctoral associates	43	48
5.	The quality of the experiments or tests	36	40
6.	The number of equipment purchases	33	36
7.	The size of the experiments or tests	30	33
8.	The number and/or months of senior personnel	29	32
9.	The number of trips	29	32
10.	The quality of equipment purchases	28	31
11.	Participant support	21	23
12.	Computer/publication costs	16	18
13.	The number and/or months of technicians	15	17
14.	The number and/or months of programmers	7	8
15.	Consultant services	6	6
16.	The cost per trip	3	4

TABLE V.6

ADDITIONAL NSF AWARD FUNDING AND/OR DURATION:
INCREASED ABILITY FOR RESEARCH AND EDUCATIONAL ACTIVITIES
(Percentages)

		Increased a Great Deal	
		Total (N = 4,989)	Gave Funding/ Duration Amount (N = 4,489)
1.	Recruit graduate students	56	62
2.	Recruit post-doctoral associates	47	52
3.	Conduct more experiments, tests or subjects	42	47
4.	Have higher-quality experiments or tests	31	34
5.	Provide adequate support for a graduate student to shorten time to degree	29	32
6.	Recruit undergraduate students	27	30
7.	Provide stability for technicians	17	19
8.	Duration of experiments	17	19
9.	Provide stability for programmers	8	8

C. THE POTENTIAL BENEFITS OF ADDITIONAL NSF FUNDING OR DURATION ON RESEARCH IN GENERAL

As Table V.7 illustrates, these PIs, in addition to the individual benefits they felt their own research would gain, felt that increased NSF funding or duration had broader implications for scientific research. Overall, more than 60 percent said increased NSF funding and duration would "very likely" "widen the focus" of research in their field, while also attracting "more" and "better graduate students." Seventy percent agreed that additional support would "very likely" "decrease interruptions in funding," and almost half (46 percent) thought that such support would very likely increase the number of proposals containing innovative ideas.

D. THE POTENTIAL IMPACT OF ADDITIONAL NSF FUNDING OR DURATION ON EDUCATIONAL ACTIVITIES

As described in Chapter II, for their current research projects, PIs support an average of two undergraduates, four graduate students, and one postdoctoral fellow (Figure II.1). As noted, PIs reported being "very likely" to increase the number or duration of these students and postdoctoral fellows if NSF provided additional grant support. Moreover, as stated earlier, among those who were awarded an NSF grant in FY2001, the average difference between the level of funding requested and the level awarded was $33,000 a year. At many schools, being able to provide this difference could itself mean supporting an additional graduate student. In addition to improving PI productivity, hiring additional students has the added benefit of supporting highly qualified students whose talents are lost when they must leave the sciences to support themselves in alternative careers.

From the PIs' perspective, it is not only the additional funding and duration that is attractive, but also NSF's unique contribution to the development of students:

TABLE V.7

ADDITIONAL NSF AWARD FUNDING AND/OR DURATION:
POTENTIAL FOR CHANGES IN FIELD OF RESEARCH
(Percentages)
N = 4,989

		Very Likely
1.	Decrease interruptions in funding	70
2.	Attract more graduate students	65
3.	Widen the focus of the research in your field	63
4.	Attract better graduate students	62
5.	Increase the number of proposals to NSF with innovative ideas	46
6.	Increase the number of proposals to NSF with high-risk ideas	37
7.	Attract more established researchers to apply for NSF funding	37
8.	Improve access to facilities and databases	36
9.	Decrease the amount of time to answer research questions	31

"Clearly more money helps, but it is the TYPE of funding that NSF provides that is unique. So many other sources (including federal agencies) have a short-term focus on technological or economic deliverables. More NSF funds opens up a spectrum of possibilities: working on new ideas, allowing students to drive some of the research, building infrastructure and a base from which more funds can be obtained from other sources, more freedom to focus of graduate and undergraduate educational goals rather than "research" goals. The NSF is different than industry, and needs to stay that way; and it needs to be a bigger part of academic funding."

"The NSF funding provides the "next generation" of technologies that are needed to take this project to its optimal conclusion. It is amazingly difficult to get funding for this basic research any other way. Also, the continuity of NSF multi-year funding is critical to the continuity of my students. Without it, promising funding for a PhD student can be risky, as many of the other grants can have "lag time" between them."

"My main concern with NSF is the 3 year cap on funding for grants as I mentioned before. This 3 year cap is not enough to have a student finish a project. Even if the project is renewed, then the renewal often does not come in time to support a graduate student's stipend working on the original project. As a result, the student has to TA or find a scholarship or just borrow from other grants for obtaining money to finish and graduate. Consequently, I would be very much in favor of extending grants to 4 years rather than 3. If this reduces the award amount slightly, so be it. But I do not think that has to be true since people would just get fewer grants but for longer periods of time. Since NSF is in the business of education scientists and engineers, I would think that NSF would be most interested in obtaining continuous funding for our hard-working graduate students. These students often sacrifice personal rewards for the opportunity to do research and we shouldn't punish them by making them go get more money to finish out their thesis since the NSF grant our out after 3 years."

E. IMPACT OF CHANGES ON INSTITUTIONS

The institutional representatives were asked several questions that gave them an opportunity to describe in their own words what they thought would be the most significant change for their institution if NSF increased either the average duration of the awards or the average award amount. The greatest percentage of comments on possible changes that would occur if NSF increased the average award duration were about how it would impact the institution's grant process (35%). Thirteen percent who noted this change said there would be a decrease in time and effort (Table V.8). These comments also noted that there would be an improvement in the quality and efficiency of the research (18%), more stable funding (15%), and there would be

staffing changes (15%) which included comments on the positive impact on PIs (6%) and more student involvement (4%).

The institutional representatives had somewhat similar comments about the significant changes that would occur if NSF increased the award amount. More than half of the responses describing the impact of increasing the average dollar amount described improvements in the quality and quantity of the research (27%) and possible staffing changes (24%) such as increased student involvement (16%) (Table V.9). The impact on the institution's grant process (28%) was also noted with 9 percent describing a decrease in the institution's time and effort and 5 percent speculating that there would be an increase in time and effort.

There were also suggestions on how NSF could reduce the amount of time and resources used by the institution to manage NSF grants. More than half (55%) of these comments described possible changes in the grant process. Specifically, 16 percent described positive experiences with FastLane and 14 percent offered suggestions for possible FastLane improvements.

F. ADDITIONAL COMMENTS ABOUT THE NSF GRANT PROCESS

At the end of the questionnaire, the PIs were given an opportunity to write in any additional comments they had about the NSF grant process. Half of them provided additional information (Table V.11). Since the question was very broad, the PIs commented on a variety of topics. Responses related to the review process made up 23 percent of these comments. Two main themes in this category were the observation that the peer review process is satisfactory and

TABLE V.8

INSTITUTION CHANGES IF NSF INCREASED THE AVERAGE DURATION PER GRANT

	Total Responses*
Grant Process General comments (18) Increase time and effort (4) Decrease time and effort (13)	35
Research Changes Improved quality/efficiency	18
Award Duration Improvements More stable funding; fewer no-cost extensions	15
Staffing Changes General comments (5) More student involvement (4) Positive PI impact (6)	15
No Changes	6
No Comment/No Response	12
TOTAL	**101**

*Weighted number of responses is 839.

TABLE V.9

INSTITUTION CHANGES IF NSF INCREASED THE AVERAGE DOLLAR AWARD PER GRANT

	Total Responses*
Grant Process General comments (7) Increase time and effort (5) Decrease time and effort (9) Increase number of applications (7)	28
Research Changes More conducted, improved quality	27
Staffing Changes General comments (4) More student involvement (16) More faculty involvement (4)	24
Award Amount More stable funding; more budget flexibility	11
No Changes	7
No Comment/No Response	4
TOTAL	**101**

*Weighted number of responses is 967.

TABLE V.10

SUGGESTIONS FOR NSF CHANGES TO REDUCE INSTITUTION TIME AND RESOURCES

	Total Responses*
Grant Process	55
General comments (21) Reduce budget revisions, requests (4) Comments on FastLane improvements (14) Positive experience with FastLane (16)	
General Comments on Award Amount and Duration	5
No Suggestions	8
Experience with NSF Staff	4
No Comments	27
TOTAL	**99**

*Weighted number of responses is 681.

TABLE V.11

PRINCIPAL INVESTIGATORS: OTHER COMMENTS ON THE NSF GRANT PROCESS
(Percentages)

Response Categories	Total Responses (5,056)
Review process	23
General award comments	17
Proposal process	12
Award size	11
Award administration	10
Award duration	8
Overall satisfaction with NSF grant	8
Comments on the questionnaire	3
Communication between NSF and principal investigators	2
Other comments	5
TOTAL	**99**

award decisions were risk adverse. Seventeen percent of the comments were general remarks about the grant awards, with many PIs singling out certain aspects of NSF grants—for example, not being able to do the research without NSF, and NSF grants provide more flexibility than other funding organizations. These general comments also covered the proposal process (12%), the award size (11%), the administration of the award (10%), and the award duration (8%).

The institutional representatives were given the opportunity to write in "any other comments they had about their institution's experiences with the NSF grant process." Twenty-three percent of the comments were about FastLane and the use of technology in the grant process (Table V.12); among these comments, 15 percent described positive experiences with FastLane. There were also comments about working with NSF staff (11%) and the level of effort involved in the grant process (16%).

TABLE V.12

INSTITUTIONS: OTHER COMMENTS ON THE NSF GRANT PROCESS

	Total Responses*
NSF Staff - Positive experiences (9) - Other comments (2)	11
Technology/Fast Lane	23
Level of Effort for Grant Process	16
Award Duration and Amount	6
Other Comments	3
No Comments	42
TOTAL	**101**

*Weighted number of responses is 666.

APPENDIX A

RESEARCH METHODOLOGY

APPENDIX A: RESEARCH METHODOLOGY

The sections that follow describe the research methodology used for the National Science Foundation Principal Investigator FY 2001 Grant Award Survey and for the National Science Foundation Institutional FY 2001 Grant Award Survey.

A. QUESTIONNAIRE DEVELOPMENT

The initial phase of questionnaire development included two focus groups with NSF representatives who could identify key issues to be included in the two questionnaires. A third focus group with institutional representatives was scheduled for September 2001, however the events of September 11 resulted in a cancellation. Instead institutional representatives were contacted by telephone to discuss key issues to be included in the survey. After draft questionnaires were developed, they were cognitively pretested with PIs and institutional representative, and revisions were made based on the findings from the pretests. The following provides details about the steps that were followed:

Date	Type of Group	Number of Participants
August 8, 2001	NSF Focus Group	12
August 9, 2001	NSF Focus Group	11
October 2001	Institutional Representatives (Telephone interviews)*	4
December 4, 2001	Principal Investigators Cognitive pretest/group discussion	8
January/February 2002	Institutional Representatives Cognitive pretest/individual interviews	4

*Re-scheduled from the Federal Demonstration Project Group discussion because of September 11,2001.

B. PROCEDURES FOR PRETEST WITH PRINCIPAL INVESTIGATORS

Eight PIs of a sample of 30 potential respondents participated in the pretest for the Principal Investigator FY 2001 Grant Award Survey. The sample was randomly selected from a total of 156 PIs throughout New Jersey representing a variety of grant types and award sizes. We decided to limit the sample selection to New Jersey because we assumed that MPR's Princeton office in New Jersey would make it easier for the respondents to participate.

Respondents were asked to complete the draft questionnaire and comment on the questions. When respondents had difficulty understanding a question, MPR reworded the question or divided it into parts to make it more understandable. MPR also added some probes to better focus respondents on questions. Because participants voiced concerns about the amount of time it took to complete the questionnaire, the length of the questionnaire was reduced. Also, feedback about the focus of questions was implemented into a revised questionnaire. In particular, the concept "fully enabled" was discussed and rejected by the group. A preferred concept to describe the goals was "ongoing research and educational activities."

The final questionnaire was programmed into a Web format to be conducted as a Computerized Self-Administered Questionnaire (CSAQ). Extensive testing was conducted on the Web questionnaire to insure compatibility with a wide range of different computers and servers that would be accessing the questionnaire.

C. SAMPLE APPROACH

1. Principal Investigator Survey

The universe for the PI survey comprises all 6,180 FY 2001 NSF award grantees. NSF decided to collect data from the universe of PIs instead of a sample to ensure that the most robust information. Since the primary mode of data collection is the World Wide Web, the additional

costs associated with using the universe, instead of a sample, were minimal. In addition, examining the universe eliminates both the additional costs needed to develop a sampling plan and the potential sampling bias associated with sampling plans.

2. Institutional Survey

The universe for the institutional survey comprises all 582 institutions where at least one PI received an NSF award in FY 2001. Each institution in the universe was mailed a questionnaire and afforded the opportunity to participate. However, a sample of 100 institutions was drawn from the universe, based on institutional size and type (for example, private research institution, academic institution), the number of grants received, the type of grants received, and the institution's geographic region.

The sampling design is based on the purpose and analytical objectives of the study. The purpose of this study is to determine the burden of the grant awards on institutions receiving grants from NSF. The analytic objective is to investigate the burden of the grant awards using both institution-level and grant-level measures. Therefore, there is an interest in both the estimate of the proportion of institutions that have a level of burden and the estimate of the average burden per grant for specific types of grants or type of institutions. The sampling design accounts for these two analytical objectives, which indicate somewhat different designs. A stratified random sample of institutions was selected that included an over sampling of institutions with a larger number of grants.

The number grant awards per institution is highly skewed with 40 percent of institutions (233) receiving one award and 16 institutions receiving in aggregate more than 1,500 awards. To account for both analytical objectives, sampling strata were developed that permit an over sample of the institutions with the greatest number of awards, and allocate a sufficient number of sampled institutions to the strata of the institutions with one or only a few awards. Within each

stratum, a sample of institutions with equal probability and without replacement were selected. A larger initial sample was selected and then partitioned into random sub samples called waves. Some waves were released for data collection at the start of the fielding period and others were held in reserve. Three reserve waves were released because of institutions on the original data base that NSF determined to be ineligible. At the end of the data collection, sampling weights were applied to the final data file based on the inverse of the selection probabilities and computed adjustment to compensate for non-response among sampled institutions.

The following provides a description of the universe and the sampling frame, the sampling design, sample allocation, and expected precision from the sample.

a. Description of the Universe

The target population and the universe for this study is a listing of current recipients of grant awards by NSF. The population includes 582 institutions receiving a total of 6,180 grants, an average of 10.6 grants per institution. In total, 440 institutions (75 percent) received 9 or fewer grants with 233 (40 percent) institutions receiving one award and 85 (15 percent) institutions receiving two awards. On the other hand, 16 institutions (2.7 percent) accounted for 1,523 (25 percent) of the grant awards.

3. Sampling Design and Allocation

The analytical objectives indicate two variations on a stratified sampling design. For institution-level survey estimates, the sampling design that can offer smallest sampling variance is an equal probability sample of all institutions. For grant-level measures of the burden of the grant awards, the sampling design offering smallest sampling variance has the institutions selected with probability proportional to the number of grant awards. The sampling approach that offered a reasonable comprise between these two designs.

A classical process to develop sampling strata that account for the "size" (in this case, the number of awards at the institution) of a sampling unit is to use the square root of the size factor and partition a list of sampling units into strata so that the aggregate value of the square root of the size factor for institutions in each strata is equal (see Cochran 1997 for the "cumulative square root of f rule").[1] Using the cumulative square root of f rule, estimates of totals (in this situation grant awards) is improved over an equal probability sample of institutions. For example, if 5 sampling strata are desired, the cumulative square root is summed over all units and then divided by 5. This value is used to identify the units that are assigned to each stratum. In developing the strata, there was a slight modification of this procedure to achieve better precision for institution-level estimates.

The proposed sample size is 100 institutions. The precision available from a sample of 100 units is assessed by using an estimate of an institution-level proportion around 0.50. The estimated half-width of a 95 percent confidence interval is 0.098, that is an interval of .402 to .598 (see Table B.1). Using the cumulative square root of the frequency (f) rule, we looked not only at the square root but also the cube root. When the finite population correction is accounted for, using the cumulative square root of f rule, resulted in a half-width of a 95 percent confidence interval of 0.115, whereas using the cumulative cube root of the frequency, resulted in a half-width of a 95 percent confidence interval of 0.100. That is, the use of the cube root can achieve nearly the precision of a simple random sampling of all institutions, but includes over sampling of the institutions with the largest number of grants. Increasing the number of strata beyond 3 had only a slight effect on the precision, and the plan was to use 5 strata for operational ease.

For grant-level estimates, the level of precision is based on the correlation between the

[1] Cochran, WG (1977) Sampling Techniques. New York: John Wiley & Sons, Inc.

number of grant awards at an institution and the outcome measures. The anticipated precision will be as good and most likely better than will be available for the institution-level estimates.

In summary, for the institution survey there was a stratified random sample of institutions using 5 strata for respondent sample of 100 institutions. The sampling strata were developed to achieve good precision for both institution-level estimates and grant-level estimates.

TABLE B.1

SAMPLE ALLOCATION AND STRATA FOR INSTITUTION SAMPLE

Strata	Number of Institutions			
	Sample Size	Equal Size Strata	Square Root Algorithm	Cube Root Algorithm
1	20	116	269	197
2	20	116	154	159
3	20	116	79	106
4	20	117	47	70
5	20	117	33	50
Half-Width of 95% Confidence Interval		0.098	0.115	0.100

SOURCE: Mathematica computations.

NOTE: Half-width of 95% confidence interval = 1.96 * variance for a stratified random sample where the variance within a stratum is computed from p * (1 – p) with p =0.50.

D. DATA COLLECTION

The PI survey was conducted using a mixed-mode format of Web and mail methods and the institution survey was a mail survey. A database containing contact information (telephone numbers and e-mail addresses) for potential respondents was provided to MPR by NSF.

The following provides additional detail of the data collection steps that were taken:

January 2001 — NSF Director Dr. Rita R. Colwell sends PIs e-mail message announcing the survey

January 30, 2002	MPR begins sending PI e-mail invitations with Web site access username and password on a rolling schedule
February 4-19, 2002	MPR sends e-mail reminders to non-responders on a 3 day schedule
February 15, 2002	MPR sends questionnaire mail packets to 778 PIs who have responded to the Web questionnaire.
March 8, 2002	Deadline for data collection

Original PI grants in NSF data file	6,180
PIs with multiple grants randomly selected a single grant for the survey (375) or questionable grant information (12)	5,793
Total completes and partials	5,221
Cases screened out during quality assurance process for criteria such as inconsistent grant award or duration information	232
Total cases used for analysis	4,989

A tracking system was developed to monitor participation. Figure A-1 illustrates the PI participation in the Web mode of the questionnaire. A total of 778 mail packets were sent to insure participation from PIs who may not have had Web access or would prefer to complete the questionnaire on paper.

The institutional survey was a mail only survey that used an e-mail approach to identify the most appropriate institutional participant. The data collection process was as follows:

January 2001	NSF Director Dr. Rita R. Colwell sends institution presidents an e-mail message announcing the two surveys

January 24, 2002	MPR sends e-mail messages to institution contact people identified on the NSF data file to identify the appropriate person to participate in the survey.
February 15-March 6	Questionnaire mail packets are sent as institutional representatives contact information is identified
March 8-30, 2002	MPR contacts non-responders in the institution sample by phone and e-mail
March 30, 2002	All data collection is completed.

Total institutions with 2001 NSF grant recipients	582
No contact information	60
Total number with contact information	471(total); 105 (sample)
Total questionnaires returned	369 (total); 95 (sample)
Questionnaires acceptable after quality assurance	359 (total); 95 (sample)

E. INSTITUTIONAL SURVEY ESTIMATES OF STANDARD ERROR

As described in Section D, the results from the institution survey are based on a sample, not a census of all institutions. Therefore, the results discussed in the report have standard errors. The estimates of the standard error for the key items included in the analysis are on Table A-1.

F. PRINCIPAL INVESTIGATOR SURVEY MEAN CALCULATIONS

The report includes information about means that are calculated in two different ways. There are means that are calculated for a single question in the PI questionnaire or for a single item of information from the NSF FY 2001 grant data files. In addition, there are means that have been calculated using measures constructed from either two items in the survey data or using a combination of questionnaire items and items from the NSF FY 2001 grant data file. The

means for these constructed variables are calculated by taking the individual PI information for the included items, doing the calculation for each individual PI, and then getting an average. The following describes the information that is based on means calculated from multiple items. Appendix G has the central tendency distributions for these constructed variables.

CONSTRUCTED VARIABLES	CALCULATION AND DATA SOURCE
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	(FY 2001 Award Request – FY 2001 Award Amount)/Number of FY2001 Grant Award Years (Information from NSF data file)
Option 2: Award Efficient and Effectiveness Percent of Research Being Funded	(FY 2001 Award Amount/(Q3.2 100)-FY2001 Award Amount) Divided by 5 Years to annualize (NSF information and survey question)
Option 4: Award Efficient and Effectiveness NFS's Contribution	Q3.3 X Q3.4 Divided by 5 Years to Annualize (Survey questions)
Difference in FY 2001 Award Amount Request and Amount Awarded	FY 2001 Amount Request-FY 2001 Amount Award (NSF data file)
Difference in FY 2001 Duration Request and Duration Award	FY 2001 Duration Request-FY 2001 Duration Award (NSF data file)
Additional Duration Needed	FY 2001 Duration Award + Q3.1 (NSF data file and survey question)

G. SURVEY MEASUREMENT ERROR

It should be noted that in any survey there are sources of both sampling and non-sampling error. Some examples of sources of survey measurement error are non-response to the survey, skipped questions, context effects, data collection methodology, and question wording. In conducting this study, all efforts possible were taken to minimize survey measurement error.

TABLE A - 1

INSTITUTIONAL SURVEY - SAMPLE

ESTIMATES OF STANDARD ERROR*

Variable	Sample Size	Weighted Size	Mean	Standard Error	% Relative SE	Design Effect
Number of 2001 NSF grant awards	95	529	12.1	0.66	5.44	0.081
Number of 2001 NSF grant declines	95	529	31.7	1.77	5.59	0.119
Q.1.3 Total number of the following assigned to grant proposals						
1 Individuals	89	495	5.8	0.39	6.64	0.362
2 Administrative Offices	91	506	1.8	0.13	7.17	0.735
Q.1.4b Average number of hours spent on typical FY 2001 NSF grant proposal	94	524	6.0	0.53	8.86	0.946
Q.2.3 Total number of the following assigned to grant proposal revisions						
1 Individuals	82	452	5.1	0.42	8.18	0.383
2 Administrative Offices	81	443	1.7	0.15	8.84	0.653
Q.2.4b Average number of hours spent on typical FY 2001 NSF grant proposal revision	89	494	2.7	0.29	10.81	1.096
Q.2.5 Hours spent communicating with NSF on revisions to the original proposal	87	481	1.5	0.29	18.95	0.743
Q.3.2 Total number of the following assigned to administer grants						
1 Individuals	90	501	7.8	0.82	10.56	0.439
2 Administrative Offices	90	495	2.4	0.26	10.84	0.382
Q.3.3b Average number of hours spent administering typical FY 2001 NSF grant						
1 First specified administrative office	89	501	20.6	7.11	34.43	1.162
2 Second specified administrative office	58	313	9.7	1.33	13.78	0.974
Q.3.4 Hours spent to complete and submit NSF required reports for typical FY 2001 grant	85	476	6.3	1.11	17.74	1.233
Q.5.1 NSF grants percentage share of all FY 2001 grants	93	522	16.5	1.96	11.90	1.051
Q.5.2 NSF grants percentage share of total dollar amount of all FY 2001 grant awards	94	525	18.1	2.03	11.22	1.052

Variance Estimation Method: Taylor Series (WOR)

* Note: These are the estimates of standard error for the key questions used in the report

APPENDIX B

ANNOTATED QUESTIONNAIRES

APPENDIX B CONTENTS

OMB Approval Number: 3145-0185

Welcome to the NSF

National Science Foundation Principal Investigator 2001 Grant Award Survey

Conducted for NSF by:

MATHEMATICA
Policy Research, Inc.

TO:

Matt Mishkind
Project Director
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543

Contact Matt Mishkind at
877-236-4185
or
E-mail: nsfgrantsweb@mathematica-mpr.com

#1	Grant Title	_____
#2	Grant Effective Date	_____
		Median=$312,000 Mean=$436,000 Mode=$375,000 Range: $300 - $15,062,000
#3	Requested Amount	_____
		Median=$250,000 Mean=$336,000 Mode=$300,000 Range: $300 - $15,062,000
#4	Awarded Amount	_____
		47% Same 51% Decrease >5% 2% Increase >5%
#5	Amount Change 5% or Greater	_____
		Median=3 Mean=3 Mode=3 Range: 0 - 6
#6	Requested Duration	_____
		Median=3 Mean=3 Mode=3 Range: 0 - 9
#7	Awarded Duration	_____
		88% Same 10% Decrease >1 Year 2% Increase >1 Year
#8	Duration Change 1 Year or Greater	_____

- You will be asked to reference the information listed above throughout this questionnaire. This information is from our database and is specific to the NSF grant you were awarded funding in 2001.
- When a question asks you to think about any of the above information, a notation will be made in the questionnaire. Therefore, it is important to keep this information attached to the rest of the questionnaire.
- **If this is your grant, please check the box and begin the questionnaire.** → ☐
- **If any of this grant information is incorrect, please contact Matt Mishkind at 877-236-4185 or nsfgrantsweb@mathematica-mpr.com before you complete the questionnaire.**
- **You may also complete this questionnaire on the Web:**

Log onto
http://nsfgrants.mathematica-mpr.com
and enter the following
↓
USERNAME: xxxxxx

PASSWORD: xxxxxx

Welcome to our study of 2001 NSF principal investigators.

Thank you for participating in this unique study. We know that your time is valuable and we greatly appreciate your assistance.

As you may remember from the message you received from Dr. Colwell, Director of the National Science Foundation, Mathematica Policy Research, Inc. (MPR) is conducting this study for the National Science Foundation (NSF). To assist in their future planning, NSF is very interested in learning more about NSF grants from the perspective of the principal investigator.

Your participation is critical to the success of the study and to the quality of the information we get about NSF grants. If you have any questions about the background of the study, you can contact Bob Abel at NSF (nsf-surveys@nsf.gov). If you have any questions or require any assistance while you are completing the questionnaire, you may contact Matt Mishkind (877-236-4185 or nsfgrantsweb@mathematica-mpr.com).

CONFIDENTIALITY

All of your responses to the questionnaire are strictly confidential. We will not use your name or email for any other purposes than this study. All information from the study will always be kept in a secure place. Only the MPR researchers directly working on the study will have access to the individually identifiable information. Any reports of the results of this study will be presented in the aggregate.

INSTRUCTIONS

If you haven't already done so, please check the grant-specific information found on the back of the BLUE cover page at the beginning of the questionnaire. Please verify that this is your 2001 NSF grant.

- You will use this information throughout the questionnaire. When your 2001 grant information is needed, you will be reminded to reference this page.

REMINDER: Please check grant information provided on back of cover page.

1.1 Was your 2001 NSF grant [#1 GRANT TITLE] awarded on [#2 GRANT EFFECTIVE DATE] a first-time submission or a revision of a previously declined NSF proposal?

- *A revised proposal does not refer to changes made in your 2001 NSF grant proposal after the initial review*

MARK ONE

71% a first time submission

29% a revision of a previously declined NSF proposal

1.2 NSF research grants can be classified along a number of different dimensions. Which ONE of the following definitions best describes the research that is funded by this grant?

- *If your work involves several of these categories please choose the one that is most appropriate*

THEORETICAL research can be accomplished with minimal physical resources beyond the investigator's institutional research library, computing capability and office space.

LABORATORY research requires an equipped laboratory, for example, research often found in chemistry, biology or engineering university laboratories requiring research and/or testing equipment, plumbing.

FIELD research requires fieldwork, specimen collection, sample survey, location of sensors, etc. away from the principal investigator's institution, for example, some science activities in geosciences, biology, social sciences.

MARK ONE

37% Theoretical Research

44% Laboratory Research

18% Field Research

1.3 Does your 2001 NSF project require the use of a national or international research facility such as access to an accelerator, a light source, a ship, major telescope or supercomputer center?

16% Yes

83% No

1.4 In general, would you say that this 2001 NSF grant is funding:

MARK ONE

7% A specific product or deliverable

89% A project that is part of your ongoing body of research and educational activities

4% Other *(Please Describe)* ➲

_____

1.5 For each of the following, how much advice did you get from NSF staff when you were preparing your grant proposal:

		MARK ONE FOR EACH			
		A Great Deal	Some	Not Much	None At All
a.	The amount of funding	12%	27%	17%	43%
b.	The duration of the grant proposal	11%	21%	16%	51%
c.	The substance or focus of the grant	7%	25%	19%	49%

IF ALL 3 MARKED, SKIP TO INSTRUCTIONS FOR SECTION 2

1.6 Based on the advice provided by NSF staff, did you increase, not change, or decrease:

		Increase	Not Change	Decrease	Not Asked
a.	The amount of the award you proposed	4%	36%	27%	31%
b.	The award duration you proposed	3%	58%	6%	31%

As part of the review process, NSF may ask principal investigators to revise their proposal before they are awarded funding. The following questions are about your revised budget and award duration.

ONLY ANSWER Q2.1 IF #5 AMOUNT CHANGE >5% IS LABELED "YES." *See inside cover.*

2.1 In your proposal, you requested [#3 REQUESTED AMOUNT] and in your award you received [#4 AWARDED AMOUNT].

Overall, how much will this change in the award amount impact your ability to do what you expected to accomplish with this 2001 NSF grant?

MARK ONE

1% Can do a great deal more than expected
2% Can do somewhat more than expected
7% Can do about the same as expected
28% Can do somewhat less than expected
15% Can do a great deal less than expected
1% Don't know
47% Not asked

ONLY ANSWER Q2.2 IF #8 DURATION CHANGE >1 YEAR IS LABELED "YES." *See inside cover.*

(IF BOTH #5 AMOUNT CHANGE >5% AND #8 DURATION CHANGE >1 YEAR ARE LABELED "NO," PLEASE SKIP TO SECTION 3).

2.2 In your proposal, you requested [#6 REQUESTED DURATION] and in your award you received [#7 AWARDED DURATION].

Overall, how much will this change in award duration impact your ability to do what you expected to accomplish with this 2001 NSF grant?

MARK ONE

1% Can do a great deal more than expected
1% Can do somewhat more than expected
1% Can do about the same as expected
4% Can do somewhat less than expected
5% Can do a great deal less than expected
88% Not asked

IF YOU RESPONDED AS 6 "CAN'T ANSWER" OR -1 "DON'T KNOW" TO BOTH Q2.1 AND Q2.2, PLEASE SKIP TO SECTION 3.

ONLY ANSWER Q2.3 IF YOU PROVIDED A RESPONSE OF 1, 2, 3, 4, OR 5 TO <u>EITHER</u> Q2.1 OR Q2.2.

2.3 The following are some possible consequences of the changes in your NSF award funding and/or duration. Will this change have a positive impact, no impact, or negative impact on your ability to ...

	Positive Impact	No Impact	Negative Impact	Not Applicable	Not Asked
A. Goals and Objectives					
1. Pursue innovative ideas	4%	25%	23%	1%	47%
2. Pursue high-risk ideas	3%	20%	26%	4%	47%
3. Obtain other funding	6%	35%	6%	5%	47%
B. Applications and Outcomes					
4. Disseminate research findings	4%	32%	17%	1%	47%
5. Develop instrumentation or other enhancements for the research and education infrastructure	2%	17%	20%	13%	47%
6. Develop partnerships with industry, other educational institutions, or national laboratories	3%	26%	13%	11%	47%
7. Integrate research activity into your teaching and training	4%	27%	18%	4%	47%
8. Nurture connections between research activity and its potential for: health benefits, economic benefits, and national security benefits	2%	24%	10%	16%	47%
9. Develop programs with K-12 teachers and/or students	1%	23%	7%	22%	47%
10. Improve public understanding of the project	3%	31%	11%	9%	47%
C. Process and Team Building					
11. Collaborate with researchers in your area of research	5%	21%	26%	1%	47%
12. Broaden participation of under-represented groups in the research activity	3%	27%	18%	6%	47%
13. Collaborate with researchers in different areas of research	4%	25%	21%	3%	47%
14. Achieve the research objectives within the specified time	4%	14%	34%	1%	47%
15. Obtain quality personnel	3%	17%	28%	4%	47%
16. Establish mentoring or other research-based education activities	3%	23%	21%	5%	47%
D. Research Tools					
17. Access state-of-the-art equipment	2%	28%	17%	6%	47%
18. Access facilities	2%	34%	10%	6%	47%

SKIP Q2.4a IF NO POSITIVE ITEMS IN Q2.3

2.4a Among the items you marked "Positive Impact," please rank order (write in the number(s)), up to three, those that had the <u>most positive</u> impact.

#1 _____ #2 _____ #3 _____

SKIP Q2.4b IF NO NEGATIVE ITEMS IN Q2.3

2.4b Among the items you marked "Negative Impact," please rank order (write in the number(s)), up to three, those that had the <u>most negative</u> impact.

#1 _____ #2 _____ #3 _____

2.5 Please describe any other impact(s) that resulted from the change in your 2001 NSF award or give more details on any in the list that need further explanation.

_____

_____

_____

_____

The next group of questions is your assessment of how this grant fits into your ongoing body of research and educational activities.

- *Our records indicate that your 2001 NSF grant is for $[#4 AWARDED AMOUNT] over a period of [#7 AWARDED DURATION] Years. See inside cover.*

3.1 Thinking about the timeframe for your ongoing body of research and educational activities, about how many additional years do you think you would need to accomplish your key goals?

- *DO NOT include the years for the 2001 NSF grant*
- *Enter "0" for "Do not need any additional years"*

Median=2 Mean=3 Mode=2 Range: 0 to 40

3.2 If you think about your ongoing body of research and educational activities as 100 percent of what you'd like to accomplish in the next five years, about what percent of what you'd like to do will be achieved with your 2001 NSF research grant?

Median=30 Mean=37 Mode=20 Range: 0 to 100

Now, speculate on what changes, if any, you would need to accomplish all you would like to in the next five years.

3.3 In the next five years, how much additional funding from all sources, if any, would you need to achieve what you would like to with your ongoing body of research and educational activities?

- *Exclude funding you currently have for this NSF grant and from any other funding sources*
- *Enter "0" for "Do not need any additional funding"*

Median=$500,000 Mean=$1,149,000 Mode=$500,000 Range: $0 to $300,000,000

IF YOU DO NOT NEED ADDITIONAL FUNDING OR DON'T KNOW, SKIP TO Q3.6.

3.4 What percent of this additional amount do you think is appropriate for NSF to fund?

Median=70% Mean=67% Mode=100% Range: 0% to 100%

3.5 About how many additional grants do you think you would need to get this funding?

Median=2 Mean=2.39 Mode=2 Range: 0 to 32

ONLY ANSWER Q3.6 IF YOU NEED ADDITIONAL YEARS (Q3.1) AND/OR ADDITIONAL FUNDING (Q3.3).

IF YOU RESPONDED "0" OR "DON'T KNOW" TO Q3.1 AND Q3.3, SKIP TO SECTION 4.

3.6 If NSF provided <u>this additional funding and/or duration</u> to support your ongoing research and educational activities, would there be a positive impact, no impact, or a negative impact on each of the following:

		Positive Impact	No Impact	Negative Impact	Not Applicable	Not Asked
A.	**Goals and Objectives**					
1.	Pursue innovative ideas	87%	2%	<1%	<1%	10%
2.	Pursue high-risk ideas	76%	9%	<1%	4%	10%
3.	Obtain other funding	54%	26%	5%	3%	10%
B.	**Applications and Outcomes**					
4.	Disseminate research findings	74%	14%	<1%	1%	10%
5.	Develop instrumentation or other enhancements for the research and education infrastructure	61%	16%	<1%	13%	10%
6.	Develop partnerships with industry, other educational institutions, or national laboratories	62%	19%	<1%	8%	10%
7.	Integrate research activity into your teaching and training	73%	13%	<1%	2%	10%
8.	Nurture connections between research activity and its potential for: health benefits, economic benefits, and national security benefits	48%	24%	<1%	16%	10%
9.	Develop programs with K-12 teachers and/or students	32%	36%	<1%	20%	10%
10.	Improve public understanding of the project	58%	25%	<1%	5%	10%
C.	**Process and Team Building**					
11.	Collaborate with researchers in your area of research	83%	6%	<1%	<1%	10%
12.	Broaden participation of under-represented groups in the research activity	62%	23%	<1%	3%	10%
13.	Collaborate with researchers in different areas of research	76%	12%	<1%	2%	10%
14.	Achieve the research objectives within the specified time	83%	6%	<1%	1%	10%
15.	Obtain quality personnel	76%	9%	<1%	3%	10%
16.	Establish mentoring or other research-based education activities	71%	14%	<1%	3%	10%
D.	**Research Tools**					
17.	Access state-of-the-art equipment	60%	22%	<1%	7%	10%
18.	Access facilities	49%	32%	<1%	8%	10%

SKIP Q3.7a IF NO POSITIVE ITEMS IN Q3.6

3.7a Among the items you marked "Positive Impact," please rank order (write in the number(s)), up to three, those that had the <u>most positive</u> impact.

#1 _____ #2 _____ #3 _____

SKIP Q3.7b IF NO NEGATIVE ITEMS IN Q3.6

3.7b Among the items you marked "Negative Impact," please rank order (write in the number(s)), up to three, those that had the <u>most negative</u> impact.

#1 _____ #2 _____ #3 _____

3.8 Please describe any other impact(s) that would result if NSF provided you what you need for what you want to accomplish, or give more details on any in the list that needs further explanation:

3.9 If you received this <u>additional funding and/or duration</u> from NSF that you need for your ongoing body of research and educational activities, <u>how likely would you increase each of the following</u>?

	MARK ONE FOR EACH						
	Very Likely	Somewhat Likely	Neither Likely Nor Unlikely	Somewhat Unlikely	Very Unlikely	Not Applicable	Not Asked
Personnel							
1. The number and/or months of senior personnel	29%	21%	13%	7%	13%	4%	10%
2. The number and/or months of post doctoral associates	43%	22%	7%	4%	5%	7%	10%
3. The number and/or months of technicians	15%	14%	14%	7%	16%	19%	10%
4. The number and/or months of programmers	7%	11%	14%	6%	19%	24%	10%
5. The number and/or months of graduate students	70%	11%	2%	1%	1%	3%	10%
6. The number and/or months of undergraduate students	45%	26%	7%	3%	3%	4%	10%
Equipment5							
7. The number of equipment purchases	33%	31%	11%	4%	5%	5%	10%
8. The quality of equipment purchases	28%	22%	20%	5%	7%	7%	10%
Travel							
9. The number of trips	29%	32%	18%	5%	4%	1%	10%
10. The cost per trip	3%	8%	36%	11%	29%	2%	10%
Experiments							
11. The number of experiments, tests, subjects	49%	14%	5%	1%	1%	20%	10%
12. The size of the experiments or tests	30%	17%	14%	3%	3%	22%	10%
13. The quality of the experiments or tests	36%	13%	13%	2%	4%	20%	10%
Other Direct Costs							
14. Participant support	21%	18%	19%	4%	10%	16%	10%
15. Consultant services	6%	10%	19%	7%	23%	22%	10%
16. Computer/Publication costs	16%	28%	21%	7%	11%	5%	10%
17. Other *(Please Specify)* ? 27% gave a response							

3.10 Among the items you are "Very Likely" to increase, rank order (write in the numbers), up to three, those that would have the most impact on what you want to accomplish.

#1 _____ #2 _____ #3 _____

3.11 And, if you received <u>this additional funding and/or duration</u> from NSF that you need for your ongoing research and educational activities, <u>would your ability to do each of the following be</u>:

		MARK ONE FOR EACH						
		Increased A Great Deal	Increased Somewhat	About the Same	Decreased Somewhat	Decreased A Great Deal	Not Applicable	Not Asked
a.	Recruit post doctoral associates	47%	23%	8%	<1%	<1%	9%	10%
b.	Recruit graduate students	56%	23%	6%	<1%	<1%	4%	10%
c.	Recruit undergraduate students	27%	31%	24%	<1%	<1%	6%	10%
d.	Provide adequate support for a graduate student to shorten time to degree	29%	26%	25%	<1%	<1%	8%	10%
e.	Provide stability for technicians	17%	15%	13%	<1%	<1%	42%	10%
f.	Provide stability for programmers	8%	9%	14%	<1%	<1%	57%	10%
g.	Conduct more experiments, tests or subjects	42%	22%	5%	<1%	<1%	19%	10%
h.	Have higher-quality experiments or tests	31%	22%	16%	<1%	<1%	20%	10%
i.	Duration of experiments	17%	19%	24%	1%	1%	26%	10%
j.	Other *(Please Specify)*							

29% gave a response

3.12 Thinking about all the different aspects of what you would like to accomplish, which of the following would have the greatest impact on your ongoing body of research and educational activities:

MARK ONE

54% More funding

35% Longer duration

10% Not asked

The following are questions about NSF funding and your general field of research.

4.1 In your opinion, if NSF increased the funding and the duration of the awards in your field of research, how likely would these changes …?

	MARK ONE FOR EACH					
	Very Likely	Somewhat Likely	Neither Likely Nor Unlikely	Somewhat Unlikely	Very Unlikely	Not Applicable
a. Widen the focus of the research in your field	63%	28%	7%	1%	1%	<1%
b. Increase the number of proposals to NSF with innovative ideas	46%	35%	13%	3%	1%	1%
c. Increase the number of proposals to NSF with high-risk ideas	37%	38%	17%	4%	2%	2%
d. Attract more established researchers to apply for NSF funding	37%	31%	23%	4%	2%	2%
e. Decrease the amount of time to answer research questions	31%	32%	20%	6%	6%	4%
f. Attract more graduate students	65%	26%	6%	<1%	<1%	2%
g. Attract better graduate students	62%	25%	8%	1%	<1%	2%
h. Improve access to facilities and databases	36%	34%	20%	1%	1%	7%
i. Decrease interruptions in funding	70%	23%	4%	<1%	<1%	1%

4.2 If NSF had more money to award each year, please rank in descending order of importance from (1) most important to (3) least important, the following possible actions for awards in your area of research:

RANK ORDER	1st	2nd	3rd
☐ Increase only the amount of funding per award	40%	36%	23%
☐ Increase only the length of time per award	24%	37%	38%
☐ Increase only the total number of awards per year	36%	26%	37%

This section asks about your experience preparing this NSF grant and about some other research experiences.

5.1 Thinking about the proposal you submitted to NSF for this grant, what is your best estimate of the <u>total hours</u> of preparation for submitting this proposal?

In determining your estimate, please make sure you:

- ***consider all of your own time*** *for writing the proposal, preparing the budget, completing forms, and consulting with others about your proposal*
- ***consider the time other people*** *such as graduate assistants, secretaries, and budget administrators put into the preparation of this proposal*
- ***DO NOT*** *include any institutional personnel who might review or internally process your proposal such as staff from the sponsored research office*

Median=100 Mean=157 Mode=100 Range: 1 to 9,000

5.2 What's your best estimate of the percent of hours that were devoted to the intellectual content of the proposal and the percent devoted to the mechanics of proposal preparation?

- *Your total must equal 100%*

Preparation of intellectual content .....

Median=75% Mean=68% Mode=80% Range: 5% - 100%

Mechanics of proposal preparation.....

Median=25% Mean=32% Mode=20% Range: 0% - 100%

5.3 How helpful is having an NSF research grant in obtaining funding from other sources?

MARK ONE

39% Very helpful
33% Somewhat helpful
25% Neither helpful nor unhelpful
2% Somewhat unhelpful
<1% Very unhelpful

Now, think about any other funding you may be getting for your ongoing body of research and educational activities.

5.4 Right now, are you getting NSF funding for any other projects for your ongoing body of research and educational activities?

- *This includes funding from grants on which you are a collaborator or subcontractor*
- *DO NOT include the 2001 NSF grant identified for this survey*

44% Yes
55% No → **SKIP TO Q5.7**
1% Don't know → **SKIP TO Q5.7**

5.5 Not including the 2001 NSF grant identified for this survey, what is the total number of current NSF grants funding your ongoing body of research and educational activities?

Median=1 Mean=2 Mode=1 Range: 0 to 236

5.6 What is the total amount of annual funding you currently have from these other NSF grants?

- *DO NOT include the 2001 NSF grant identified for this survey*

Median=$100,000 Mean=$207,000 Mode=$100,000 Range: $0 to $30,000,000

5.7 Did you divide your ongoing body of research and educational activities into several proposals and submit them to NSF?

38% Yes
62% No

Now, think about any non-NSF funding you are getting for your ongoing body of research and educational activities.

5.8 In addition to your NSF funding, do you currently have other funding for your ongoing body of research and educational activities?

- *This may be funding from sources such as your institution, another federal agency, a state agency, a non-profit foundation, or a for-profit company or organization*

72% Yes
27% No → **SKIP TO Q5.11 (PAGE 8)**
<1% Don't know → **SKIP TO Q5.11 (PAGE 8)**

5.9 What is the total number of current non-NSF funding sources for your ongoing body of research and educational activities?

Median=2 Mean=2 Mode=1 Range: 0 to 420

5.10 And, what is the total amount of annual funding you have from non-NSF sources?

Median=$100,000 Mean=$199,000 Mode=$100,000 Range: $0 to $10,000,000

The next set of questions are about your research activities and professional duties.

5.11 What's your best estimate of the percent of your time spent conducting research in each of the following ways:

- *Your total must equal 100%*

Work as part of a team with researchers from other disciplines .....

Median=10% Mean=14% Mode=0% Range: 0% - 100%

Work as part of a team including other senior investigators in the same discipline .....

Median=20% Mean=25% Mode=20% Range: 0% - 100%

Work individually with students and post doctoral assistants.....

Median=55% Mean=54% Mode=50% Range: 0% - 100%

Other *(Please Specify)*.....

Median=0% Mean=6% Mode=0% Range: 0% - 100%

5.12 How many peer-reviewed articles have you published during the past 5 years where you have been the primary author?

Median=9 Mean=13 Mode=5 Range: 0 to 500

For the following question, please think about your current experience.

5.13 How many people in the following categories work with you on your current research projects?

Undergraduate Students

Median=2 Mean=2 Mode=1 Range: 0 - 50

Graduate Students

Median=3 Mean=4 Mode=2 Range: 0 - 300

Post-doctoral fellows

Median=1 Mean=1 Mode=0 Range: 0 - 100

Type of Institution

4%	Non-Academic
5%	Non-PhD
18%	Other PhD
25%	NSF Funding Top 20
26%	NSF Funding Top 21-50
22%	NSF Funding Top 51-100

5.14 Questionnaires by their nature are limited. Please write in any other comments you have about your experiences with the NSF grant process that you think are important.

Thank you very much for completing this questionnaire! Please return in the postage-paid envelope.

OMB Approval Number: 3145-0185

National Science Foundation Institutional Survey

Sample Institution

Conducted for NSF by:

MATHEMATICA
Policy Research, Inc.

TO:

Matt Mishkind
Project Director
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543

Contact Matt Mishkind at
877-236-4185
or
E-mail: nsfgrants@mathematica-mpr.com

Thank you for participating in this study of institutional representatives who are responsible for applying for and administering National Science Foundation (NSF) grants. We know that your time is valuable and we greatly appreciate your assistance.

Dr. Colwell, Director of the National Science Foundation, sent a letter informing your institution about this study. Mathematica Policy Research, Inc. (MPR) is conducting this study for the National Science Foundation (NSF). To assist in their future planning, NSF is very interested in learning more about NSF grants from the perspective of the institutional representatives responsible for NSF grants.

Your participation is critical to the success of the study and to the quality of the information we get about NSF grants. If you have any questions about the background of the study you can contact Bob Abel at NSF (nsf-survey@nsf.gov). If you have any questions or require any assistance while you are completing the questionnaire, you may contact Matt Mishkind at MPR (877-236-4185/nsfgrants@mathematica-mpr.com).

CONFIDENTIALITY

All of your responses to the questionnaire are strictly confidential. We will not use your name or email for any other purposes than this study. All information from the study will be kept in a secure place. Only the MPR researchers directly working on the study will have access to this information. Any reports of the results of this study will be presented in the aggregate.

INSTRUCTIONS

As you answer some of these questions, you will focus on the NSF FY 2001 grant(s) awarded to your institution. It will include questions about the NSF proposals submitted by your institution and the NSF grants administered by your institution. For your convenience, a list of these grants is enclosed.

The process of applying for and administering NSF grants may vary from institution to institution. The purpose of this questionnaire is to get a general assessment of the resources your institution uses for this process. Please make sure the most informed person at your institution completes each section of the questionnaire. For some institutions, multiple people may need to respond.

Number of 2001 NSF grant awards	Median=3	Mean=12	Mode=1
Number of 2001 NSF grant declines	Median=7	Mean=32	Mode=1

The following questions focus on the proposal process at your institution.

1.1 Does your institution have a formal, standardized process that is followed to submit grant proposals?

- *This is only your institution's process for grant proposals, it does not refer to others such as NSF FastLane*

98% Yes
2% No

1.2 Are there specific individuals or administrative offices assigned to work with grant proposals?

- *Do not include principal investigators*

99% Yes
1% No → **SKIP TO Q1.4a**

1.3 What is the total number of each of the following assigned to grant proposals:

|____|____| INDIVIDUALS Median=4 Mean=6 Mode=3

|____|____| ADMINISTRATIVE OFFICES Median=1 Mean=2 Mode=1

1.4a In the grid below, please identify, up to five, the key administrative offices at your institution involved in the proposal process for grants.

- *Do not include individual academic departments or research centers*

1.4b For each office, please give your best estimate of the average number of hours individuals in that office spent on a typical FY 2001 NSF grant proposal.

Administrative Office	Average Number of Hours Per NSF Grant Proposal
	Median=4 Mean=6 Mode=1
	Median=2 Mean=4 Mode=1
	Median=1 Mean=2 Mode=1
	Median=3 Mean=10 Mode=1
	Median=1 Mean=2 Mode=1

The following questions are about the process of negotiating grant proposal revisions.

2.1 Does your institution have a formal, standardized process that is followed to negotiate grant proposal revisions?

72% Yes

28% NO

2.2 Are there <u>specific</u> individuals or administrative offices assigned to work with grant proposal revisions?

- *Do not include principal investigators*

87% Yes

14% No → **SKIP TO Q2.4a**

2.3 What is the total number of each of the following assigned to grant proposal revisions:

|____|____| INDIVIDUALS Median=3 Mean=5 Mode=3

|____|____| ADMINISTRATIVE OFFICES Median=1 Mean=2 Mode=1

2.4a In the grid below, please identify, up to five, the key <u>administrative offices</u> at your institution involved in the proposal revision process for grants.

- *Do not include individual academic departments or research centers*

2.4b For each office, please give your best estimate of the average number of hours individuals in that office spent on <u>a typical FY 2001 NSF grant proposal revision</u>.

Administrative Office	Average Number of Hours Per NSF Grant Proposal Revision
	Median=2 Mean=3 Mode=1
	Median=1 Mean=2 Mode=1
	Median=1 Mean=1 Mode=1
	Median=1 Mean=3 Mode=1
	Median=0 Mean=<1 Mode=1

2.5 For <u>a typical NSF grant</u> that your institution is <u>awarded</u>, approximately how many hours are spent communicating directly with NSF on revisions to the original proposal?

- *Do not include principal investigator hours*

|____|____|____| AVERAGE NUMBER OF HOURS PER NSF GRANT

Median=1 Mean=2 Mode=1

After a grant is awarded, institutions are responsible for administering the grant and providing additional oversight. For the following questions, please think about grant administration.

3.1 Are there <u>specific</u> individuals or administrative offices assigned to administer grant awards?

97% Yes

3% No → **SKIP TO Q3.3a**

3.2 What is the total number of each of the following assigned to administer grants:

- *Do not include principal investigators*

|____|____| INDIVIDUALS Median=4 Mean=8 Mode=3

|____|____| ADMINISTRATIVE OFFICES Median=2 Mean=2 Mode=2

3.3a In the grid below, please identify, up to five, the key <u>administrative offices</u> at your institution involved in administering grant awards.

- *Do not include individual academic departments or research centers*

3.3b For each office, please give your best estimate of the average number of hours individuals in that office spent to administer <u>a typical FY 2001 NSF grant award</u>.

Administrative Office	Average Number of Hours Per NSF Grant Administration
	Median=8 Mean=21 Mode=5
	Median=5 Mean=10 Mode=1
	Median=4 Mean=11 Mode=1
	Median=2 Mean=5 Mode=1
	Median=10 Mean=7 Mode=<1

3.4 Approximately how many hours are spent to complete and submit NSF required reports for a typical FY 2001 NSF grant?

|____|____|____| AVERAGE NUMBER OF HOURS PER NSF GRANT

Median=3 Mean=6 Mode=2

NSF is considering increasing the amount and duration available for grants. Think about how these potential changes would impact how your institution applies for and administers NSF grants.

4.1 If NSF had more money to award each year, please rank from most important (1) to least important (3), the following possible actions for awards to your institution.

MARK ONE

Ranking

1	2	3	
44%	38%	13%	Increase only the amount of funding per award
9%	23%	62%	Increase only the duration per award
50%	30%	17%	Increase only the total number of awards per year

4.2 Overall, if NSF made each of the following changes, would it increase, decrease, or not make any difference in the administrative time your institution uses to mange all aspects of NSF awards?

	Increase Time Needed	Decrease Time Needed	No Difference in Time Needed
a. Increasing the amount of funding for NSF awards	12%	7%	81%
b. Increasing the duration of NSF awards	42%	24%	33%
c. Increasing the total number of NSF awards	86%	--%	14%

4.3 In your opinion, what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average dollar amount for each grant award?

_____

_____

_____

4.4 Now, what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average duration for each grant award?

_____

_____

_____

4.5 Please outline any suggestions you have for NSF changes that would result in a reduction of the amount of time and resources used by your institution to manage NSF grants.

_____

_____

_____

The following questions will provide an overview of the grants managed by your institution.

5.1 Thinking about <u>all</u> the grant awards managed by your office in FY 2001, approximately what percent is for NSF grants?

|____|____|____| PERCENT Median=10% Mean=16% Mode=10%

5.2 And, approximately what percent of the <u>total dollar amount</u> of all grant awards managed by your office in FY 2001, is for NSF grants?

|____|____|____| PERCENT Median=12% Mean=18% Mode=1%

Questionnaires by their nature are sometimes limited. Please write in any other comments you have about your institution's experiences with the NSF grant process.

_____

_____

_____

Thank you very much for completing this questionnaire. Please use the enclosed postage-paid envelope to return it to: Matt Mishkind, Mathematica Policy Research, Inc., P.O. Box 2393, Princeton, NJ 08543.

Type of Institution

11%	Non-Academic
28%	Non-PhD
44%	Other PhD
5%	NSF Funding Top 20
3%	NSF Funding Top 21-50
9%	NSF Funding Top 51-100

APPENDIX C

NONSAMPLE INSTITUTIONAL SURVEY INFORMATION

APPENDIX C

NONSAMPLE INSTITUTION SURVEY RESULTS

This section of the appendix provides a general overview of the results on the completed questionnaires from the 264 institutional representatives who were not selected as part of the scientific sample of institutions described in Appendix A. These results can be categorized as a convenience sample rather than a scientific sample. The results of the scientific institution sample discussed in the report text can be projected on the population of all FY 2001 institutions who had PIs that received NSF grants; the results from this convenience sample describes the responses from these 264 institutional representatives.

The results from these nonsample institutions follows in two forms: (1) an annotated questionnaire with the responses and (2) tables that have the percentages of responses from the open-ended questions. It should be noted that in Appendix G there is a table with the central tendency distributions for the nonsample institutions.

OMB Approval Number: 3145-0185

National Science Foundation Institutional Survey

Nonsample Institution

Conducted for NSF by:

MATHEMATICA
Policy Research, Inc.

TO:

Matt Mishkind
Project Director
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543

Contact Matt Mishkind at
877-236-4185
or
E-mail: nsfgrants@mathematica-mpr.com

Thank you for participating in this study of institutional representatives who are responsible for applying for and administering National Science Foundation (NSF) grants. We know that your time is valuable and we greatly appreciate your assistance.

Dr. Colwell, Director of the National Science Foundation, sent a letter informing your institution about this study. Mathematica Policy Research, Inc. (MPR) is conducting this study for the National Science Foundation (NSF). To assist in their future planning, NSF is very interested in learning more about NSF grants from the perspective of the institutional representatives responsible for NSF grants.

Your participation is critical to the success of the study and to the quality of the information we get about NSF grants. If you have any questions about the background of the study you can contact Bob Abel at NSF (nsf-survey@nsf.gov). If you have any questions or require any assistance while you are completing the questionnaire, you may contact Matt Mishkind at MPR (877-236-4185/nsfgrants@mathematica-mpr.com).

CONFIDENTIALITY

All of your responses to the questionnaire are strictly confidential. We will not use your name or email for any other purposes than this study. All information from the study will be kept in a secure place. Only the MPR researchers directly working on the study will have access to this information. Any reports of the results of this study will be presented in the aggregate.

INSTRUCTIONS

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The process of applying for and administering NSF grants may vary from institution to institution. The purpose of this questionnaire is to get a general assessment of the resources your institution uses for this process. Please make sure the most informed person at your institution completes each section of the questionnaire. For some institutions, multiple people may need to respond.

Number of 2001 NSF grant awards	Median=2	Mean=10	Mode=1
Number of 2001 NSF grant declines	Median=9	Mean=27	Mode=1

The following questions focus on the proposal process at your institution.

1.1 Does your institution have a formal, standardized process that is followed to submit grant proposals?

- *This is only your institution's process for grant proposals, it does not refer to others such as NSF FastLane*

94% Yes

5% No

1.2 Are there specific individuals or administrative offices assigned to work with grant proposals?

- *Do not include principal investigators*

96% Yes

3% No → **SKIP TO Q1.4a**

1.3 What is the total number of each of the following assigned to grant proposals:

|____|____| INDIVIDUALS Median=3 Mean=5 Mode=2

|____|____| ADMINISTRATIVE OFFICES Median=1 Mean=2 Mode=1

1.4a In the grid below, please identify, up to five, the key administrative offices at your institution involved in the proposal process for grants.

- *Do not include individual academic departments or research centers*

1.4b For each office, please give your best estimate of the average number of hours individuals in that office spent on a typical FY 2001 NSF grant proposal.

Administrative Office	Average Number of Hours Per NSF Grant Proposal
	Median=4 Mean=8 Mode=2
	Median=2 Mean=4 Mode=1
	Median=1 Mean=3 Mode=1
	Median=1 Mean=4 Mode=1
	Median=2 Mean=7 Mode=1

The following questions are about the process of negotiating grant proposal revisions.

2.1 Does your institution have a formal, standardized process that is followed to negotiate grant proposal revisions?

65% Yes

34% NO

2.2 Are there <u>specific</u> individuals or administrative offices assigned to work with grant proposal revisions?

- *Do not include principal investigators*

85% Yes

14% No → **SKIP TO Q2.4a**

2.3 What is the total number of each of the following assigned to grant proposal revisions:

|____|____| INDIVIDUALS Median=3 Mean=4 Mode=2

|____|____| ADMINISTRATIVE OFFICES Median=1 Mean=2 Mode=1

2.4a In the grid below, please identify, up to five, the key <u>administrative offices</u> at your institution involved in the proposal revision process for grants.

- *Do not include individual academic departments or research centers*

2.4b For each office, please give your best estimate of the average number of hours individuals in that office spent on <u>a typical FY 2001 NSF grant proposal revision</u>.

Administrative Office	Average Number of Hours Per NSF Grant Proposal Revision
	Median=1 Mean=3 Mode=1
	Median=1 Mean=2 Mode=1
	Median=1 Mean=2 Mode=1
	Median=2 Mean=5 Mode=1
	Median=7 Mean=7 Mode=*

***No value calculated**

2.5 For <u>a typical NSF grant</u> that your institution is <u>awarded</u>, approximately how many hours are spent communicating directly with NSF on revisions to the original proposal?

- *Do not include principal investigator hours*

|____|____|____| AVERAGE NUMBER OF HOURS PER NSF GRANT

Median=1 Mean=2 Mode=1

After a grant is awarded, institutions are responsible for administering the grant and providing additional oversight. For the following questions, please think about grant administration.

3.1 Are there <u>specific</u> individuals or administrative offices assigned to administer grant awards?

96% Yes

3% No → **SKIP TO Q3.3a**

3.2 What is the total number of each of the following assigned to administer grants:

- *Do not include principal investigators*

|____|____| INDIVIDUALS Median=3 Mean=6 Mode=2

|____|____| ADMINISTRATIVE OFFICES Median=2 Mean=2 Mode=2

3.3a In the grid below, please identify, up to five, the key <u>administrative offices</u> at your institution involved in administering grant awards.

- *Do not include individual academic departments or research centers*

3.3b For each office, please give your best estimate of the average number of hours individuals in that office spent to administer <u>a typical FY 2001 NSF grant award</u>.

Administrative Office	Average Number of Hours Per NSF Grant Administration
	Median=8 Mean=18 Mode=2
	Median=5 Mean=16 Mode=1
	Median=6 Mean=14 Mode=1
	Median=6 Mean=10 Mode=1
	Median=9 Mean=13 Mode=*

*No value calculated

3.4 Approximately how many hours are spent to complete and submit NSF required reports for a typical FY 2001 NSF grant?

|____|____|____| AVERAGE NUMBER OF HOURS PER NSF GRANT

Median=4 Mean=8 Mode=2

NSF is considering increasing the amount and duration available for grants. Think about how these potential changes would impact how your institution applies for and administers NSF grants.

4.1 If NSF had more money to award each year, please rank from most important (1) to least important (3), the following possible actions for awards to your institution.

MARK ONE

Ranking			
1	2	3	
36%	39%	12%	Increase only the amount of funding per award
6%	28%	52%	Increase only the duration per award
46%	20%	21%	Increase only the total number of awards per year

4.2 Overall, if NSF made each of the following changes, would it increase, decrease, or not make any difference in the administrative time your institution uses to mange all aspects of NSF awards?

	Increase Time Needed	Decrease Time Needed	No Difference in Time Needed
a. Increasing the amount of funding for NSF awards	17%	5%	77%
b. Increasing the duration of NSF awards	41%	20%	38%
c. Increasing the total number of NSF awards	85%	1%	14%

4.3 In your opinion, what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average dollar amount for each grant award?

_____

_____

_____

4.4 Now, what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average duration for each grant award?

_____

_____

_____

4.5 Please outline any suggestions you have for NSF changes that would result in a reduction of the amount of time and resources used by your institution to manage NSF grants.

_____

_____

_____

The following questions will provide an overview of the grants managed by your institution.

5.1 Thinking about <u>all</u> the grant awards managed by your office in FY 2001, approximately what percent is for NSF grants?

|____|____|____| PERCENT Median=10% Mean=16% Mode=10%

5.2 And, approximately what percent of the <u>total dollar amount</u> of all grant awards managed by your office in FY 2001, is for NSF grants?

|____|____|____| PERCENT Median=11% Mean=18% Mode=10%

Questionnaires by their nature are sometimes limited. Please write in any other comments you have about your institution's experiences with the NSF grant process.

_____

_____

_____

Thank you very much for completing this questionnaire. Please use the enclosed postage-paid envelope to return it to: Matt Mishkind, Mathematica Policy Research, Inc., P.O. Box 2393, Princeton, NJ 08543.

Type of Institution

20%	Non-Academic
30%	Non-PhD
34%	Other PhD
2%	NSF Funding Top 20
5%	NSF Funding Top 21-50
9%	NSF Funding Top 51-100

TABLE C-1

NONSAMPLE INSTITUTION SURVEY
CHANGES IF NSF INCREASED THE AVERAGE DURATION PER GRANT

	Total Responses (415)
Grant Process	39
General comments (21)	
Increase time and effort (11)	
Decrease time and effort (7)	
Research Changes	15
Improved quality/efficiency	
Award Duration Improvements	
More stable funding; fewer no-cost extensions	12
Staffing Changes	16
General comments (5)	
More student involvement (4)	
Positive PI impact (6)	
No Changes	10
No Comment/No Response	8
TOTAL	**100**

TABLE C-2

NONSAMPLE INSTITUTION SURVEY
CHANGES IF NSF INCREASED THE AVERAGE DOLLAR AWARD PER GRANT

	Total Responses (438)
Grant Process	31
General comments (14)	
Increase time and effort (7)	
Decrease time and effort (5)	
Increase number of applications (4)	
Research Changes	26
More conducted, improved quality	
Staffing Changes	21
General comments (5)	
More student involvement (12)	
More faculty involvement (4)	
Award Amount	
More stable funding; more budget flexibility	7
No Changes	9
No Comment/No Response	6
TOTAL	**100**

TABLE C-3

NONSAMPLE INSTITUTION SURVEY
SUGGESTIONS FOR NSF CHANGES TO REDUCE
INSTITUTION TIME AND RESOURCES

	Total Responses (329)
Grant Process	50
General comments (22) Reduce budget revisions, requests (3) Comments on FastLane improvements (5) Positive experience with FastLane (20)	
General Comments on Award Amount and Duration	8
No Suggestions	6
Experience with NSF Staff	4
No Comments/No Response	32
TOTAL	**100**

TABLE C-4

NONSAMPLE INSTITUTION SURVEY
OTHER COMMENTS ON THE NSF GRANT PROCESS

	Total Responses (313)
NSF Staff - Positive experiences (3) - Other comments (2)	5
Technology/Fast Lane	19
Level of Effort for Grant Process	21
Award Duration and Amount	*
Other Comments	7
No Comments	47
TOTAL	**99**

*Less than 1%

APPENDIX D

VERBATIM RESPONSE CODING FRAME

APPENDIX D CONTENTS

PRINCIPAL INVESTIGATOR SURVEY - VERBATIM RESPONSE CODING FRAME

Q.2.5 Please describe any other impact(s) that resulted from the change in your 2001 NSF award or give more details on any in the list that need further explanation.

A. Goals and Objectives

101. Reduced project scope
102. Reduced data quality
103. Reduced lab analysis
104. Reduced field work
105. Delayed start of project
106. Slower rate of project progress
107. Elimination of follow-on work
108. Possible project termination
109. Increased ability to travel
110. Increased project scope
111. Increased research efforts
112. Increased rate of project progress
113. Reduced time/rushed results
114. Reduced duration of research
115. Reduction in high-risk projects

B. Applications and Outcomes

No other impacts have been identified that differed from those already listed in section 2.3B of the survey.

C. Process and Team Building

301. Ability to recruit/retain staff
302. Staff eliminated
303. Salaries reduced
304. Advisor involvement curtailed
305. Team morale harmed
306. Travel reduced
307. Increased time spent on seeking funding rather than research
308. Increased time spent on other projects to generate income
309. Project continuity jeopardized
310. Training curtailed
311. Increased ability to concentrate on project/research
312. Enabled to develop more effective international collaborations
313. Eliminated collaboration with other scientists
314. Enabled to hire more students (under grads, minority)
315. Increased community interaction (teachers, schools)

D. Research Tools
401. Ability to purchase supplies and equipment
402. Limited funding to cover emergencies/equipment repairs
403. General increase in funding

E. No Impact/Impact Unknown
501. No additional impact
502. Minor impact only
503. Too early to determine impact
504. No impact because funding cut was compensated by another institution

F. Other
601. Possible termination of relationship with NSF

Q.3.8 Please describe any other impact(s) that would result if NSF provided you what you need for what you want to accomplish, or give more details on any in the list that needs further explanation.

B. Goals and Objectives
101. Expand planned project scope
102. Research new ideas/information discovered during planned research (innovative/high risk)
103. Improve data quality
104. Increase data analysis
105. Increase amount of field work
106. Faster rate of project progress
107. Pursue longer-term projects
108. Without NSF support my research would never have been supported/continue

B. Applications and Outcomes
201. Improve dissemination:
- Web-site development
- Publishing
- Conference/meeting attendance

202. Enhanced integration of research with education
203. Development of new course material
204. Conservation
205. Enhance national and international public health
206. Positive impact on reputation of institution
207. Positive career impact/tenure for PI
208. Increase public outreach
209. Increase technology transfer to underdeveloped countries
210. Lend credibility to project
211. Keep up with inflation

212. Implementation and commercialization of research results
213. Maintain competitiveness within international scientific community
214. Positive agricultural implications
215. Enhanced possibility of developing patents
216. Specific description of a scientific advance
217. Increased interaction/collaboration with colleagues/peers/other scientists
218. NSF grant increases my ability to receive matching funds from other sources

C. Process and Team Building
301. Ability to recruit/retain staff
302. Increase travel
303. Decrease time spent on seeking funding; increase time spent on research
304. If a larger grant were to be given rather than multiple smaller ones, less time would be spent on administrative activities.
305. Increased ability to mentor women and minority students
306. Increasing duration of grant would better correlate with the length of time needed for a student to earn a graduate degree.
307. Improve productivity/continuity of project with less staff turnover
308. Improve student productivity by funding them as Research Assistants instead of as Teaching Assistants.
309. Increased ability to attract bright, quality, graduate and post doctorate students/ability to encourage/excite scientists of the future

D. Research Tools
401. Increase ability to purchase supplies and equipment
402. Establish separate course and research labs possible
403. New methodologies for research/experimentation
404. Establish research facilities

E. No Impact
501. No additional impact
502. Question is not applicable

Q.5.14 Questionnaires by their nature are limited. Please write in any other comments you have about your experiences with the NSF grant process that you think are important.

A. General Award Comments
101. NSF is the only source of funding for the particular type of project
102. Project would not have been possible but for NSF funding
103. NSF funding enabled a new area of research within a program
104. NSF funding allows researchers more flexibility than other agencies
105. NSF funding enables more fundamental research rather than applied research only
106. NSF funding helped the investigator's career
107. NSF funding enabled more funding to be obtained

108. Funding for new scientists should be facilitated
109. Funding of international projects is excellent
110. There should be an award appeal process
111. More awards should be given, even if that would necessitate smaller grants
112. Non-US citizens should be able to be supported by awards
113. Program directors should have term limits
114. Program directors should not rotate for improved continuity
115. More focus should be placed on research programs than individual projects
116. Individual awards should not be eliminated in favor of awards to larger groups
117. More graduate student scholarships should be given
118. The CAREER program emphasizes teaching too heavily
119. Valuable to have teaching/training incorporated with research
120. NSF should have a larger total budget
121. NSF budget cuts during projects are problematic
122. Require more funding of international projects
123. Funding for new scientists is satisfactory
124. Probability of receiving NSF grants is low

B. Award Size

201. Grant size should be larger
202. Grant size should not be larger to allow more researchers to receive grants
203. Perceived disparity regarding size of grants awarded within different programs
204. Principle Investigators deliberately request larger budgets in anticipation of reduction in award
205. Award size is not keeping up with inflation
206. Award size is not keeping up with growing costs of conducting research
207. Award size is not keeping up with scientists' now-higher standard of living
208. Additional funding needed for more students
209. Additional funding needed for publication and dissemination of results
210. Additional funding needed for equipment
211. Additional funding needed for technical support
212. Overhead should not be included in awards but handled separately
213. Salary-release funding should be included in awards
214. Grant should cover summer salaries
215. Grant should not cover summer salaries
216. Grant amount should be smaller
217. Receiving funding for smaller projects is difficult
218. Funding for new scientists is good/satisfactory
219. Additional funding for information management is needed
220. Need for more starter grants

C. Award Duration

301. Grant duration should be longer
302. Grant duration should remain shorter to allow more researchers to receive grants
303. 3 years is not enough time to complete project
304. 2-3 years is not enough time for a graduate student to complete his/her degree

305. Longer award duration is better as it provides more stability and ability to plan ahead
306. Projects with shorter term awards lose research assistants, who seek projects with longer-term funding.
307. Impossible to define a finite end to research, so cannot determine how much award duration should be increased
308. Difficult to maintain program continuity with breaks in funding
309. No-cost extensions are useful
310. Award renewals should be facilitated
311. Grant duration should be shorter

D. Proposal Process

401. Smaller award size requires more time to be spent on proposal preparation
402. Excessive amounts of time required for proposal preparation
403. Reasonable amounts of time required for proposal preparation
404. Increased program officer involvement is needed
405. Program officer involvement was satisfactory/helpful
406. NSF should require justification for any proposal not including student involvement
407. Investigators must promise more than can be delivered in proposals
408. The proposal process is becoming too competitive to be a cost-effective way to obtain funding.
409. Investigator uncertain of the criteria used to determine a fundable proposal
410. Page limit of proposals should be increased
411. Proposal deadlines are inappropriate for the field season
412. Investigators should be allowed to submit proposals to more than one organization.
413. NSF should increase the number of proposal due dates to help eliminate funding gaps.
414. NSF should not put so much emphasis on inclusion of outreach and/or elementary education activities in proposals
415. Multiple submissions for the same project is draining/a waste
416. Proposal process is beneficial to clarify goals
417. Must have results in hand in order to be funded

E. Review Process

501. Reviews do not enable multidiscipline work
502. Reviews enable multidiscipline work
503. Panel review should not replace mail review
504. Investigators should be able to respond to review feedback.
505. Reviewers should be made more accountable for their reviews
506. Some reviewers appear unqualified
507. Some reviewers appear not to be conscientious in their efforts
508. Award decisions are risk-averse
509. Award decisions support risky projects
510. Reviewers are too influenced by requested budget
511. Reviews should be completed in a shorter timeframe
512. Review completion timeframe was satisfactory

513. Publication of books as well as peer-reviewed articles should be considered
514. Too much delay between notification of award and the time when funds actually became available.
515. Investigators should be notified that they did not receive an award in time to resubmit for the next deadline.
516. More information should be provided on the details of how a panel arrives at its decision.
517. Reviewer comments were inappropriate
518. Investigators should not be penalized for already having another grant
519. Peer review process is satisfactory
520. Reviewer(s) who review an initial proposal should also review resubmissions
521. Reviewers should focus on conceptual aspects of the proposal only
522. Past results from awards should not be considered
523. Past results from awards should be considered more
524. Review process is overly political/biased; more anonymity with respect to researchers (names, salaries) reviewers favor colleagues' interests
525. Rating system appears arbitrary and ratings assigned by reviewers are given too much consideration by project managers
526. Review process needs improvement (not further specified)
527. Review panel participants should be changed periodically
528. Larger and/or more prestigious institutions/universities are favored in reviews

F. Award Administration

601. FASTLANE is satisfactory/convenient
602. FASTLANE is improved
603. FASTLANE is difficult/inconvenient
604. The paper process is preferred over the automated process
605. Satisfaction with NSF grant officer
606. Annual report should be required after rather than prior to the end of the first year
607. Administration workload is too heavy

G. Communication between NSF and Investigators

701. Open workshops are very helpful
702. More guidance on determining appropriate funding levels is needed
703. NSF's main web site is difficult to navigate
704. An on-line chat site should be available where investigators can post questions concerning the proposal preparation process.
705. New scientists need more assistance with budget formulation
706. More feedback is needed on annual reports
707. Means for providing anonymous feedback regarding program officers should be made available to PIs.
708. More orientation is needed for new awardees
709. Workshops should be held for writing and managing proposals
710. Researchers should receive annual updates indicating NSF's targeted areas of support.
711. Investigators need more assistance/guidance overall

H. Survey Feedback

801. The number of articles co-authored should be considered in addition to number of articles where the PI is the primary author, since many PIs allow students to be listed first.
802. The number of books authored should also be considered
803. Survey respondents should be provided with a summary of survey responses
804. The survey is too long
805. Survey is not easily applicable to the respondent's project
806. Overall satisfaction with NSF grant

I. No Additional Comments

Institutional Survey - Verbatim Response Coding Frame

Q.4.3 **In your opinion, what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average dollar amount for each grant award?**

A. Award Amount
100. Misc award amount
101. Stable funding source
102. More flexibility in budgeting

B. Process
200. Misc process
201. Increase time/effort/burden for grant administration office
202. Decrease time/effort/burden for grant administration office
203. Increase in number of applications/submissions/proposals

C. Staff
300. Misc staff
301. More student involvement
302. More faculty involvement

D. None
400. Misc none
401. No significant changes
402. No comment

E. Research
500. Misc research
501. Improved research quality/efficiency
502. More research conducted

Q.4.4 **Now what, if any, would be the 2 or 3 most significant changes for your institution if NSF increased the average duration for each grant award?**

A. Award Duration
100. Misc award duration
101. Stable funding source
102. Fewer no-cost extensions

B. Process
200. Misc process
201. Increase time/effort/burden for grant administration office
202. Decrease time/effort/burden for grant administration office

C. Staff
300. Misc staff
301. More student involvement
302. Positive impact on Principle Investigator

D. None
400. Misc none
401. No significant changes
403. No comment

E. Research
500. Misc research
501. Improved research quality/efficiency

Q.4.5 **Please outline any suggestions you have for NSF changes that would result in a reduction of the amount of time and resources used by your institution to manage NSF grants.**

A. Process

100. Misc process
101. Reduce quantity of budget revisions/reports required
102. Offer FastLane training/tutorial
103. Coordinate program announcements with FastLane updates
104. Provide improved FastLane functionality
105. FastLane needs more efficient communication of deadlines/project schedule
106. Positive experience with process/FastLane

B. None

200. Misc none
201. No significant suggestions
202. No comment

C. Staff

300. Misc staff
301. Necessary to improve training/coordination of information between FastLane helpdesk and Program Officer
302. Positive experience with staff

D. Award amount and duration

400. Misc amount
401. Misc duration
402. Should pattern program after NIH

Q.5.3 **Questionnaires by their nature are sometimes limited. Please write in any other comments you have about your institution's experiences with the NSF grant process.**

A. Staff

100. Misc Staff
101. Positive experience with NSF staff
102. Inconsistent information from NSF staff

B. Technology/FastLane

200. Misc technology/fast lane
201. Positive experience with FastLane
202. Negative experience with FastLane
203. Specific FastLane technical enhancement proposed

C. Process

300. Misc process
301. High level of administrative effort to utilize FastLane
302. Increased amount of time spent on proposals
303. Positive experience, not further specified

D. Award amount and duration

400. Misc amount
401. Misc duration
402. Should pattern program after NIH

E. Survey

500. Misc comments on survey

APPENDIX E

PRINCIPAL INVESTIGATOR SURVEY CONTACT INFORMATION

APPENDIX E CONTENTS

Dear NAME OF PRINCIPAL INVESTIGATOR:

The National Science Foundation (NSF) is examining its principal investigator research grants program with regard to the appropriate size and duration of awards. This examination will include an external survey to provide NSF with FY 2001 principal investigator advice on the most appropriate grant size and duration of their FY 2001 awards. The goal of the study it to improve the overall efficiency of the research process.

To accomplish this objective, NSF has commissioned Mathematica Policy Research, Inc.(MPR) to conduct a confidential survey. In the next week or so you will receive information directly from MPR about your participation in the survey. MPR will present the results of this survey only as statistical tabulations and there will not be any personal identification. All of your responses will be totally confidential.

This survey will provide important guidance to NSF with regard to future decisions about proposal funding. We realize that your time is very valuable, but we ask that you participate in this study so that NSF will have the most complete and accurate information. If you would like additional information please contact Mathew Mishkind at MPR (nsfgrantsweb@mathematica-mpr.com).

Thank you for participating in this survey.

Sincerely,

Rita R. Colwell
Director

APPENDIX E - B

Dear NAME OF PRINCIPAL INVESTIGATOR,

In January, you were sent a letter from Dr.Colwell, Director of the National Science Foundation, asking you to participate in a study conducted by Mathematica Policy Research to learn more about NSF grants from the perspective of the principal investigator. As described in Dr. Colwell's letter, MPR contacted you with information on how to participate in this study.

Our records indicate that you have not yet completed the questionnaire for this very important study. We understand that your time is important and that is why we have designed this study to be completed at your convenience on the World Wide Web. Because each NSF grant is unique, it is very important to get a completed questionnaire from each principal investigator. Due to the continued interest in the project, we have extended the due date to March 8, 2002. Please take the time now to go to the website and complete the questionnaire.

Please click on this link to begin the questionnaire:
http://NSFGRANTS.Mathematica-mpr.com

USERNAME: NAME OF PRINCIPAL INVESTIGATOR PASSWORD: 12345

All of the information you provide will be totally confidential. We will not use your name or email for any other purpose than this study. Mathematica is required to protect the privacy of people who respond to the survey. Please be assured that the information you provide is confidential. Names and addresses will not be released to anyone. All personal data are stored behind Mathematica's firewall to protect against unauthorized access.

If you have any questions about the background of the study you may contact Bob Abel at NSF mailto:NSF-Surveys@nsf.gov . For general survey questions or questions about MPR, contact Matt Mishkind at (877)-236-4185 or mailto:NSFGRANTSWEB@Mathematica-mpr.com .

Regards,
Janice Ballou
Vice President

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 3145-0185.

APPENDIX E - C

Dear NAME OF PRINCIPAL INVESTIGATOR,

Recently a letter from Dr.Colwell, Director of the National Science Foundation (NSF), informed you that Mathematica Policy Research would contact you about a study we are conducting to assist NSF in their future planning. The main objective of the study is to learn more about NSF grants from the perspective of the principal investigator. This study will give you an opportunity to provide NSF information about your experiences with the grant process. Because each NSF grant is unique, it is very important to get a completed questionnaire from each principal investigator. March 8, 2002 is the deadline to complete the questionnaire. Please take the time now to go to the website and complete the questionnaire.

The questionnaire that NSF would like you to complete can be found at http://NSFGRANTS.Mathematica-mpr.com . You will be prompted to enter a username and password when you enter the site.

USERNAME: NAME OF PRINCIPAL INVESTIGATOR PASSWORD: 12345

All of the information you provide will be totally confidential. We will not use your name or email for any other purpose than this study. Mathematica is required to protect the privacy of people who respond to the survey. Please be assured that the information you provide is confidential. Names and addresses will not be released to anyone. All personal data are stored behind Mathematica's firewall to protect against unauthorized access. If you have any questions about the background of the study you may contact Bob Abel at NSF mailto:NSF-Surveys@nsf.gov . For general survey questions or questions about MPR, contact Matt Mishkind at (877)-236-4185 or mailto:NSFGRANTSWEB@Mathematica-mpr.com .

Regards,
Janice Ballou
Vice President

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 3145-0185.

APPENDIX F

INSTITUTIONAL SURVEY CONTACT INFORMATION

APPENDIX F CONTENTS

APPENDIX F - A

Dear NAME OF INSTITUTION President,

The National Science Foundation (NSF) continues to examine ways to improve the efficiency and effectiveness of the research funding process. In order to better understand the appropriate size, appropriate duration, and impact of its awards, NSF has commissioned two surveys: one survey of principal investigators and one survey of institutional representatives.

Mathematica Policy Research, Inc. (MPR), on behalf of NSF, will conduct these surveys. In the next week or so the surveys will be sent directly to a sample of principal investigators at your institution and to your institutional representative.

All of the responses will be confidential and there will not be any identification of institutions or principal investigators. MPR will present the results of these surveys to NSF only as statistical tabulations.

These surveys are integral to NSF's commitment to fully enabling science and engineering. The survey results will provide insight to NSF on the grant process and investment priorities and strategies. We greatly appreciate your willingness to support this project in order to ensure that NSF will have the most complete and accurate information. If you would like additional information, please contact Mathew Mishkind at MPR (nsfgrantsweb@mathematica-mpr.com).

Thank you for supporting your institution's participation in these surveys.

Sincerely,

Rita R. Colwell
Director

APPENDIX F - B

Recently Dr.Colwell, Director of the National Science Foundation (NSF), informed your institution that Mathematica Policy Research is conducting a study to assist NSF in their future planning. The main objective of the study is to learn more about NSF grants from the perspective of the institutions.

It is very important that the Institutional Survey is completed by the person who is the most knowledgeable about the overall grant process from the proposal phase to grant administration, and who has final administrative responsibility for this process. Please reply to this email with the name and contact information for this person.

__ I am the person who should be contacted for this study.

__ The person listed below should be contacted for this study.

NAME:
ADDRESS:
TELEPHONE:
EMAIL:

If you have any questions about the background of the study you may contact Bob Abel at NSF (703-292-4492 or mailto:nsf-surveys@nsf.gov). For general survey questions or questions about MPR, contact Matthew Mishkind at 877-236-4185 or mailto:NSFGrants@Mathematica-mpr.com

This study will give your institution an opportunity to provide NSF information about your experiences with the grant process. Because each institution is unique, it is very important to have your participation. Please take the time now to email the requested information.

Regards,

Janice Ballou
Vice President

APPENDIX F - C

February 14, 2002

Greetings:

Recently a letter from Dr.Colwell, Director of the National Science Foundation (NSF), informed your institution that Mathematica Policy Research would contact you about a study we are conducting to assist NSF in their future planning. The main objective of the study is to learn more about NSF grants from the perspective of the institutions.

The questionnaire that NSF would like you to complete is included in this packet. All of the information you provide will be totally confidential. Information from the study will only be in the aggregate.

If you have any questions about the background of the study you may contact Bob Abel at NSF (nsf-survey@nsf.gov). For general survey questions or questions about MPR , contact Matt Mishkind at 877-236-4185/nsfgrants@mathematica-mpr.com.

This study will give you an opportunity to provide NSF information about your experiences with the grant process. Because each institution is unique, it is very important to get your completed questionnaire by March 8,2002. Please take the time now to answer these questions.

Regards,

Janice Ballou
Vice President

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB number of this project is 3145-0185.

Principal Investigator		*Award Amount*	*Award Duration*	*Grant Title*
George Washington Univ				
Bellaachia	Abdelghani	"$369,003.00"	3	ITR/AP: A Web-Based Scientific Analysis Facility for Nuclear & Particle Physics Data
Goodfriend	Glenn	"$250,063.00"	3	The Origin of Geographic Diversity in the Bahamian Land Snail Cerion: The Fossil History of Modern Patterns
Heller	Rachelle	"$149,201.00"	3	ADVANCE Leadership Award
Maltzman	Forrest	"$72,142.00"	2	Collaborative Research: Party Effects in Congress
Vonortas	Nicholas	"$183,295.00"	2	Network Indicators
Zeng	Chen	"$300,000.00"	5	CAREER: Statistical Physics of Disordered Systems: A Program for the Development and Application of Exact Combinatorial Algorithms to Extended Systems in Disordered Media

MATHEMATICA
Policy Research, Inc.

P.O. Box 2393
Princeton, NJ 08543-2393
Telephone (609) 799-3535
Fax (609) 799-0005
www.mathematica-mpr.com

MEMORANDUM

TO: NSF Grants Institutional Survey Respondent

FROM: Janice Ballou **DATE:** 3/1/2002

SUBJECT: NSF FY 2001 Grant Awards

As noted in the instructions to the questionnaire, Mathematica Policy Research (MPR) planned to provide you with a listing of your institution's NSF FY 2001 Grant Awards as a reference. We are not able to provide you with this information. However, you can complete the questionnaire without this listing or you may have your own list of NSF FY 2001 Grant Awards to use as a reference.

Please contact MPR at nsfgrants@mathematica-mpr.com if you have any questions. We look forward to your participation in this important study.

ATTENTION

EXTENDED DEADLINE TO RETURN

NATIONAL SCIENCE FOUNDATION INSTITUTIONAL SURVEY

RETURN DATE MARCH 15, 2002

The enclosed questionnaire will have a March 8, 2002 return date. Since we have just recently received the information to mail your questionnaire packet, the return date has been extended to March 15, 2002.

This study will give your institution the opportunity to provide NSF information about your experiences with the grant process. Because each institution is unique, it is very important to have your participation.

Please note that this study had two different questionnaires: 1) the NSF Institution Survey which is the focus of this letter and 2) a web-based survey of principal investigators that focuses on individual grant experiences. If for some reason you were included in both groups, you may have already completed the principal investigator questionnaire. It is very important to also complete the institutional questionnaire.

The National Science Foundation (NSF) study of institutions is very important. In the past few weeks, you received an initial email and a reminder from Mathematica Policy Research (MPR) briefly describing the study and requesting information to insure we contact the most appropriate person to participate in this study.

We have not heard from you and would like to have your response as soon as possible so we can insure the research conducted for NSF is representative and provides the information NSF needs for their future planning. If you have already replied, thank you for your cooperation. Your institution will soon receive a three page questionnaire about your NSF experience.

It is very important that the Institution Survey is completed by the person who is the most knowledgeable about the overall grant process from the proposal phase to grant administration, and who has final administrative responsibility for this process. Please reply to this email with the name and contact information for this person:

NAME:
ADDRESS:
TELEPHONE:
EMAIL:

If you have any questions about the background of the study you may contact Bob Abel at NSF (mailto:nsf-surveys@nsf.gov). For general survey questions or questions about MPR, contact Matthew Mishkind at 877-236-4185 or mailto:nsfgrants@mathematica-mpr.com .

This study will give your institution the opportunity to provide NSF information about your experiences with the grant process. Because each institution is unique, it is very important to have your participation. Please take the time to email the requested information.

Regards,

Janice Ballou
Vice President

REMINDER: NATIONAL SCIENCE FOUNDATION INSTITUTIONAL SURVEY RETURN DATE EXTENDED TO MARCH 15, 2002

We have not yet received a completed questionnaire from your institution.

If you have already completed and returned the mail questionnaire please inform us by responding to this message. Thank you very much for your participation in this study.

As you know from our previous messages, the National Science Foundation (NSF) study of institutions is very important. In the past few weeks, you were sent an email from Mathematica Policy Research (MPR) describing briefly the study and requesting information to insure we contact the most appropriate person to participate in this study. All institutions providing this information were sent a packet containing the questionnaire and a list of FY 2001 grants received by the respective institutions.

--If you have completed the questionnnaire, but have not yet returned it by mail to MPR, please consider making copies of all of the pages, including the cover, and sending it by fax to the attention of Matthew Mishkind at 609-799-0005.

If you have any questions about the background of the study you may contact Bob Abel at NSF (mailto:nsf-surveys@nsf.gov). For general survey questions or questions about MPR, contact Matthew Mishkind at 877-236-4185 or (mailto:nsfgrants@mathematica-mpr.com).

This study will give your institution the opportunity to provide NSF information about your experiences with the grant process. Because each institution is unique, it is very important to have your participation.

Regards,

Janice Ballou
Vice President

APPENDIX G

STATISTICAL TABULATIONS

APPENDIX G CONTENTS

APPENDIX G

STATISTICAL TABULATIONS

The statistical tabulations that follow include the central tendency distributions for the: (1) PI survey results, (2) sample institution survey results, and (3) nonsample institution survey results. In addition, for the PI survey results there is a set of cross tabulations for a selected group of key questions in the questionnaire. There is a full set of electronic tabulations for all questionnaire items. The questions included in Appendix G represent the following PI categories:

Banner 1

- Type of grant submission
- Type of research being funded
- Changes in funding from proposal request to award
- Changes in duration from proposal request to award
- Professional age based on date of PI's last degree

Banner 2

- Additional years needed to accomplish PI goals
- Percentage of goals achieved in next 5 years with NSF award
- Additional funding needed to accomplish PI goals
- Use of national or international facility

Banner 3

- NSF Directorate
- Preparation hours for FY 2001 grant proposal submission
- Number of PI published peer review articles

APPENDIX G – A

MEASURE OF CENTRAL TENDENCY: PRINCIPAL INVESTIGATOR SURVEY

TABLE 1*

TOTAL

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	4,208	2	2	2	2	32	0
Q.3.1 Additional years needed to accomplish key goals	3,721	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	4,434	37	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	4,345	1,149,167	500,000	500,000	7,773,405	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	3,895	67	70	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	2,125	206,569	100,000	100,000	1,061,085	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	3,474	2	2	1	9	420	0
Q.5.10 Total amount of annual funding from non-NSF sources	3,523	198,846	100,000	100,000	462,436	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	4,547	157	100	100	250	9,000	1
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	4,821	13	9	5	17	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	4,947	68	75	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	4,947	32	25	20	18	100	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	2,167	2	1	1	6	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	4,933	14	10	0	16	100	0
2 Part of team with senior investigators in same discipline	4,933	25	20	20	20	100	0
3 Individually with students and post doctoral assistants	4,933	54	55	50	26	100	0
4 Other	4,933	6	0	0	18	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	4,140	2	2	1	3	50	0
2 Graduate Students	4,602	4	3	2	6	300	0
3 Post-doctoral fellows	3,992	1	1	0	2	100	0
Award Amount	4,989	335,979	249,999	300,000	505,250	15,062,146	300
Award Duration	4,989	3	3	3	1	9	0
Requested Amount	4,989	435,806	312,208	375,000	690,037	15,062,148	300
Requested Duration	4,989	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 2 -A*

SUBMISSION: FIRST

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	2,942	2	2	2	2	32	0
Q.3.1 Additional years needed to accomplish key goals	2,595	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	3,098	37	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	3,053	1,256,369	500,000	500,000	8,945,781	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	2,723	67	70	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	1,502	227,307	100,000	100,000	1,250,591	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	2,436	3	2	1	10	420	0
Q.5.10 Total amount of annual funding from non-NSF sources	2,471	212,812	100,000	50,000	499,346	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	3,203	145	100	100	218	6,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	3,394	14	10	5	17	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	3,490	68	70	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	3,490	32	30	20	18	100	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	1,533	2	1	1	7	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	3,482	15	10	0	16	100	0
2 Part of team with senior investigators in same discipline	3,482	26	20	20	21	100	0
3 Individually with students and post doctoral assistants	3,482	53	50	50	26	100	0
4 Other	3,482	6	0	0	17	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	2,896	2	2	0	3	50	0
2 Graduate Students	3,250	4	3	2	6	300	0
3 Post-doctoral fellows	2,833	1	1	0	3	100	0
Award Amount	3,521	348,288	249,999	300,000	549,244	15,062,146	2,650
Award Duration	3,521	3	3	3	1	6	0
Requested Amount	3,521	455,785	314,662	375,000	765,366	15,062,148	2,650
Requested Duration	3,521	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 2 - B*

SUBMISSION: SECOND

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,253	2	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	1,114	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,320	38	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,277	899,336	500,000	500,000	3,768,409	125,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,158	68	70	100	27	100	0
Q.5.6 Total amount of annual funding from other NSF grants	617	154,849	95,000	100,000	257,126	3,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,025	2	2	1	7	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,039	159,838	80,000	100,000	325,174	8,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,328	186	120	100	313	9,000	8
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,411	12	8	5	15	275	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,441	70	75	80	17	99	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,441	30	25	20	17	90	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	628	2	1	1	1	7	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,435	14	10	0	15	100	0
2 Part of team with senior investigators in same discipline	1,435	23	20	10	20	100	0
3 Individually with students and post doctoral assistants	1,435	56	60	50	26	100	0
4 Other	1,435	7	0	0	19	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,232	2	2	1	2	25	0
2 Graduate Students	1,337	4	3	2	3	35	0
3 Post-doctoral fellows	1,145	1	1	0	1	20	0
Award Amount	1,449	306,179	250,000	300,000	378,477	5,765,151	300
Award Duration	1,449	3	3	3	1	9	1
Requested Amount	1,449	388,037	306,181	375,000	459,976	4,997,959	300
Requested Duration	1,449	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 3 - A*

TYPE OF RESEARCH: THEORETICAL

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,446	2	2	1	2	20	0
Q.3.1 Additional years needed to accomplish key goals	1,253	2	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,574	39	35	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,518	740,144	350,000	500,000	1,930,245	50,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,330	71	75	100	27	100	0
Q.5.6 Total amount of annual funding from other NSF grants	663	199,320	85,000	100,000	1,212,367	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,139	2	2	1	3	100	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,149	170,618	70,000	50,000	475,805	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,661	129	100	100	299	9,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,798	14	10	10	17	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,841	70	75	80	17	100	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,840	30	25	20	17	90	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	677	2	1	1	1	8	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,837	13	10	0	16	100	0
2 Part of team with senior investigators in same discipline	1,837	29	25	20	22	100	0
3 Individually with students and post doctoral assistants	1,837	49	50	50	26	100	0
4 Other	1,837	8	0	0	20	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,359	1	1	0	2	30	0
2 Graduate Students	1,692	3	2	1	3	30	0
3 Post-doctoral fellows	1,394	1	1	0	1	15	0
Award Amount	1,863	276,149	201,950	300,000	381,779	5,655,274	3,200
Award Duration	1,863	3	3	3	1	9	1
Requested Amount	1,863	372,595	260,652	375,000	566,969	11,109,857	4,000
Requested Duration	1,863	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 3 - B*

RESEARCH TYPE: LABORATORY

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,971	2	2	2	2	32	0
Q.3.1 Additional years needed to accomplish key goals	1,704	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	2,001	37	30	20	22	100	1
Q.3.3 Additional funding from all sources needed to achieve goals	2,013	1,190,205	500,000	500,000	5,618,851	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,841	63	60	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	984	222,278	100,000	100,000	1,184,750	25,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,661	2	2	1	6	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,693	209,805	110,000	100,000	353,953	6,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	2,020	170	120	100	184	2,400	4
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	2,125	15	10	5	18	275	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	2,177	68	75	80	18	99	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	2,177	32	25	20	18	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	1,003	2	1	1	4	115	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	2,173	14	10	10	14	100	0
2 Part of team with senior investigators in same discipline	2,173	20	20	10	17	100	0
3 Individually with students and post doctoral assistants	2,173	62	67	80	23	100	0
4 Other	2,173	4	0	0	13	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,995	3	2	2	2	20	0
2 Graduate Students	2,056	4	3	2	4	100	0
3 Post-doctoral fellows	1,899	1	1	0	3	100	0
Award Amount	2,186	389,789	310,051	300,000	568,199	15,062,146	300
Award Duration	2,186	3	3	3	1	6	1
Requested Amount	2,186	506,945	375,000	375,000	760,041	15,062,148	300
Requested Duration	2,186	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 3 - C*

RESEARCH TYPE: FIELD

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	769	3	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	740	3	2	2	4	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	832	34	25	20	21	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	787	1,838,822	500,000	500,000	15,653,147	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	703	71	75	100	27	100	0
Q.5.6 Total amount of annual funding from other NSF grants	458	181,101	100,000	100,000	279,757	2,500,000	0
Q.5.9 Total number of current non-NSF funding sources	649	3	2	1	9	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	659	205,309	75,000	100,000	611,484	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	833	178	120	100	279	5,000	8
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	863	8	6	5	9	112	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	894	67	70	80	18	99	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	894	33	30	20	18	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	466	2	2	1	11	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	888	18	10	0	19	100	0
2 Part of team with senior investigators in same discipline	888	29	25	20	21	100	0
3 Individually with students and post doctoral assistants	888	45	40	50	26	100	0
4 Other	888	8	0	0	21	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	761	3	2	1	4	50	0
2 Graduate Students	822	4	3	2	11	300	0
3 Post-doctoral fellows	672	1	1	0	2	25	0
Award Amount	902	330,890	198,018	400,000	554,016	5,765,151	4,496
Award Duration	902	3	3	3	1	6	1
Requested Amount	902	395,107	237,599	400,000	732,059	14,111,022	4,950
Requested Duration	902	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 4 - A*

PROFESSIONAL AGE: 0 - 10 YEARS FROM HIGHEST DEGREE

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,229	2	2	2	2	30	0
Q.3.1 Additional years needed to accomplish key goals	1,054	2	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,334	38	30	20	23	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,269	867,523	500,000	500,000	5,705,307	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,115	67	67	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	567	132,226	80,000	100,000	247,877	3,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,050	2	2	1	13	420	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,056	128,846	75,000	100,000	191,609	2,250,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,335	163	100	100	314	9,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,457	11	8	5	10	111	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,487	70	75	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,487	30	25	20	18	95	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	582	2	1	1	1	7	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,482	14	10	0	15	90	0
2 Part of team with senior investigators in same discipline	1,482	24	20	20	21	100	0
3 Individually with students and post doctoral assistants	1,482	54	60	50	26	100	0
4 Other	1,482	7	0	0	19	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,279	2	2	1	3	30	0
2 Graduate Students	1,365	4	3	2	3	35	0
3 Post-doctoral fellows	1,117	1	0	0	1	10	0
Award Amount	1,496	283,583	239,954	375,000	354,815	7,500,000	3,229
Award Duration	1,496	3	3	3	1	9	0
Requested Amount	1,496	357,864	289,404	375,000	521,102	13,037,189	3,229
Requested Duration	1,496	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 4 - B*

PROFESSIONAL AGE: 11 - 20 YEARS FROM HIGHEST DEGREE

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,479	2	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	1,323	3	2	2	3	27	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,531	37	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,515	1,139,437	500,000	500,000	6,236,505	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,378	66	65	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	809	181,518	100,000	100,000	694,886	18,300,000	0
Q.5.9 Total number of current non-NSF funding sources	1,225	2	2	1	2	30	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,248	201,140	100,000	50,000	483,308	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,572	157	100	100	235	6,000	4
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,653	14	10	5	18	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,693	69	75	80	17	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,692	31	25	20	17	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	825	2	1	1	1	8	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,691	14	10	0	15	100	0
2 Part of team with senior investigators in same discipline	1,691	25	20	20	19	100	0
3 Individually with students and post doctoral assistants	1,691	55	60	50	25	100	0
4 Other	1,691	5	0	0	16	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,429	2	2	1	3	24	0
2 Graduate Students	1,594	4	3	2	3	40	0
3 Post-doctoral fellows	1,385	1	1	0	2	40	0
Award Amount	1,710	332,208	248,271	300,000	468,770	5,803,691	4,000
Award Duration	1,710	3	3	3	1	6	1
Requested Amount	1,710	440,801	300,118	100,000	739,611	14,111,022	4,000
Requested Duration	1,710	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 4 - C*

PROFESSIONAL AGE: 21+ YEARS FROM HIGHEST DEGREE

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,500	2	2	1	2	32	0
Q.3.1 Additional years needed to accomplish key goals	1,344	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,569	37	30	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,561	1,387,569	500,000	500,000	10,194,917	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,402	69	75	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	749	289,906	100,000	100,000	1,617,765	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,199	3	2	1	10	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,219	257,137	100,000	50,000	582,891	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,640	151	100	100	199	5,000	1
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,711	15	10	5	19	275	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,767	67	70	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,768	33	30	20	18	100	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	760	2	1	1	10	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,760	14	10	0	17	100	0
2 Part of team with senior investigators in same discipline	1,760	27	20	20	21	100	0
3 Individually with students and post doctoral assistants	1,760	52	50	50	27	100	0
4 Other	1,760	7	0	0	18	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,432	2	1	0	3	50	0
2 Graduate Students	1,643	4	3	2	8	300	0
3 Post-doctoral fellows	1,490	2	1	1	3	100	0
Award Amount	1,783	383,559	265,000	300,000	627,378	15,062,146	300
Award Duration	1,783	3	3	3	1	6	1
Requested Amount	1,783	496,410	336,265	100,000	756,021	15,062,148	300
Requested Duration	1,783	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 5 - A*

DIRECTORATE: BIO

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	739	2	2	2	1	15	0
Q.3.1 Additional years needed to accomplish key goals	668	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	769	37	33	50	22	100	2
Q.3.3 Additional funding from all sources needed to achieve goals	757	1,387,569	500,000	500,000	7,380,671	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	682	69	70	100	30	100	0
Q.5.6 Total amount of annual funding from other NSF grants	285	289,906	100,000	100,000	287,934	3,000,000	0
Q.5.9 Total number of current non-NSF funding sources	581	3	2	1	2	21	0
Q.5.10 Total amount of annual funding from non-NSF sources	591	257,137	90,000	50,000	369,822	6,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	750	151	150	200	262	5,000	20
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	799	15	7	5	12	125	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	817	67	75	80	17	98	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	817	33	25	20	17	95	2
Q.5.5 Total number of current NSF grants funding ongoing body of research	291	2	1	1	1	10	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	816		10	0	14	100	0
2 Part of team with senior investigators in same discipline	816	14	15	10	17	100	0
3 Individually with students and post doctoral assistants	816	27	70	80	25	100	0
4 Other	816	52	0	0	16	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	754	7	2	2	3	20	0
2 Graduate Students	748		3	2	2	30	0
3 Post-doctoral fellows	724	2	1	0	2	20	0
Award Amount	819	4	330,000	330,000	559,959	5,803,691	6,257
Award Duration	819	2	3	3	1	6	1
Requested Amount	819	383,559	413,337	35,000	746,443	10,907,169	10,000
Requested Duration	819	3	3	3	1	6	1

* All values rounded to nearest whole number

TABLE 5 - B*

DIRECTORATE: CSE

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	516	3	2	2	2	15	0
Q.3.1 Additional years needed to accomplish key goals	438	2	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	533	36	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	522	1,342,306	750,000	500,000	2,037,995	23,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	476	66	66	50	25	100	0
Q.5.6 Total amount of annual funding from other NSF grants	310	212,482	100,000	100,000	445,878	5,250,000	0
Q.5.9 Total number of current non-NSF funding sources	410	3	2	1	11	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	413	227,429	100,000	50,000	385,413	5,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	540	149	100	100	293	6,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	579	15	12	5	15	108	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	597	71	75	80	16	98	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	597	29	25	20	16	90	2
Q.5.5 Total number of current NSF grants funding ongoing body of research	318	2	2	1	1	8	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	596	15	10	10	15	90	0
2 Part of team with senior investigators in same discipline	596	24	20	20	17	100	0
3 Individually with students and post doctoral assistants	596	56	60	50	23	100	0
4 Other	596	4	0	0	13	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	512	2	2	1	3	30	0
2 Graduate Students	572	5	5	2	4	40	0
3 Post-doctoral fellows	456	1	0	0	2	40	0
Award Amount	602	446,723	300,000	300,000	630,850	7,500,000	4,200
Award Duration	602	3	3	3	1	9	0
Requested Amount	602	635,041	416,157	500,000	1,000,268	13,037,189	4,200
Requested Duration	602	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 5 - C*

DIRECTORATE: ENG

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	573	3	2	2	3	32	0
Q.3.1 Additional years needed to accomplish key goals	495	2	2	2	2	15	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	585	36	30	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	584	1,255,480	600,000	500,000	5,371,597	125,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	541	56	50	50	25	100	0
Q.5.6 Total amount of annual funding from other NSF grants	342	125,419	100,000	100,000	133,503	1,200,000	0
Q.5.9 Total number of current non-NSF funding sources	535	4	2	2	18	420	1
Q.5.10 Total amount of annual funding from non-NSF sources	545	273,892	150,000	200,000	606,523	10,000,000	2,000
Q.5.1 Total hours of preparation for submitting this proposal	589	165	120	100	215	3,500	1
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	618	18	13	10	19	200	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	640	69	75	80	17	99	15
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	641	31	25	20	18	100	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	343	2	1	1	6	115	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	638	18	15	10	15	100	0
2 Part of team with senior investigators in same discipline	638	19	20	10	15	100	0
3 Individually with students and post doctoral assistants	638	60	60	50	21	100	0
4 Other	638	3	0	0	11	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	566	2	2	2	2	18	0
2 Graduate Students	634	6	5	4	12	300	0
3 Post-doctoral fellows	530	1	1	0	2	14	0
Award Amount	646	314,770	270,000	375,000	284,048	3,081,665	6,000
Award Duration	646	3	3	3	1	5	1
Requested Amount	646	377,941	330,836	375,000	382,785	3,941,299	6,000
Requested Duration	646	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 5 - D*

DIRECTORATE: GEO

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	689	3	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	623	3	2	2	3	25	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	733	30	25	20	19	100	1
Q.3.3 Additional funding from all sources needed to achieve goals	705	1,871,095	500,000	500,000	16,476,572	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	655	71	75	100	26	100	0
Q.5.6 Total amount of annual funding from other NSF grants	485	156,849	100,000	100,000	196,547	2,085,000	0
Q.5.9 Total number of current non-NSF funding sources	597	2	2	1	2	30	1
Q.5.10 Total amount of annual funding from non-NSF sources	603	171,631	90,000	50,000	347,765	4,975,128	75
Q.5.1 Total hours of preparation for submitting this proposal	758	146	100	100	209	3,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	770	8	6	5	7	74	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	790	67	70	80	18	99	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	790	33	30	20	18	90	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	487	3	2	1	11	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	785	17	10	10	16	100	0
2 Part of team with senior investigators in same discipline	785	29	25	20	21	100	0
3 Individually with students and post doctoral assistants	785	49	50	50	25	100	0
4 Other	785	5	0	0	15	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	645	2	1	1	2	15	0
2 Graduate Students	739	3	2	1	2	15	0
3 Post-doctoral fellows	660	1	1	0	1	7	0
Award Amount	803	270,255	201,878	300,000	335,445	3,870,189	9,847
Award Duration	803	3	3	3	1	5	1
Requested Amount	803	308,953	231,366	361,527	352,868	3,870,189	12,040
Requested Duration	803	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 5 - E*

DIRECTORATE: MPS

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,013	2	2	1	2	30	0
Q.3.1 Additional years needed to accomplish key goals	847	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,085	45	50	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,074	751,492	300,000	500,000	2,274,025	50,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	938	70	75	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	397	319,730	75,000	0	2,177,990	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	793	2	1	1	9	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	802	180,038	71,000	100,000	455,527	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,181	138	100	100	291	9,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,256	17	12	10	23	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,282	67	70	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,282	33	30	20	18	95	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	411	1	1	1	1	8	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,279	11	10	0	14	100	0
2 Part of team with senior investigators in same discipline	1,279	28	20	20	23	100	0
3 Individually with students and post doctoral assistants	1,279	53	50	50	28	100	0
4 Other	1,279	8	0	0	20	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,027	1	1	0	2	18	0
2 Graduate Students	1,165	3	2	1	4	100	0
3 Post-doctoral fellows	1,086	2	1	0	4	100	0
Award Amount	1,290	350,454	250,187	300,000	593,952	15,062,146	10,000
Award Duration	1,290	3	3	3	1	6	1
Requested Amount	1,290	459,184	333,781	2,000,000	728,608	15,062,148	10,000
Requested Duration	1,290	3	3	3	1	5	1

* All values rounded to nearest whole number

TABLE 5 - F*

DIRECTORATE: OD

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	110	3	2	2	2	20	1
Q.3.1 Additional years needed to accomplish key goals	99	4	2	1	6	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	120	34	25	20	25	100	1
Q.3.3 Additional funding from all sources needed to achieve goals	111	1,169,239	500,000	500,000	2,950,569	30,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	100	75	80	100	25	100	0
Q.5.6 Total amount of annual funding from other NSF grants	94	247,928	150,000	50,000	274,592	1,600,000	0
Q.5.9 Total number of current non-NSF funding sources	88	2	2	1	2	15	0
Q.5.10 Total amount of annual funding from non-NSF sources	94	217,184	107,875	150,000	514,672	4,800,000	0
Q.5.1 Total hours of preparation for submitting this proposal	121	155	100	80	187	1,600	10
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	125	7	6	8	5	25	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	128	65	70	70	18	95	20
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	128	35	30	30	18	80	5
Q.5.5 Total number of current NSF grants funding ongoing body of research	96	3	2	1	2	9	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	127	22	20	0	21	100	0
2 Part of team with senior investigators in same discipline	127	32	30	30	21	95	0
3 Individually with students and post doctoral assistants	127	38	35	20	26	100	0
4 Other	127	8	0	0	22	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	98	2	2	1	5	50	0
2 Graduate Students	110	4	3	1	4	30	0
3 Post-doctoral fellows	88	1	1	0	1	6	0
Award Amount	130	367,552	224,410	40,000	589,736	5,490,000	10,168
Award Duration	130	3	3	3	1	5	1
Requested Amount	130	483,532	248,994	40,000	1,273,271	14,111,022	10,882
Requested Duration	130	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 5 - G*

DIRECTORATE: SBE

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	554	2	2	2	2	15	0
Q.3.1 Additional years needed to accomplish key goals	537	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	594	32	25	20	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	578	715,474	300,000	500,000	2,606,547	50,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	491	71	75	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	205	268,594	72,000	100,000	1,375,707	18,300,000	0
Q.5.9 Total number of current non-NSF funding sources	454	2	2	1	2	28	0
Q.5.10 Total amount of annual funding from non-NSF sources	459	174,722	50,000	100,000	546,557	8,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	593	144	100	100	182	2,000	5
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	658	10	7	5	12	130	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	677	69	75	80	17	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	676	31	25	20	17	95	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	214	2	1	1	1	7	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	676	15	10	0	18	100	0
2 Part of team with senior investigators in same discipline	676	29	25	0	23	100	0
3 Individually with students and post doctoral assistants	676	45	45	50	27	100	0
4 Other	676	10	0	0	23	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	525	2	1	0	4	30	0
2 Graduate Students	621	3	3	1	3	18	0
3 Post-doctoral fellows	438	1	0	0	1	12	0
Award Amount	683	176,773	95,876	50,000	378,609	4,934,624	300
Award Duration	683	2	2	3	1	5	1
Requested Amount	683	229,000	123,981	18,000	457,006	4,987,770	300
Requested Duration	683	2	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 6 - A*

TYPE OF INSTITUTION: NON-ACADEMIC

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	152	3	2	1	2	11	0
Q.3.1 Additional years needed to accomplish key goals	153	3	2	2	5	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	170	35	30	20	24	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	165	1,361,656	500,000	500,000	2,605,299	20,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	140	65	75	100	31	100	0
Q.5.6 Total amount of annual funding from other NSF grants	78	215,816	100,000	100,000	343,749	2,000,000	0
Q.5.9 Total number of current non-NSF funding sources	158	3	2	2	3	21	0
Q.5.10 Total amount of annual funding from non-NSF sources	156	421,123	125,000	60,000	992,332	8,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	187	167	120	100	247	2,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	192	10	6	5	13	111	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	197	67	75	80	19	96	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	197	33	25	20	19	90	4
Q.5.5 Total number of current NSF grants funding ongoing body of research	82	5	1	1	26	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:	194	18	10	0	20	100	0
1 Part of team with researchers from other disciplines	194	34	30	0	26	100	0
2 Part of team with senior investigators in same discipline	194	31	25	0	27	100	0
3 Individually with students and post doctoral assistants	194	17	0	0	31	100	0
4 Other	120	3	1	1	5	50	0
Q.5.13 Number in following categories working on current research projects:	139	4.76	2.00	1.00	25.49	300.00	0.00
1 Undergraduate Students	126	2	1	1	3	25	0
2 Graduate Students	200	458,092	207,580	100,000	881,001	7,500,000	6,500
3 Post-doctoral fellows	200	3	3	3	1	5	1
Award Amount	200	601,834	262,518	.	1,218,799	13,037,189	6,500
Award Duration	200	3	3	3	1	5	0
Requested Amount	258	242,004	172,376	375,000	241,125	2,567,750	9,800
Requested Duration	258	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 6 - B*

TYPE OF INSTITUTION: NON-PHD

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	218	2	2	1	1	12	0
Q.3.1 Additional years needed to accomplish key goals	204	2	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	237	46	50	50	22	100	3
Q.3.3 Additional funding from all sources needed to achieve goals	227	564,427	200,000	200,000	3,334,995	50,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	195	77	80	100	23	100	0
Q.5.6 Total amount of annual funding from other NSF grants	84	106,002	71,000	200,000	134,436	900,000	0
Q.5.9 Total number of current non-NSF funding sources	150	2	1	1	3	30	1
Q.5.10 Total amount of annual funding from non-NSF sources	149	97,403	25,000	10,000	218,328	1,700,000	133
Q.5.1 Total hours of preparation for submitting this proposal	235	153	100	100	167	2,000	10
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	253	7	5	3	8	73	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	257	67	70	80	17	99	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	257	33	30	20	17	90	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	86	2	1	1	1	7	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	257	11	5	0	16	100	0
2 Part of team with senior investigators in same discipline	257	23	20	0	22	100	0
3 Individually with students and post doctoral assistants	257	56	60	60	30	100	0
4 Other	257	10	0	0	24	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	232	4	3	2	3	20	0
2 Graduate Students	161	3	2	0	3	30	0
3 Post-doctoral fellows	128	1	0	0	1	4	0
Award Amount	258	199,970	147,697	100,000	164,988	1,069,333	4,496
Award Duration	258	3	3	3	1	5	1
Requested Amount	258	242,004	172,376	375,000	241,125	2,567,750	9,800
Requested Duration	258	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 6 - C*

TYPE OF INSTITUTION: OTHER PHD

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	787	2	2	2	2	32	0
Q.3.1 Additional years needed to accomplish key goals	696	3	2	2	3	25	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	834	38	30	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	812	1,098,725	500,000	500,000	10571518.28 3	0	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	725	66	65	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	316	110,433	80,000	100,000	118,103	900,000	0
Q.5.9 Total number of current non-NSF funding sources	623	3	2	1	17	420	0
Q.5.10 Total amount of annual funding from non-NSF sources	636	158,249	75,000	50,000	266,045	2,500,000	0
Q.5.1 Total hours of preparation for submitting this proposal	837	173	120	100	297	6,000	1
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	893	12	8	5	12	120	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	919	69	75	80	17	99	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	919	31	25	20	17	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	320	2	1	1	1	9	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	913	14	10	0	16	100	0
2 Part of team with senior investigators in same discipline	913	24	20	10	20	100	0
3 Individually with students and post doctoral assistants	913	57	60	50	26	100	0
4 Other	913	5	0	0	16	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	766	2	2	1	3	30	0
2 Graduate Students	862	3	3	2	4	100	0
3 Post-doctoral fellows	705	1	1	0	4	100	0
Award Amount	922	261,315	229,120	300,000	274,491	4,200,000	2,650
Award Duration	922	3	3	3	1	6	0
Requested Amount	922	336,047	279,508	375,000	393,860	4,957,871	2,650
Requested Duration	922	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 6 - D*

TYPE OF INSTITUTION: NSF FUNDING TOP 20

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,029	3	2	2	2	30	0
Q.3.1 Additional years needed to accomplish key goals	907	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,092	34	30	20	21	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,062	1,291,983	500,000	500,000	7,867,418	250,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	958	66	60	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	597	319,901	100,000	100,000	1,809,361	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	916	2	2	1	2	30	0
Q.5.10 Total amount of annual funding from non-NSF sources	930	256,735	111,000	100,000	665,216	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,118	138	100	100	162	3,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,188	15	10	5	22	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,217	68	70	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,218	32	30	20	18	100	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	616	2	2	1	1	9	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,221	14	10	0	15	90	0
2 Part of team with senior investigators in same discipline	1,221	26	20	20	21	100	0
3 Individually with students and post doctoral assistants	1,221	55	60	50	25	100	0
4 Other	1,221	5	0	0	15	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,030	2	1	0	2	20	0
2 Graduate Students	1,179	4	3	2	3	23	0
3 Post-doctoral fellows	1,060	1	1	0	2	21	0
Award Amount	1,238	383,290	282,034	300,000	650,496	15,062,146	300
Award Duration	1,238	3	3	3	1	6	1
Requested Amount	1,238	503,532	351,868	375,000	824,368	15,062,148	300
Requested Duration	1,238	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 6 - E*

TYPE OF INSTITUTION: NSF FUNDING TOP 21-50

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,077	2	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	956	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,126	37	30	20	22	100	1
Q.3.3 Additional funding from all sources needed to achieve goals	1,114	1,035,217	500,000	500,000	6,094,005	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,013	68	70	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	584	188,263	100,000	100,000	794,297	18,300,000	0
Q.5.9 Total number of current non-NSF funding sources	870	2	2	1	2	28	0
Q.5.10 Total amount of annual funding from non-NSF sources	880	178,670	100,000	100,000	258,694	3,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,167	152	100	100	168	2,400	8
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,238	14	10	5	17	275	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,274	69	75	80	18	100	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,273	31	25	20	18	90	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	587	2	1	1	1	8	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,273	15	10	0	16	100	0
2 Part of team with senior investigators in same discipline	1,273	26	20	20	20	100	0
3 Individually with students and post doctoral assistants	1,273	54	50	50	25	100	0
4 Other	1,273	6	0	0	16	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,065	2	1	0	2	25	0
2 Graduate Students	1,223	4	3	2	3	30	0
3 Post-doctoral fellows	1,055	1	1	0	2	20	0
Award Amount	1,284	348,277	250,000	300,000	450,703	5,803,691	4,950
Award Duration	1,284	3	3	3	1	9	1
Requested Amount	1,284	454,357	320,411	100,000	675,912	10,907,169	4,950
Requested Duration	1,284	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 6 - F*

TYPE OF INSTITUTION: NSF FUNDING TOP 51-100

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	945	2	2	2	2	20	0
Q.3.1 Additional years needed to accomplish key goals	805	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	975	38	30	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	965	1,267,199	500,000	500,000	7,960,357	200,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	864	68	70	100	29	100	0
Q.5.6 Total amount of annual funding from other NSF grants	466	166,092	96,000	100,000	311,159	3,500,000	0
Q.5.9 Total number of current non-NSF funding sources	757	3	2	1	12	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	772	160,215	80,000	100,000	287,441	5,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,003	167	104	100	360	9,000	7
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,057	13	10	10	14	130	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,083	69	75	80	17	99	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,083	31	25	20	17	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	476	2	1	1	5	115	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,075	14	10	0	15	100	0
2 Part of team with senior investigators in same discipline	1,075	25	20	20	20	100	0
3 Individually with students and post doctoral assistants	1,075	55	60	50	25	100	0
4 Other	1,075	6	0	0	17	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	927	2	2	1	3	30	0
2 Graduate Students	1,038	4	3	2	3	40	0
3 Post-doctoral fellows	918	1	1	0	2	40	0
Award Amount	1,087	340,714	264,600	375,000	472,587	5,490,000	4,312
Award Duration	1,087	3	3	3	1	6	1
Requested Amount	1,087	436,824	325,502	375,000	653,880	14,111,022	4,312
Requested Duration	1,087	3	3	3	1	6	0

* All values rounded to nearest whole number

TABLE 7 - A*

TOTAL FUNDING: 2001 GRANT ONLY

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	709	2	1	1	1	10	0
Q.3.1 Additional years needed to accomplish key goals	657	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	785	46	50	50	22	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	748	444,694	275,000	500,000	1,091,677	25,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	649	80	100	100	26	100	0
Q.5.6 Total amount of annual funding from other NSF grants	0	.	.	.	.	.	.
Q.5.9 Total number of current non-NSF funding sources	0	.	.	.	.	.	.
Q.5.10 Total amount of annual funding from non-NSF sources	0	.	.	.	.	.	.
Q.5.1 Total hours of preparation for submitting this proposal	812	144	100	100	162	2,000	1
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	879	10	7	5	19	500	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	908	70	75	80	17	100	10
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	908	30	25	20	17	90	0
Q.5.5 Total number of current NSF grants funding ongoing body of research	0	.	.	.	.	.	.
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	902	10	5	0	15	100	0
2 Part of team with senior investigators in same discipline	902	28	20	0	25	100	0
3 Individually with students and post doctoral assistants	902	50	50	50	30	100	0
4 Other	902	12	0	0	25	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	673	2	1	0	2	25	0
2 Graduate Students	769	2	2	1	2	18	0
3 Post-doctoral fellows	626	1	0	0	1	15	0
Award Amount	933	262,943	192,699	300,000	376,336	7,500,000	7,560
Award Duration	933	3	3	3	1	5	1
Requested Amount	933	349,184	255,393	375,000	549,480	13,037,189	7,560
Requested Duration	933	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 7 - B*

TOTAL FUNDING: 2001 GRANT AND OTHER NSF GRANT

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	385	2	2	1	2	15	0
Q.3.1 Additional years needed to accomplish key goals	346	2	2	2	3	20	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	404	39	30	20	23	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	404	64,947	400,000	500,000	1,371,951	23,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	359	80	100	100	25	100	0
Q.5.6 Total amount of annual funding from other NSF grants	438	48,655	80,000	100,000	1,863,576	30,000,000	0
Q.5.9 Total number of current non-NSF funding sources	0	.	.	.	.	.	.
Q.5.10 Total amount of annual funding from non-NSF sources	0	.	.	.	.	.	.
Q.5.1 Total hours of preparation for submitting this proposal	423	162	100	100	306	5,000	8
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	432	12	8	10	12	140	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	451	67	70	80	18	97	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	451	33	30	20	18	95	3
Q.5.5 Total number of current NSF grants funding ongoing body of research	444	2	1	1	12	236	0
Q.5.11 Percent of time spent conducting research in each of the following ways:	447	15	10	0	17	100	0
1 Part of team with researchers from other disciplines	447	28	25	20	21	100	0
2 Part of team with senior investigators in same discipline	447	51	50	50	25	100	0
3 Individually with students and post doctoral assistants	447	6	0	0	16	100	0
4 Other	375	2	1	0	2	15	0
Q.5.13 Number in following categories working on current research projects:	426	2.96	3.00	2.00	2.22	15.00	0.00
1 Undergraduate Students	354	1	0	0	1	15	0
2 Graduate Students	452	45,256	250,000	300,000	475,087	4,200,000	7,000
3 Post-doctoral fellows	452	3	3	3	1	6	1
Award Amount	452	39,487	313,106	375,000	611,493	4,366,797	7,000
Award Duration	452	3	3	3	1	6	0
Requested Amount	933	349,184	255,393	375,000	549,480	13,037,189	7,560
Requested Duration	933	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 7 - C*

TOTAL FUNDING: 2001 GRANT AND OTHER NON-NSF GRANT

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,588	2	2	2	2	32	0
Q.3.1 Additional years needed to accomplish key goals	1,374	3	2	2	3	40	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,657	37	30	50	21	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,631	1,149,866	500,000	500,000	8,200,313	250,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,461	62	50	100	28	100	0
Q.5.6 Total amount of annual funding from other NSF grants	0	.	.	.	.	.	.
Q.5.9 Total number of current non-NSF funding sources	1,799	2	2	1	11	420	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,814	179,644	75,000	50,000	449,695	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,681	164	120	100	281	9,000	4
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,815	13	9	5	13	125	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,844	69	75	80	18	99	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,845	31	25	20	18	100	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	0	.	.	.	.	.	.
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,843	14	10	0	16	100	0
2 Part of team with senior investigators in same discipline	1,843	24	20	10	20	100	0
3 Individually with students and post doctoral assistants	1,843	57	60	50	26	100	0
4 Other	1,843	6	0	0	18	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,572	2	2	0	3	50	0
2 Graduate Students	1,728	3	3	2	3	26	0
3 Post-doctoral fellows	1,468	1	1	0	2	25	0
Award Amount	1,852	305,251	250,000	300,000	367,634	5,072,963	300
Award Duration	1,852	3	3	3	1	9	1
Requested Amount	1,852	392,034	315,192	375,000	461,358	5,000,000	300
Requested Duration	1,852	3	3	3	1	5	0

* All values rounded to nearest whole number

TABLE 7 - D*

TOTAL FUNDING: 2001 GRANT, OTHER NSF GRANT AND OTHER NON-NSF GRANT

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Q.3.5 Additional grants needed to get funding	1,526	3	2	2	2	30	0
Q.3.1 Additional years needed to accomplish key goals	1,344	3	2	2	3	30	0
Q.3.2 Percentage of goals achieved with 2001 NSF research grant	1,588	32	25	20	21	100	0
Q.3.3 Additional funding from all sources needed to achieve goals	1,562	1,611,030	600,000	500,000	9,816,780	300,000,000	0
Q.3.4 Percentage of additional amount appropriate for NSF to fund	1,426	64	60	100	27	100	0
Q.5.6 Total amount of annual funding from other NSF grants	1,687	195,643	100,000	100,000	719,485	19,000,000	0
Q.5.9 Total number of current non-NSF funding sources	1,675	3	2	1	6	219	0
Q.5.10 Total amount of annual funding from non-NSF sources	1,709	219,227	100,000	100,000	474,869	10,000,000	0
Q.5.1 Total hours of preparation for submitting this proposal	1,631	154	100	100	236	6,000	2
Q.5.12 Number of peer-reviewed articles published in past five years as primary author	1,695	16	10	5	19	275	0
Q.5.2.1 Percent of hours devoted to intellectual content of proposal preparation	1,744	68	70	80	18	100	5
Q.5.2.2 Percent of hours devoted to mechanics of proposal preparation	1,743	32	30	20	18	95	1
Q.5.5 Total number of current NSF grants funding ongoing body of research	1,723	2	1	1	1	10	0
Q.5.11 Percent of time spent conducting research in each of the following ways:							
1 Part of team with researchers from other disciplines	1,741	17	15	10	15	100	0
2 Part of team with senior investigators in same discipline	1,741	25	20	20	18	100	0
3 Individually with students and post doctoral assistants	1,741	54	55	50	23	100	0
4 Other	1,741	4	0	0	12	100	0
Q.5.13 Number in following categories working on current research projects:							
1 Undergraduate Students	1,520	2	2	1	3	30	0
2 Graduate Students	1,679	5	4	4	8	300	0
3 Post-doctoral fellows	1,544	2	1	1	3	100	0
Award Amount	1,752	404,962	282,658	300,000	664,967	15,062,146	4,200
Award Duration	1,752	3	3	3	1	6	0
Requested Amount	1,752	527,254	339,283	375,000	927,347	15,062,148	4,200
Requested Duration	1,752	3	3	3	1	6	0

* All values rounded to nearest whole number

APPENDIX G – B

MEASURE OF CENTRAL TENDENCY CONSTRUCTED VARIABLES: PRINCIPAL INVESTIGATOR SURVEY

TABLE 1 - A*

TOTAL

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	4,989	39,674	4,263	146,775	4,841,975	-153,438
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	4,425	180,707	85,169	431,891	11,708,731	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	3,895	135,201	60,000	907,352	32,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	4,989	106,140	83,333	119,835	3,012,429	100
Difference in FY 2001 Duration Request and Duration Award	4,989	<1	0	1	4	-4
Additional Duration Needed	3,721	5	5	3	43	<1

* All values rounded to nearest whole number

TABLE 2 - A*

TYPE OF RESEARCH: THEORETICAL

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	1,863	34,223	5,393	117,862	3,029,861	-121,503
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	1,573	134,277	62,369	246,901	5,563,352	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	1,330	93,981	50,000	225,730	5,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	1,863	86,261	68,616	89,728	1,131,055	1,600
Difference in FY 2001 Duration Request and Duration Award	1,863	<1	0	1	4	-4
Additional Duration Needed	1,253	5	5	3	33	1

* All values rounded to nearest whole number

TABLE 2 - B*

TYPE OF RESEARCH: LABORATORY

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	2,186	48,319	6,718	178,627	4,841,975	-152,637
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	2,001	211,042	110,000	462,978	11,708,731	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	1,841	140,215	60,000	810,587	30,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	2,186	123,805	100,000	138,596	3,012,429	100
Difference in FY 2001 Duration Request and Duration Award	2,186	<1	0	1	4	-3
Additional Duration Needed	1,704	6	5	3	43	1

* All values rounded to nearest whole number

TABLE 2 - C*

TYPE OF RESEARCH: FIELD

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	902	29,252	1	110,027	1,724,204	-153,438
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	828	197,045	85,225	596,993	10,940,312	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	703	198,661	70,000	1,653,984	32,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	902	104,815	75,005	119,438	1,153,030	1,840
Difference in FY 2001 Duration Request and Duration Award	902	<1	0	1	4	-4
Additional Duration Needed	740	6	5	4	43	1

* All values rounded to nearest whole number

TABLE 3 - A*

DIRECTORATE: BIO

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	819	67,641	12,498	235,645	4,841,975	-152,637
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	769	224,469	112,602	557,143	11,708,731	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	682	145,793	60,000	1,155,878	30,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	819	135,370	108,362	142,925	1,500,000	6,257
Difference in FY 2001 Duration Request and Duration Award	819	<1	0	1	4	-3
Additional Duration Needed	668	6	5	4	33	1

* All values rounded to nearest whole number

TABLE 3 - B*

DIRECTORATE: CSE

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	602	57,215	16,443	136,790	1,314,332	-40,232
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	531	244,394	122,621	418,514	5,641,733	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	476	163,441	90,000	240,731	2,400,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	602	131,891	96,412	140,164	1,500,000	4,200
Difference in FY 2001 Duration Request and Duration Award	602	<1	0	1	2	-4
Additional Duration Needed	438	5	5	3	33	<1

* All values rounded to nearest whole number

TABLE 3 - D*

DIRECTORATE: GEO

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	803	20,244	1	57,443	711,697	-121,503
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	733	162,353	108,001	209,908	3,096,151	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	655	205,307	75,000	1,711,443	32,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	803	92,121	77,168	75,290	774,038	4,919
Difference in FY 2001 Duration Request and Duration Award	803	<1	0	1	4	-2
Additional Duration Needed	623	5	5	3	30	1

* All values rounded to nearest whole number

TABLE 3 - E*

DIRECTORATE: MPS

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	1,290	40,108	11,102	140,487	3,521,350	-153,438
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	1,082	156,448	60,201	472,384	10,377,272	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	938	102,610	45,000	451,359	10,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	1,290	107,249	80,253	141,764	3,012,429	5,000
Difference in FY 2001 Duration Request and Duration Award	1,290	<1	0	1	4	-2
Additional Duration Needed	847	6	5	3	43	1

* All values rounded to nearest whole number

TABLE 3 - C*

DIRECTORATE: ENG

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	646	24,062	0	68,926	765,890	-64,263
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	583	179,931	112,500	273,860	2,842,000	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	541	111,182	60,000	441,674	10,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	646	99,400	80,000	68,551	780,000	6,000
Difference in FY 2001 Duration Request and Duration Award	646	<1	0	<1	4	-2
Additional Duration Needed	495	5	5	2	18	1

* All values rounded to nearest whole number

TABLE 3 - F*

DIRECTORATE: SBE

CONSTRUCTED VARIABLES	COUNT	MEAN	MEDIAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
Option 1: Award Efficiency and Effectiveness Deviation from Requested Award Amount	683	29,966	333	149,485	3,029,861	-47,339
Option 2: Award Efficiency and Effectiveness Percent of Research Being Funded	592	121,533	45,121	513,591	10,940,312	0
Option 4: Award Efficiency and Effectiveness NSF's Contribution	491	79,424	40,000	243,501	5,000,000	0
Difference in FY 2001 Award Amount Request and Amount Awarded	683	64,287	50,480	82,306	986,925	100
Difference in FY 2001 Duration Request and Duration Award	683	<1	0	1	4	-4
Additional Duration Needed	537	5	4	3	33	1

* All values rounded to nearest whole number

APPENDIX G - C

CROSS TABULATIONS: PRINCIPAL INVESTIGATOR SURVEY

2001 NSF GRANT AWARD SURVEY
Banner 1
Table 1

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.1 FIRST TIME SUBMISSION OR A REVISION																	
Missing	0	0	.	.	13	0	0	0	2	0	0	.	0	0	0	0	1
First time submission	71	.	71	.	71	77	68	63	65	70	72	66	66	71	69	69	74
Rev. of prev declined NSF prop.	29	.	.	29	16	23	31	37	33	30	28	34	34	28	31	31	26
Total	100	0	71	29	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 2

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED																	
Missing	1	26	1	0	1	.	.	.	.	1	1	1	1	1	1	1	1
Theoretical Research	37	32	41	29	.	37	.	.	37	39	35	38	34	38	42	35	36
Laboratory Research	44	37	42	47	.	.	44	.	41	45	43	37	47	44	41	46	44
Field Research	18	5	16	23	.	.	.	18	23	15	21	24	18	18	16	19	19
Total	100	100	100	100	1	37	44	18	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 3

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS																	
do not know	25	37	26	23	37	33	22	18	28	25	25	22	13	27	30	23	**25**
Low(0-**1**)	27	21	27	27	39	25	27	31	**30**	25	29	41	20	27	30	29	22
Mid(1+-**3**)	**32**	16	31	35	11	31	35	30	22	36	29	14	52	31	28	34	35
High(GT 3)	15	26	15	15	13	12	16	21	20	14	17	23	15	15	13	14	19
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	**100**
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 4

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD																	
do not know	11	16	12	9	29	16	8	8	12	12	10	13	11	11	11	10	12
Low(0-25)	38	42	38	38	47	31	40	47	40	34	42	33	49	37	37	39	38
Mid (25+-50)	31	26	30	34	8	31	32	31	32	33	30	33	25	32	32	31	31
High(GT 50)	20	16	20	20	16	22	19	15	16	21	18	22	15	20	20	19	20
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 5

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS																	
do not know	13	21	13	12	29	19	8	13	19	14	12	12	11	13	15	11	12
Low(0-300000)	32	26	32	33	24	39	26	33	33	31	34	26	28	33	34	31	32
Mid(300000+-750000)	28	32	27	29	26	22	32	27	25	28	27	27	33	27	27	27	28
High(GT 750000)	27	21	28	26	21	20	34	27	24	28	27	35	28	27	23	30	27
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 6

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.41 ADDITIONAL AMOUNT PERCENT NSF SHOULD FUND																	
.	15	26	16	13	39	22	9	14	24	15	15	13	12	15	17	13	15
do not know	7	.	7	7	5	7	6	8	7	7	6	10	7	7	8	6	6
Missing	0	.	0	0	.	0	0	.	.	0	0	.	.	0	0	.	0
Low(0-50)	33	26	33	33	24	27	42	26	24	32	35	30	31	33	33	35	31
Mid(50+-90)	20	26	19	22	16	18	19	27	19	20	20	27	23	19	19	22	19
High(GT 90)	25	21	25	25	16	27	24	26	26	26	24	20	27	25	23	23	29
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 7

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.12 GREATEST IMPACT ON RESEARCH AND ACTIVITIES																	
.	10	21	11	8	39	16	6	8	17	10	10	11	6	10	12	8	10
Missing	1	5	1	1	3	1	0	1	.	1	1	1	0	1	1	1	1
More funding	54	47	53	57	34	46	58	61	44	56	52	59	53	54	56	52	53
Longer duration	35	26	36	35	24	37	36	30	39	33	38	29	41	35	30	40	36
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 8

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.21 FIRST IMPORTANT ACTION FOR AWARD IN AREA																	
Missing	1	11	1	1	8	1	0	1	1	1	1	1	1	1	1	1	1
Increase amount funding per award	40	63	40	38	47	35	43	39	32	44	35	43	40	39	36	38	44
Increase length of time per award	24	5	25	22	13	26	25	17	20	24	24	22	29	23	22	26	24
Increase total of awards per year	36	21	34	40	32	38	31	42	47	31	40	34	30	36	42	35	31
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 9

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.22 SECOND IMPORTANT ACTION FOR AWARD IN AREA																	
Missing	1	11	1	1	8	1	1	2	2	1	1	1	1	1	1	1	2
Increase amount funding per award	36	16	35	37	32	34	36	39	33	34	38	36	36	36	38	36	33
Increase length of time per award	37	53	38	37	45	39	37	36	43	38	37	33	36	38	36	38	39
Increase total of awards per year	26	21	26	25	16	26	27	23	23	27	24	30	26	25	25	26	26
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 10

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.23 THIRD IMPORTANT ACTION FOR AWARD IN AREA																	
Missing	2	11	2	1	8	2	1	2	2	1	2	1	1	2	1	1	2
Increase amount funding per award	23	11	23	24	13	30	20	20	34	21	26	20	23	24	25	25	21
Increase length of time per award	38	32	36	40	34	34	38	45	35	37	38	45	34	38	42	35	36
Increase total of awards per year	37	47	39	34	45	35	41	33	29	41	35	35	42	37	32	38	41
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 11

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submission	Rev. of prev declined NSF prop.	Missing	Theoretical Research	Laboratory Research	Field Research	5+% Increase	5+% Decrease	< 5% Change	1+ yr Increase	1+ yr Decrease	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL																	
do not know	8	11	9	8	11	10	8	7	11	9	7	13	9	8	10	8	8
missing	0	5	0	0	3	1	0	1	.	0	0	1	1	0	0	0	0
Low(0-80)	33	26	36	25	47	43	25	31	27	31	36	29	30	34	32	32	35
Mid(80+-150)	29	42	28	31	11	27	32	28	32	29	29	30	31	29	29	30	28
High(GT 150)	29	16	26	36	29	19	35	33	30	30	27	26	30	29	28	30	29
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 12

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.4 NSF FUNDING FOR OTHER PROJECTS OF RESEARCH																	
Do not know	1	5	1	0	3	1	1	0	2	1	1	1	1	1	1	1	1
Missing	0	5	0	0	3	1	0	1	.	0	0	1	1	0	0	0	0
Yes	44	32	44	44	58	37	46	53	46	42	46	51	36	45	39	49	44
no	55	58	55	55	37	61	53	46	53	57	53	47	62	54	60	50	55
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 13

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.6 ANNUAL FUNDING AMOUNT FROM OTHER NSF GRANTS																	
.	56	68	56	56	42	63	54	47	54	58	54	49	64	55	61	51	56
missing	2	.	2	2	5	2	1	2	4	2	1	3	2	2	1	2	2
low(0-65000)	15	11	14	15	16	14	14	17	18	15	14	22	11	15	15	15	14
Mid(60000+-140000)	14	.	14	15	13	12	15	16	12	13	16	8	14	15	14	17	12
High(GT 140000)	14	21	14	13	24	9	16	18	11	13	15	18	10	14	9	16	16
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 14

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.8 DO YOU HAVE NON NSF FUNDING FOR RESEARCH																	
Do not know	0	5	0	0	8	0	0	0	.	0	0	.	0	0	0	0	1
Missing	0	5	0	0	3	1	0	1	.	0	1	1	1	0	0	1	0
Yes	72	68	72	73	68	64	79	75	77	71	74	74	68	73	72	75	70
no	27	21	27	26	21	35	21	24	23	29	25	25	32	26	27	25	29
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 15

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.10 ANNUAL FUNDING AMOUNT FROM NON NSF SOURCES																	
.	28	32	28	27	32	36	21	25	23	29	26	26	32	27	28	25	30
missing	2	.	2	2	11	2	1	2	6	2	1	3	2	1	2	2	1
Low(0-50000)	26	26	26	28	8	27	24	32	30	26	27	24	22	27	30	27	23
Mid(50000+-150000)	21	16	21	22	18	19	23	20	25	20	22	18	22	21	24	21	19
High(GT 150000)	23	26	24	21	32	16	30	21	16	23	23	28	22	23	17	25	27
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 16

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOTAL FUNDING																	
2001 grant only	19	26	19	19	13	27	14	13	16	21	17	14	24	18	20	16	20
2001 grant + other nsf grant(Q5_4)	9	5	10	8	18	9	8	12	7	9	10	12	9	9	8	9	10
2001 grant + non-nsf grant(Q5_8)	37	42	37	37	29	36	40	34	38	37	37	35	40	37	41	35	37
2001 grant + other NSF and non NSF grant	35	26	35	37	39	28	39	41	39	33	37	39	27	36	32	40	33
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 17

		Q1.1 FIRST TIME SUBMISSION OR A REVISION			Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED				Funding			Duration			PROFESSIONAL AGE		
	Total	Missing	First time submis-sion	Rev. of prev declin-ed NSF prop.	Missing	Theore-tical Resear-ch	Labora-tory Resear-ch	Field Resear-ch	5+% Increa-se	5+% Decrea-se	< 5% Change	1+ yr Increa-se	1+ yr Decrea-se	< 1 yr change	0-10 Years	11-20 Years	21+ Years
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TYPE OF INSTITUTION																	
NONACAD	4	.	4	4	3	3	3	8	5	3	5	4	4	4	3	4	5
NONPHD	5	.	5	6	.	4	6	7	8	4	6	3	4	5	6	5	4
OTHPHD	18	11	18	20	18	15	21	20	18	18	19	17	17	19	19	20	16
T20	25	53	26	21	34	28	23	23	24	25	24	23	25	25	24	22	28
T21-50	26	26	26	26	26	28	25	23	25	27	25	39	26	25	25	25	27
T51-100	22	11	21	23	18	23	22	19	20	22	21	13	24	22	22	23	20
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	19	3521	1449	38	1863	2186	908	123	2533	2333	92	485	4412	1496	1710	1783

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Table 1

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.1 FIRST TIME SUBMISSION OR A REVISION																
Missing	0	1	0	0	1	1	0	0	0	1	0	0	0	10	0	0
First time submission	71	73	71	68	71	76	71	68	71	73	70	69	72	58	71	71
Rev. of prev declined NSF prop.	29	26	29	31	29	23	29	31	29	27	30	31	28	32	29	29
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 2

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED																
Missing	1	1	1	0	1	2	1	0	1	2	1	1	1	20	1	1
Theoretical Research	37	48	35	35	28	52	31	37	42	54	45	30	27	30	41	20
Laboratory Research	44	38	43	48	46	33	46	45	43	27	35	51	55	38	44	43
Field Research	18	13	21	17	25	13	22	18	14	18	19	18	18	12	15	36
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 3

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS																
do not know	25	25	.	.	.	66	19	21	22	58	20	20	21	34	**26**	22
Low(0-**1**)	27	.	27	.	.	16	30	**26**	28	18	32	27	25	20	27	26
Mid(1+-**3**)	**32**	.	.	32	.	13	31	36	41	18	38	34	31	28	32	32
High(GT 3)	15	.	.	.	15	5	21	17	8	7	10	19	22	18	14	20
Total	100	25	27	32	15	100	100	100	100	100	100	100	100	100	100	100
N	**4989**	**1268**	**1338**	**1617**	**766**	**555**	**1891**	**1561**	**982**	**644**	**1616**	**1377**	**1352**	**50**	**4157**	**782**

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Table 4

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD																
do not know	11	29	7	5	3	11	.	.	.	40	8	7	6	18	12	8
Low(0-25)	38	28	42	36	51	.	38	.	.	20	23	40	63	46	37	41
Mid (25+-50)	31	26	30	34	35	.	.	31	.	23	33	40	25	18	31	33
High(GT 50)	20	17	21	25	11	.	.	.	20	17	37	14	7	18	20	17
Total	100	100	100	100	100	11	38	31	20	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 5

	Total	Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
		do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(300000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS																
do not know	13	29	9	7	6	46	7	9	11	**13**	.	.	.	26	13	11
Low(0-300000)	32	26	**38**	38	21	23	19	34	60	.	32	.	.	24	34	26
Mid(300000+-750000)	28	22	27	29	34	17	29	**35**	19	.	.	28	.	30	27	29
High(GT 750000)	27	23	26	26	39	14	45	22	9	.	.	.	27	**20**	26	35
Total	100	100	100	100	100	100	**100**	100	100	13	32	28	27	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 6

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.41 ADDITIONAL AMOUNT PERCENT NSF SHOULD FUND																
.	15	32	12	8	7	49	8	11	15	100	7	.	.	30	15	12
do not know	7	9	7	6	4	7	5	8	9	.	11	7	5	2	7	6
Missing	0	.	.	0	0	0	0	.	.	.	0	.	0	.	0	.
Low(0-50)	33	25	36	35	37	15	44	33	22	.	21	39	58	36	34	31
Mid(50+-90)	20	14	21	22	24	9	23	21	17	.	18	28	23	18	19	26
High(GT 90)	25	20	23	29	28	19	20	27	36	.	44	26	14	14	25	25
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 7

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.12 GREATEST IMPACT ON RESEARCH AND ACTIVITIES																
.	10	32	7	.	.	42	5	5	9	66	5	.	.	20	10	7
Missing	1	1	1	1	1	1	1	1	1	0	1	1	1	2	1	1
More funding	54	43	60	55	56	37	61	56	47	16	51	61	68	40	53	57
Longer duration	35	24	32	44	42	21	34	38	43	18	44	38	31	38	36	35
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 8

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.21 FIRST IMPORTANT ACTION FOR AWARD IN AREA																
Missing	1	1	1	1	1	2	1	1	1	2	1	1	1	6	1	1
Increase amount funding per award	40	38	39	41	40	39	42	39	37	31	32	40	52	36	39	43
Increase length of time per award	24	21	20	28	26	21	23	25	25	23	24	26	22	30	23	26
Increase total of awards per year	36	39	40	31	33	38	34	35	38	45	43	33	26	28	37	30
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 9

	Total	Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
		do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.22 SECOND IMPORTANT ACTION FOR AWARD IN AREA																
Missing	1	1	1	1	1	2	1	1	1	2	1	1	1	8	1	2
Increase amount funding per award	36	34	38	35	36	34	37	36	33	38	35	37	34	42	36	35
Increase length of time per award	37	38	36	39	37	37	37	36	41	39	39	34	38	32	38	37
Increase total of awards per year	26	26	25	25	27	26	25	26	25	21	25	27	27	18	26	26
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 10

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.23 THIRD IMPORTANT ACTION FOR AWARD IN AREA																
Missing	2	2	2	2	1	3	2	1	1	2	1	2	1	12	1	2
Increase amount funding per award	23	26	22	23	23	25	20	24	29	29	31	22	13	12	24	20
Increase length of time per award	38	40	42	32	36	39	39	37	33	36	36	38	39	30	38	35
Increase total of awards per year	37	33	34	43	39	34	39	38	36	32	31	38	47	46	36	43
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 11

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL																
do not know	8	14	7	7	6	20	7	7	8	19	7	7	6	12	9	5
missing	0	0	0	0	0	1	0	0	1	0	0	1	0	.	0	1
Low(0-80)	33	37	34	32	27	31	36	31	32	37	39	31	27	44	33	31
Mid(80+-150)	29	25	30	30	31	26	29	31	28	23	28	30	32	24	29	28
High(GT 150)	29	24	28	31	35	22	28	31	32	20	25	31	35	20	28	35
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 12

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.4 NSF FUNDING FOR OTHER PROJECTS OF RESEARCH																
Do not know	1	1	0	1	0	2	0	0	1	2	1	0	0	2	1	1
Missing	0	0	0	0	0	1	0	0	1	0	0	1	0	2	0	1
Yes	44	41	48	43	46	38	54	40	36	37	34	46	57	44	42	58
no	55	58	51	56	53	59	45	60	63	61	65	53	42	52	57	41
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 13

	Total	Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
		do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.6 ANNUAL FUNDING AMOUNT FROM OTHER NSF GRANTS																
.	56	59	52	57	54	62	46	60	64	63	66	54	43	56	58	42
missing	2	2	1	1	1	3	2	1	2	5	1	1	1	2	2	2
low(0-65000)	15	14	15	14	15	13	15	15	14	13	15	16	13	8	14	16
Mid(60000+-140000)	14	13	17	14	13	11	19	12	10	9	11	17	19	14	13	19
High(GT 140000)	14	11	15	14	16	11	18	12	9	10	7	12	24	20	12	21
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 14

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.8 DO YOU HAVE NON NSF FUNDING FOR RESEARCH																
Do not know	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	1
Missing	0	1	0	0	1	1	0	0	1	0	0	1	0	2	0	1
Yes	72	70	73	73	75	65	81	72	61	64	62	74	87	66	71	77
no	27	29	26	27	25	34	18	28	38	35	38	25	13	30	28	22
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 15

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.10 ANNUAL FUNDING AMOUNT FROM NON NSF SOURCES																
.	28	30	27	27	25	35	19	28	39	36	38	26	13	34	29	23
missing	2	2	2	1	1	5	1	1	1	6	1	1	1	4	2	2
Low(0-50000)	26	27	27	26	26	28	24	27	28	26	34	27	16	24	27	25
Mid(50000+-150000)	21	20	22	21	21	16	23	24	16	14	15	28	26	8	21	24
High(GT 150000)	23	20	22	24	27	16	32	19	16	18	12	18	44	30	22	26
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 16

		Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
	Total	do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOTAL FUNDING																
2001 grant only	19	22	16	20	17	27	11	19	29	29	27	16	6	26	20	13
2001 grant + other nsf grant(Q5_4)	9	8	11	8	9	9	8	9	10	7	11	10	7	8	9	11
2001 grant + non-nsf grant(Q5_8)	37	38	36	38	37	35	35	41	35	34	38	37	37	30	39	29
2001 grant + other NSF and non NSF grant	35	32	37	35	37	30	46	30	26	30	23	37	50	36	33	48
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 17

	Total	Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS				Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD				Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS				Q1.3 NATIONAL OR INTERNATIONAL FACILITY USE		
		do not know	Low(0-1)	Mid(1+-3)	High(GT 3)	do not know	Low(0-25)	Mid (25+-50)	High(GT 50)	do not know	Low(0-300000)	Mid(30-0000+-750000)	High(GT 750000)	Missing	No	Yes
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TYPE OF INSTITUTION																
NONACAD	4	4	4	4	5	5	4	4	3	5	4	3	5	2	4	6
NONPHD	5	4	7	6	4	4	4	5	9	5	9	4	2	10	5	5
OTHPHD	18	18	18	18	21	16	18	20	18	17	20	20	16	14	19	18
T20	25	26	24	26	23	26	28	23	21	27	22	23	30	32	25	24
T21-50	26	26	25	26	26	28	26	25	26	26	23	27	27	18	25	28
T51-100	22	22	22	21	22	20	21	22	23	19	22	23	21	24	22	21
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	1268	1338	1617	766	555	1891	1561	982	644	1616	1377	1352	50	4157	782

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Table 1

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.1 FIRST TIME SUBMISSION OR A REVISION																		
Missing	0	0	.	.	1	0	1	.	0	0	5	0	1	0	2	0	1	0
First time submission	71	62	74	94	69	63	79	67	73	72	68	77	69	64	76	68	69	74
Rev. of prev declined NSF prop.	29	38	26	6	31	36	21	33	26	27	26	22	31	36	23	32	31	25
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 2

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q1.2 WHAT TYPE OF RESEARCH IS BEING FUNDED																		
Missing	1	1	1	.	1	1	1	.	1	1	5	1	0	1	2	1	1	1
Theoretical Research	37	7	62	6	35	28	55	14	37	45	58	48	34	25	39	31	40	41
Laboratory Research	44	76	32	50	61	30	40	24	29	39	11	33	48	53	36	43	40	50
Field Research	18	17	5	44	3	41	5	62	33	15	26	17	17	21	23	25	19	8
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 3

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.11 ADDITIONAL YEARS NEEDED ACCOMPLISH GOALS																		
do not know	25	18	27	13	23	22	34	24	21	41	26	28	22	21	26	25	26	25
Low(0-1)	27	25	31	44	28	31	20	35	31	23	26	28	28	26	27	27	28	25
Mid(1+-3)	32	34	31	38	37	32	31	17	33	25	32	31	34	34	32	31	32	34
High(GT 3)	15	22	11	6	12	15	15	25	15	11	16	12	17	19	15	16	15	15
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 4

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.21 PERCENT ACHIEVED IN FIVE YEARS WITH AWARD																		
do not know	11	6	11	6	9	9	16	8	13	26	16	10	10	9	17	10	11	12
Low(0-25)	38	36	41	44	40	52	22	48	47	30	32	41	38	36	42	39	37	37
Mid (25+-50)	31	36	30	31	33	28	34	27	25	26	26	29	33	34	22	32	31	31
High(GT 50)	20	22	18	19	18	11	28	18	15	17	26	19	19	22	19	18	21	21
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 5

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+-150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.31 ADDITIONAL FUNDS NEEDED ACCOMPLISH GOALS																		
do not know	13	8	13	13	10	12	17	15	15	29	5	15	10	9	17	14	13	11
Low(0-300000)	32	29	17	13	22	27	43	25	48	28	37	38	32	28	28	34	35	28
Mid(300000+-750000)	28	37	30	13	31	30	21	27	22	24	42	26	28	30	32	28	27	27
High(GT 750000)	27	27	40	63	37	31	19	34	15	19	16	22	30	33	23	25	24	33
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 6

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.41 ADDITIONAL AMOUNT PERCENT NSF SHOULD FUND																		
.	15	10	14	13	11	14	20	15	18	30	5	18	12	10	18	16	16	13
do not know	7	7	7	13	5	5	7	8	10	9	16	7	5	8	7	8	6	6
Missing	0	.	0	.	0	.	.	.	.	.	.	0	.	0	.	.	0	0
Low(0-50)	33	36	34	38	52	29	28	19	28	22	32	30	38	35	30	31	30	39
Mid(50+-90)	20	17	25	25	19	27	16	30	16	15	16	20	19	22	22	18	20	21
High(GT 90)	25	30	20	13	13	26	29	28	28	24	32	25	25	25	23	27	28	21
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 7

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q3.12 GREATEST IMPACT ON RESEARCH AND ACTIVITIES																		
.	10	5	10	6	7	9	15	10	10	21	.	13	8	6	12	11	11	9
Missing	1	0	1	.	0	1	1	2	1	0	95	1	.	1	11	0	**1**	0
More funding	54	51	62	69	62	52	**46**	58	58	51	.	52	56	56	46	54	51	56
Longer duration	35	44	27	25	31	37	38	29	32	28	5	35	36	37	30	35	38	35
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	**4989**	**819**	**602**	**16**	**646**	**803**	**1290**	**130**	**683**	**423**	**19**	**1656**	**1452**	**1439**	**168**	**1797**	**1481**	**1543**

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Table 8

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.21 FIRST IMPORTANT ACTION FOR AWARD IN AREA																		
Missing	1	0	0	6	1	1	1	2	1	1	100	0	0	0	17	0	0	0
Increase amount funding per award	40	37	44	31	46	36	38	43	38	41	.	37	40	43	39	37	37	45
Increase length of time per award	24	27	21	13	22	26	27	24	17	19	.	24	24	25	18	21	26	26
Increase total of awards per year	36	36	34	50	31	36	34	31	45	38	.	39	36	31	26	42	37	28
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 9

	Total	NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
		BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.22 SECOND IMPORTANT ACTION FOR AWARD IN AREA																		
Missing	1	1	1	6	1	2	1	5	1	1	100	1	1	1	19	1	1	0
Increase amount funding per award	36	35	35	50	36	41	32	38	35	35	.	37	35	36	30	38	36	34
Increase length of time per award	37	39	36	25	37	35	39	35	38	40	.	38	38	37	29	37	37	39
Increase total of awards **per year**	26	26	28	19	26	22	28	22	25	24	.	25	26	27	22	25	27	27
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	**4989**	**819**	**602**	**16**	**646**	**803**	**1290**	**130**	**683**	**423**	**19**	**1656**	**1452**	**1439**	**168**	**1797**	**1481**	**1543**

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Table 10

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q4.23 THIRD IMPORTANT ACTION FOR AWARD IN AREA																		
Missing	2	1	1	6	2	2	1	5	2	2	100	1	1	1	19	1	1	1
Increase amount funding per award	23	27	19	13	16	21	28	15	25	23	.	26	24	20	13	25	27	20
Increase length of time per award	38	34	42	56	40	37	33	37	44	39	.	38	37	38	34	42	36	34
Increase total of awards per year	37	38	37	25	42	40	37	44	29	36	.	35	38	41	35	33	36	45
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 11

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL																		
do not know	8	8	10	6	9	5	8	6	13	8	.	.	.	.	13	8	8	9
missing	0	0	0	.	0	1	0	1	.	.	0	.	.	.	11	.	.	.
Low(0-80)	33	16	36	19	30	37	39	37	39	.	.	33	.	.	28	35	35	30
Mid(80+-150)	29	32	31	19	30	32	28	28	22	.	.	.	29	.	27	28	29	31
High(GT 150)	29	44	23	56	31	25	24	28	25	.	.	.	.	29	21	29	28	30
Total	100	100	100	100	100	100	100	100	100	8	0	33	29	29	100	100	100	100
N	**4989**	**819**	**602**	**16**	**646**	**803**	**1290**	**130**	**683**	**423**	**19**	**1656**	**1452**	**1439**	**168**	**1797**	**1481**	**1543**

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Table 12

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.4 NSF FUNDING FOR OTHER PROJECTS OF RESEARCH																		
Do not know	1	0	1	.	0	0	1	1	0	2	.	0	1	1	1	0	0	1
Missing	0	0	0	.	0	1	0	1	.	0	100	.	.	.	12	.	.	.
Yes	44	36	53	44	54	63	33	75	31	35	.	46	46	43	46	39	44	50
no	55	64	45	56	45	36	66	24	68	62	.	54	53	56	41	60	56	48
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 13

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.6 ANNUAL FUNDING AMOUNT FROM OTHER NSF GRANTS																		
.	56	64	47	56	46	37	67	25	69	65	100	54	54	57	54	61	56	50
missing	2	1	2	.	1	2	2	2	1	3	.	2	1	2	10	1	1	1
low(0-65000)	15	12	15	13	17	17	14	13	14	11	.	15	15	15	14	13	15	15
Mid(60000+-140000)	14	12	17	13	22	21	8	22	9	11	.	14	16	14	10	12	15	17
High(GT 140000)	14	11	20	19	14	23	8	37	7	10	.	16	14	13	12	13	12	17
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 14

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.8 DO YOU HAVE NON NSF FUNDING FOR RESEARCH																		
Do not know	0	0	0	.	0	0	0	.	1	1	.	0	0	0	2	0	0	0
Missing	0	0	0	.	0	1	1	1	.	0	100	0	.	0	14	.	.	.
Yes	72	73	72	100	85	77	63	75	69	69	.	70	74	74	56	69	70	80
no	27	26	28	.	14	21	36	25	30	30	.	29	25	25	28	31	29	20
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 15

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Q5.10 ANNUAL FUNDING AMOUNT FROM NON NSF SOURCES																		
.	28	27	28	.	15	23	37	25	31	31	100	30	26	26	44	31	30	20
missing	2	1	3	.	1	2	1	2	2	6	.	1	1	1	12	1	2	1
Low(0-50000)	26	26	21	19	17	28	28	25	36	23	.	26	26	28	13	29	29	22
Mid(50000+-150000)	21	22	22	19	28	25	17	22	16	19	.	19	24	21	13	19	22	23
High(GT 150000)	23	24	25	63	40	22	18	25	14	20	.	23	23	24	18	19	18	33
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 16

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOTAL FUNDING																		
2001 grant only	19	19	16	.	8	12	29	11	23	24	100	20	17	17	32	22	18	13
2001 grant + other nsf grant(Q5_4)	9	8	12	.	7	11	8	15	8	7	.	10	9	9	12	9	11	7
2001 grant + non-nsf grant(Q5_8)	37	46	31	56	38	26	39	15	45	40	.	34	37	40	22	39	38	36
2001 grant + other NSF and non NSF grant	35	27	41	44	47	52	24	60	24	29	.	36	37	34	34	30	33	43
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

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Table 17

		NSF Directorate								Q5.11 PREPARATION HOURS FOR SUBMITTING PROPOSAL					Q5.12 PEER REVIEW ARTICLES PUBLISHED: LAST 5 YRS			
	Total	BIO	CSE	EHR	ENG	GEO	MPS	O/D	SBE	do not know	missing	Low(0-80)	Mid(80+150)	High(GT 150)	Missing	Low(0-6)	Mid(6+-13)	High(GT 13)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TYPE OF INSTITUTION																		
NONACAD	4	7	2	.	1	4	2	11	7	3	5	4	4	4	5	6	4	2
NONPHD	5	8	3	31	3	4	6	6	6	5	5	5	5	5	3	9	4	2
OTHPHD	18	23	17	44	22	17	15	16	17	20	5	18	17	21	17	20	19	17
T20	25	15	28	6	28	29	27	27	21	26	53	27	26	21	30	23	24	27
T21-50	26	22	26	6	26	27	27	25	27	27	16	26	25	25	27	23	26	29
T51-100	22	26	24	13	20	17	23	15	21	19	16	20	24	23	18	20	23	23
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N	4989	819	602	16	646	803	1290	130	683	423	19	1656	1452	1439	168	1797	1481	1543

APPENDIX G – D

MEASURE OF CENTRAL TENDENCY: SAMPLE INSTITUTIONS

MEASURES OF CENTRAL TENDENCY: SAMPLE INSTITUTIONS

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Number of 2001 NSF grant awards	95	12	3	1	53	125	1
Number of 2001 NSF grant declines	95	32	7	1	118	258	1
Q.1.3 Total number of the following assigned to grant proposals							
1 Individuals	89	6	4	3	14	43	1
2 Administrative Offices	91	2	1	1	3	9	1
Q.1.4b Average number of hours spent on typical FY 2001 NSF grant proposal							
1 First specified administrative office	94	6	4	1	13	25	1
2 Second specified administrative office	39	4	2	1	14	30	0
Q.2.3 Total number of the following assigned to grant proposal revisions							
1 Individuals	82	5	3	3	14	43	1
2 Administrative Offices	81	2	1	1	4	11	1
Q.2.4b Average number of hours spent on typical FY 2001 NSF grant proposal revision							
1 First specified administrative office	89	3	2	1	6	15	0
2 Second specified administrative office	23	2	1	1	7	20	0
Q.2.5 Hours spent communicating with NSF on revisions to the original proposal	87	2	1	1	7	30	0
Q.3.2 Total number of the following assigned to administer grants							
1 Individuals	90	8	4	3	28	99	1
2 Administrative Offices	90	2	2	2	9	50	1
Q.3.3b Average number of hours spent administering typical FY 2001 NSF grant							
1 First specified administrative office	89	21	8	5	148	500	1
2 Second specified administrative office	58	10	5	1	24	52	1
Q.3.4 Hours spent to complete and submit NSF required reports for typical FY 2001 grant	85	6	3	2	22	60	0
Q.5.1 NSF grants percentage share of all FY 2001 grants	93	16	10	10	44	100	1
Q.5.2 NSF grants percentage share of total dollar amount of all FY 2001 grant awards	94	18	12	1	45	100	1

* All values rounded to nearest whole number

APPENDIX G – E

MEASURE OF CENTRAL TENDENCY: NONSAMPLE INSTITUTIONS

MEASURES OF CENTRAL TENDENCY: NONSAMPLE INSTITUTIONS

QUESTION	COUNT	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MAXIMUM	MINIMUM
Number of 2001 NSF grant awards	264	10	2	1	17	102	1
Number of 2001 NSF grant declines	264	27	9	1	41	266	1
Q.1.3 Total number of the following assigned to grant proposals							
1 Individuals	250	5	3	2	6	62	0
2 Administrative Offices	247	2	1	1	2	17	0
Q.1.4b Average number of hours spent on typical FY 2001 NSF grant proposal							
1 First specified administrative office	253	8	4	2	17	150	0
2 Second specified administrative office	128	4	2	1	8	50	0
Q.2.3 Total number of the following assigned to grant proposal revisions							
1 Individuals	224	4	3	2	5	34	0
2 Administrative Offices	219	2	1	1	2	17	0
Q.2.4b Average number of hours spent on typical FY 2001 NSF grant proposal revision							
1 First specified administrative office	245	3	1	1	5	40	0
2 Second specified administrative office	98	2	1	1	3	20	0
Q.2.5 Hours spent communicating with NSF on revisions to the original proposal	248	2	1	1	5	60	0
Q.3.2 Total number of the following assigned to administer grants							
1 Individuals	247	6	3	2	8	78	0
2 Administrative Offices	248	2	2	2	2	23	0
Q.3.3b Average number of hours spent administering typical FY 2001 NSF grant							
1 First specified administrative office	251	18	8	2	33	250	1
2 Second specified administrative office	166	16	5	1	29	240	0
Q.3.4 Hours spent to complete and submit NSF required reports for typical FY 2001 grant	252	8	4	2	15	175	0
Q.5.1 NSF grants percentage share of all FY 2001 grants	262	16	10	10	18	100	1
Q.5.2 NSF grants percentage share of total dollar amount of all FY 2001 grant awards	263	18	11	10	20	100	1

* All values rounded to nearest whole number