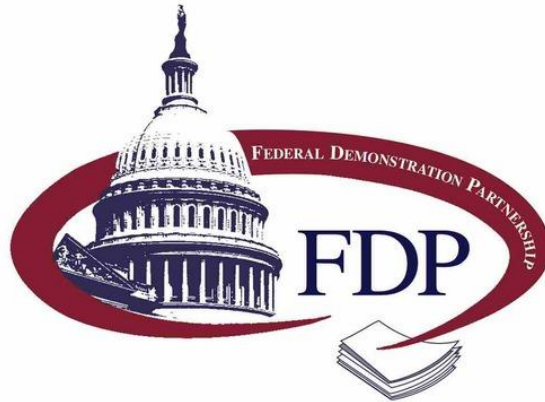


FEDERAL DEMONSTRATION PARTNERSHIP (FDP)



2012 Faculty Workload Survey RESEARCH REPORT

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Dedication

We would like to dedicate this report to our colleague and friend, **Sara Rockwell**, Professor Emeritus of Therapeutic Radiology and of Pharmacology, and Associate Dean for Scientific Affairs at Yale University. Over the years, Sara has been a major contributor to the Federal Demonstration Partnership (FDP), serving as the FDP Vice Chair and FDP Faculty Committee Chair from 2006 to 2008, and as the Yale Faculty Representative to the FDP for over a decade. Sara has been essential to the success of both the 2005 and 2012 Faculty Workload Surveys, and we are grateful for having had the opportunity to benefit from her expertise, energy, and unfailing commitment to the highest quality science.

Acknowledgments

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FDP 2012 Faculty Workload Survey: Research Report

Table of Contents

Executive Summary	6
Overview	10
Study Description and Rationale	10
Background	10
Method	12
Participants	12
Design and Procedure	12
Respondent Characteristics	13
General Demographic Characteristics	13
Principal Field and Institutional Backgrounds	15
Respondent Funding Characteristics	16
Researcher Workload Distribution	18
Distribution of Work Time	18
Time Spent on Activities Associated with Federally-funded Research	18
Proposal and Report Preparation	19
Pre-award and Post-award Administration	21
Potential Time Savings from Additional Assistance	25
Comparisons of Administrative Workloads by Respondent Characteristics	26
Demographic and Institutional Characteristics	26
Appointment Types and Administrative Roles	28
Funding Agency, Field of Study and Project Type	29
Amount and Number of Federal Grants and Percent Funding from Federal Dollars	32
Administrative Workload Profiles	34
Identifying Administrative Workload Profiles	34
Prevalence of Administrative Workload Profiles	36
Administrative Workload Profiles and Time Away from Active Research	37
Administrative Workload Profiles and Benefits of Additional Assistance	38

Table of Contents (continued)

Analysis of Specific Workload Responsibilities and Associated Frustrations	39
Proposal and Report Preparation.....	40
Proposal Preparation.....	41
Progress/Final Report Preparation (non-ARRA).....	43
Pre-Award and Post-Award Administrative Responsibilities	45
Common Administrative Responsibilities.....	45
Finances	46
Personnel.....	49
Effort Reporting.....	51
Human Subjects Administrative Responsibilities	53
IRB (Institutional Review Board).....	53
Clinical Trials.....	56
HIPAA (Health Information Privacy and Accountability Act)	58
Animal Subjects and Safety Administrative Responsibilities	60
IACUC (Institutional Animal Care and Use Committee).....	60
Biosafety	62
General Laboratory Safety/Security	64
Chemical Safety.....	65
Recombinant DNA.....	66
Radiation Safety.....	67
Controlled Substances/Narcotics	68
Contract-related Administrative Responsibilities.....	69
Subcontracts.....	69
Intellectual Property.....	71
ARRA (American Recovery & Reinvestment Act).....	72
General Compliance Administrative Responsibilities.....	74
Data Sharing.....	74
COI: Conflict of Interest	76
RCR: Responsible Conduct of Research	78
Cross-Agency Differences	79

Table of Contents (continued)

National Security Administrative Responsibilities.....	80
Export Controls	80
Select Agents	82
Protected Critical Infrastructure Information.....	83
Emergent Themes.....	84
Institution and Agency Roles	84
Needless Complication and Wasted Research Time	88
Other Specific Pervasive Issues.....	91
Perceptions of the Climate for Research.....	93
Evaluation of Individual Items	94
Comparison with the 2005 Survey	96
Analysis of General Comments	97
Broader Issues	97
Administrative Workload.....	99
Indirect Cost Recovery.....	99
Reactions to 2012 FDP Faculty Workload Survey	99
Conclusions and Recommendations	100
Toward a Healthy Research Culture	100
An Efficiency Checklist	101
Reducing Disincentives for Conducting Research.....	103
Future Potential for the Workload Survey	104
References.....	105

Executive Summary

The Federal Demonstration Partnership (FDP; Phase V) is a cooperative initiative among 10 federal agencies and 119 institutional recipients of federal funds, sponsored by the National Academies, with a purpose of reducing administrative burdens associated with federal research grants and contracts. In early 2012, the FDP conducted a survey of principal investigators (PIs) of federally-funded projects to determine the impact of federal regulations and requirements on the research process. This was a follow-up survey to the 2005 FDP Faculty Workload Survey of 6,295 federally-funded investigators (see Decker et al., 2007). In the current survey, responses were obtained from 13,453 PIs (representing a 26% response rate; 12,816 with complete data) with active federal grants during the 2010-11 academic year from 111 (non-federal) FDP member institutions. Respondent characteristics were remarkably similar across the two time periods.

Overall, PIs reported that almost half of their available research time for federal projects had to be allocated to project-related requirements instead of the content of their research projects. PIs estimated that an average of **42% of their research time** associated with federally-funded projects was spent on **meeting requirements** rather than conducting active research. These results are remarkably similar to those found in the 2005 FDP survey, suggesting little change since the original survey was conducted.

According to PI estimates, research time spent on obtaining and completing federally-funded projects is roughly divided as follows:

Proposal preparation	15.4%
Pre-award administration	5.7%
Post-award administration	13.6%
Report preparation	7.6%
Active Research	57.7%

In addition to proposal and report preparation requirements, as many as **23 different pre- and post-award administrative responsibilities** were identified within the survey. Researchers reported having to deal with an **average of 8.67 of these responsibilities** within the one-year time frame of the survey. Researchers estimated that **additional administrative assistance could reduce their time spent on administrative responsibilities by an average of 27%** (from an average of 42% to approximately 31%). In absolute terms, researchers estimated that with adequate administrative help roughly **4 hours per week** might be reclaimed for active research.

Sources of and Differences in Administrative Workload

The most commonly experienced administrative responsibilities included those related to federal project **finances, personnel, and effort reporting**. These were also among the most time-consuming responsibilities. For researchers engaged in projects that required **human or animal subjects**, the related **IRB** (Institutional Review Board) and **IACUC** (Institutional Animal Care

and Use Committee) **requirements** were by far the most time-consuming. Other areas viewed as particularly time consuming were those involving **clinical trials, subcontracts, and cross-agency differences**. Since 2005, we observed increases in the proportion of respondents reporting substantial time devoted to federal project finances, personnel, and patent/copyright applications, and slight decreases in the proportion reporting substantial time required to meet HIPAA (Health Information Privacy and Accountability Act) requirements and to complete IRB training.

Administrative workload differed as a function of **respondent characteristics** including respondent's administrative role, field of study, research assignment, type of project, funding source, amount of funding, and type of institution. These differences were most pronounced in the areas of post-award administration and then interim/final report preparation. There were also small but notable differences in administrative workload as a function of race, sex, and age.

Administrative Workload Profiles

Several **administrative workload profiles** were identified with the help of principal components analysis.

- Only **6%** of respondents reported **relatively few** systematic administrative requirements, which resulted in an average estimate of **31% time taken away from research** (for instance, by proposal and progress/final report preparation).
- **27%** of respondents experienced only the most **common requirements** of project **finances, personnel, and effort reporting**. Their estimate of time taken from active research averaged **40%**, with a steep **increase for post-award administration** time.
- **42%** of respondents experienced the common requirements as well as a **targeted set of requirements** having to do with one of the following: **human subjects, animal subjects and laboratory safety, general compliance, or contract-related** requirements. These groups averaged a **43% estimate of time taken away from research**.
- **25%** of respondents were categorized as having a **heavy administrative workload** in which they had to respond to two or more of the targeted workload areas plus the possible addition of administrative requirements having to do with **national security**. These respondents estimated that about **46%** of their **time** was taken **from active research**.

As workload increased from the common requirements, large increases were seen in proposal preparation time and in pre-award administrative task time. Estimates of **potential time savings with the addition of administrative assistance** increased as administrative workload increased. Average estimates ranged from a possible **20% to 40% reduction** in administrative time, with absolute estimates in time savings of **between two and six hours per week**.

Specific Workload Responsibilities

An analysis of specific workload responsibilities and associated frustrations provided additional detail, and highlighted several areas that might be the focus of attempts to streamline

administrative requirements related to federally-funded research. Both quantitative and qualitative measures were used to identify areas of focus. These included ratings of specific tasks and content analysis of comments about major frustrations.

More than 25% of over 6,000 comments included either **proposal or report preparation as one of the most frustrating responsibilities**. In addition, over 1,300 comments discussed aspects of requirements regarding the management of **finances** on federally funded projects. Over 800 discussed frustrations having to do with **human subjects/IRB** review requirements, and over 600 discussed frustrations about **animal care and use/IACUC** requirements. The large number of comments regarding human and animal subjects is especially noteworthy given that only a minority of respondents dealt with human subjects (44%) or animal subjects (25%).

Emergent themes were also identified within the frustration comments. Over one-third of the frustration comments targeted **institution and agency roles**. Another theme evident within a third of the comments was a plea to end **needless administrative complications** and thereby reduce the amount of **wasted research time**. Other less common themes included issues related to **training**, concerns about **problematic electronic systems/forms**, and complications related to obstacles associated with **international research**.

Implications on Climate for Research

When asked about the **perceived climate for research**, respondents generally confirmed their commitment to their own academic careers; however, many also agreed that the administrative workload associated with research is **discouraging students from pursuing academic careers**. Most respondents agreed that administrative workload associated with federally-funded research has increased in the past 5 to 6 years, and that the workload would seem more reasonable if **funding rates** at federal agencies were higher. Although only one fourth of the respondents reported that they were less likely to submit federal grant proposals now than in the past, many were concerned that the **time spent meeting federal requirements for research may not provide benefit worth the cost** and that **many federally-mandated requirements may not accomplish their intended goals**. Responses also reflected the **desire for better methods for understanding and complying with federal regulations**. To the extent that comparisons with responses to the 2005 survey were possible, it seemed that perceptions remained generally similar over time.

Emergent Themes

An analysis of the roughly 3,000 **open-ended general comments** provided at the end of the Faculty Workload Survey revealed several overarching concerns. Over 1,000 comments focused on **broader issues** concerning the **viability of scientific research and research careers** in the current funding environment. Between the threat of **inadequate funding** and **ever-increasing administrative workload**, respondents maintained that it is becoming harder and harder to persuade students to pursue a research career. Over half of the open-ended final comments

included some type of elaboration about the **impact of administrative workload** and/or the need for **effective support staff**.

Conclusions and Recommendations

Reducing the administrative workload associated with federally-funded projects is critical for increasing the **efficiency and effectiveness of research**. The current levels of administrative workload routinely reduce the **ability of highly qualified scientists to focus on the content of their research**. Different kinds of research are subjected to different amounts and types of administrative workload, suggesting that solutions may not be the same in all cases. Nevertheless the need for **larger-scale solutions**, in addition to more **focused initiatives**, is clearly evident by the growing frustration with the sense that **valuable research time is being wasted**, and that heavy administrative workloads coupled with the uncertainties of research funding are threatening the viability and attractiveness of research career paths.

The Federal Demonstration Partnership (FDP) can play a key role in identifying potential answers and in demonstrating the value of proposed solutions. Even with respect to larger scale issues, the FDP can work with federal agency partners and member institutions to emphasize the need to:

- (a) factor in impacts on **research quality and productivity** when weighing the costs and benefits of research policies;
- (b) strengthen research programs by **minimizing distractions, interruptions, and an environment of uncertainty**; and
- (c) **reduce disincentives for conducting research** and following a research career path.

The FDP can also be a leader in assisting member institutions to promote a **healthy research culture** internally. A primary goal is to find a healthy **balance between facilitating research and protecting against audit and legal concerns**. For example, FDP demonstrations could show the value of targeting high risk conditions and high likelihood problems, with reduced workload in more benign situations. FDP demonstrations have been routinely aimed at **preventing the waste of valuable research time**. The FDP's continued success will be bolstered to the extent that member institutions, as well as federal agencies and others, adopt this goal as a priority.

The 2012 FDP Faculty Workload Survey provides a **rich resource for targeting specific issues** that have a substantial effect on administrative workload. Both quantitative (ratings) and qualitative (comments) data are available to help **guide FDP demonstration projects**, as well as to confirm the existence and impact of issues related to administrative workload on federally-funded projects. As a unique forum, the FDP is especially well-positioned to engage in collaborative projects with institutions and agencies to find ways to alleviate the most pressing of these problems.

Federal Demonstration Partnership 2012 Faculty Workload Survey RESEARCH REPORT

Overview

Study Description and Rationale

The Federal Demonstration Partnership (FDP) Faculty Task Force on Administrative Burden administered a web-based survey to explore the impact of federal regulations and related requirements on the time faculty spend pursuing active research. This is a follow-up to the FDP 2005 Faculty Workload Survey, which estimated that as much as 42% of faculty research time is spent completing required tasks associated with the administration of research rather than actively conducting research.

The 2012 Faculty Workload Survey re-assesses estimates of federal research workload, and extends the earlier survey findings by:

- (1) evaluating specific areas of administrative workload in greater detail,
- (2) examining new sources of faculty workload, such as the quarterly reporting required of American Recovery and Reinvestment Act (ARRA) awards, and
- (3) exploring workload profiles across research areas, institution types, and funding sources.

The results of this study will be used by the FDP to make recommendations for streamlining research administrative workload without reducing research accountability or compliance with federal regulations. Volunteers were solicited from among a pool of federally-funded research personnel working as Principal Investigators during the 2010-2011 academic year within 99 FDP member organizations (at a total of 111 individual institutions). Over 13,000 investigators provided responses to the survey.

Background

The Federal Demonstration Partnership is a cooperative initiative among 10 federal agencies and 119 institutional recipients of federal funds, now in Phase V of its 25-year history. The FDP is a program sponsored by the Government-University-Industry Research Roundtable (GUIRR) of the National Academies. Its purpose is to reduce the administrative burdens associated with research grants and contracts. The interaction among the FDP's 400 or so university and federal

representatives takes place in the FDP's three annual meetings and, more extensively, in the many collaborative working groups and task forces that meet often by conference calls in order to develop specific work products. The FDP is a unique forum for individuals from universities and nonprofit research organizations to work collaboratively with federal agency officials to improve the national research enterprise.

About 17 years ago, the FDP surveyed faculty from FDP institutions to evaluate the worth of the "expanded authorities" that had recently been negotiated between the FDP universities, participating federal agencies and the Office of Management and Budget (OMB). The principal focus of the survey was to determine whether the negotiated changes had saved faculty time, and whether such saved time had been re-invested in research activities.

Over twenty-five hundred faculty responded to the survey indicating that the new, more flexible policies saved researchers significant time. Of this liberated time, 90% was refocused toward scholarly activity and of that 90%, 73% was spent directly conducting research. These observations implied that the research productivity of FDP-institution faculty would be increased by changes in federal grant policies. However, anecdotal comments from some of the surveyed faculty indicated that much of the free time resulting from the implementation of the "expanded authorities" was likely to be re-allocated to other research administrative duties, such as IRB- or IACUC-related tasks and research safety issues.

During the decade following this early FDP survey, a number of new federal regulations were added to the faculty workload, which further reduced the amount of time that faculty could allocate to active research. In addition, changes in cost accounting standards no longer offered most researchers the option of using a portion of their direct costs to shift the ever-increasing administrative workload to departmental staff.

In 2005, the FDP conducted another survey, the first Faculty Workload Survey, which estimated that as much as 42% of faculty research time on federal projects was spent completing tasks related to research requirements rather than actively conducting research. These findings are available on the FDP website (Decker et al., 2007; <http://www.thefdp.org/>) and have been a focus of attention in flagship journals of the American Association for the Advancement of Science (AAAS; Lane & Bertuzzi, 2011; Leshner, 2008) and the National Council of University Research Administrators (NCURA; Rockwell, 2009; Sedwick, 2009).

We hypothesized that research administrative workload had increased since 2005, given the increase in regulations, especially with respect to reporting, compliance, safety and security. Anticipating these increases, we also included several specific items that allow us to determine specific sources of burden. We hypothesized, for instance, that training requirements and efforts to understand new regulations would be prominent sources of administrative workload. We also hypothesized that those who must meet IRB and IACUC requirements would report a heavier overall administrative workload than those who do not. We anticipated that various fields of

research would have distinctly different profiles of research administrative workloads, with engineering and physical sciences reporting primary workload in the areas of laboratory safety and export controls, social and behavioral sciences reporting primary workload associated with IRB responsibilities, and medical sciences reporting a host of administrative workload requirements including those associated with HIPAA, clinical trials, and safety/security concerns related to biohazards, radiation, recombinant DNA, and controlled substances/narcotics.

Method

Participants

Each of the non-federal member institutions of the FDP was asked to provide a list of all university personnel who were serving as principal investigators (PIs) on U.S. federally-funded projects (including both contracts and grants) which were active at any point during the 2010-2011 academic year, including projects that were in no-cost extensions. (Neither fellowships nor federal pass-through funds managed by a third party were considered projects.) Lists were provided by 99 of the 119 (83%) FDP non-federal member organizations, which represented a total of 111 individual institutions. According to 2011 Carnegie classifications, these included 62 very high research universities (42 public and 20 private), 21 high research or doctoral research universities, 6 special focus medical schools/centers, 13 non-doctoral colleges or universities, and 9 independent research institutes/centers.

In total, we solicited participation from 53,428 investigators. Approximately 500 of those could not be contacted due to address-related problems. 17,101 potential participants entered the survey, with 16,574 of those providing their consent to participate and continuing on to take the survey. This yielded an overall response rate of 31%. Of those, 14,040 provided content-related data (i.e., answered more than the first few descriptive items), yielding a modified response rate of 26%. When post-doctoral students and part-time personnel were removed (to be analyzed separately), the final number of base respondents for analyses was 13,453. The number of respondents with complete data totaled 12,816.

Design and Procedure

The 2012 Faculty Workload Survey was a web-based multi-item survey. Participants were asked to respond with respect to their research activity during the 2010-2011 academic year. The survey consisted of five sections: Background, Your Work, Your Research, Specific Responsibilities, and About You. The question formats included multiple choice, text entry, and fill-in items. The length of the survey varied for each participant depending on which federal regulations applied to their research. Respondents were asked detailed questions only about regulations relevant to their own projects. Placement of items inquiring about gender, age, and ethnic background were varied to diminish any biasing effects that these might have on proximal items. From start to finish the survey took approximately 15-30 minutes to complete.

The survey was administered by Survey Sciences Group, LLC (SSG), a full service survey research provider located in Ann Arbor, Michigan. (SSG was also involved in 2005/2006 when the previous FDP Faculty Workload Survey was conducted.) SSG contracted with the FDP to provide professional survey research services. The survey was programmed using best practice web survey design methods and made use of interactive capabilities to minimize respondent burden.

In January of 2012, all 53,428 PIs on the lists provided by participating institutions were sent an email from the research team inviting them to participate. (It is estimated that no more than 1% of these remained undeliverable after attempts to remedy any address-related problems.) In addition, about a week prior to the email, a randomly selected group of 5,000 PIs were sent a letter in the mail inviting them to participate in the study. The purpose of including the postal-mailing group was to compare them to the larger email-only sample to determine whether the method of invitation introduces any response bias. It was also anticipated that response rates would be lower among the email-only group, so having the additional postal-mailing group helped to ensure a sufficient number of respondents.

The letter and email invitations provided potential participants with a unique randomly-assigned study identification (ID) number and directed them to the survey website. When potential participants entered the website, they were prompted to enter their ID number. Once they typed in their ID number, and consented to participate, they were able to begin the survey. Over the course of approximately four weeks, email reminders were sent out routinely to all those who had not yet completed the survey, and one postal mail reminder was sent to non-respondents from the subsample of 5,000. Data collection was completed within two months of the mailing of the initial letter of invitation to participants.

All questions in the survey were optional; each question could be skipped by simply clicking the “Next” button without entering an answer. The only exception to this was the first question which asked for the participant’s consent to participate in the survey. Participants were required to consent before they were able to proceed. If a participant encountered a problem during the survey, support information was made available throughout the survey and in all respondent communications to contact support staff.

Respondent Characteristics

General Demographic Characteristics

All respondents reported being a principal investigator on a federally-funded project that was active during the 2010-2011 academic year. Their demographic characteristics, including a comparison with respondents from the 2005 survey, are presented in Table 1.

Table 1. General Demographic Characteristics

Item (2005 and 2012 wording may vary)	Possible Responses	2012 Base (N=13453)	2005 Base (N=6295)
<i>Length of University Appointment</i>	≤8 months: 9 months: 10-11 months: 12 months:	1.3% 43.1% 5.3% 50.4%	0.3% 44.2% 5.6% 50.0%
<i>Tenure Status</i>	Tenured: On tenure track, but not tenured: Not on tenure track/No tenure system:	61.9% 17.4% 20.6%	65.0% 20.9% 14.1%
<i>Academic Rank (2012: could select 'Other', along with another option)</i>	Professor: Associate professor: Assistant professor: Other:	49.1% 23.5% 18.9% 8.3%	51.8% 23.1% 21.4% 3.7%
<i>Gender</i>	Female: Male: Prefer not to specify (2012 option only):	32.5% 64.6% 2.9%	27.6% 72.4% 0.0%
<i>Race/Ethnicity (2012: Select all that apply)</i>	White/Caucasian: Asian: Hispanic/Latino: African American/Black: American Indian/Alaskan Native: Race/ethnicity not included/Pacific Islander:	79.2% 10.6% 3.5% 1.5% 0.4% 1.2%	81.6% 9.6% 2.4% 1.1% 0.5% 1.5%
<i>Age in Years</i>	Mean= Standard Deviation= Median=	51 10.1 51	50 9.4 50

Respondents were roughly evenly split between 12-month appointments and 9-month academic appointments. Approximately half of the respondents held the rank of full professor, just under one fourth were Associate Professors, with 19% Assistant Professors, and 8% without an academic rank. The tenure status reported was reflective of the ranks: almost two-thirds were tenured, with an additional 17% who were preparing for tenure, and 20% who were not on a tenure track. This pattern was very similar to that of 2005, although there were more respondents in 2012 who did not hold an academic rank. In part, this reflects a change in criteria for responding to the survey. In 2012, faculty status was not mandatory for responding as it was in 2005; any person serving as Principal Investigator was eligible to respond in 2012. In addition, the “other” category could be selected in 2012 (but not 2005) as a second response along with one of the other ranks. Despite these minor differences, the vast majority of respondents were faculty in both surveys.

Just over one-third of respondents in both surveys reported holding administrative positions (37% in 2012 versus 36% in 2005) such as Center Director, Department Chair, or Associate Dean. Although the categories did not align exactly across surveys, the general profile looks similar. In 2012, 8% of those in administrative positions were serving in dean, provost, or chancellor positions (including assistant or associate), 18% were department chairs (compared with 15% in 2005), and almost half were center or program directors.

The percentage of females in the sample increased from 28% in 2005 to 33% in 2012. The vast majority of respondents in both surveys identified themselves as White Caucasian. There were very slight increases in the percentages of Asian, Hispanic, and African American respondents in 2012 compared with 2005. The differences across surveys in the distributions of gender and race/ethnicity were both significant based on X^2 tests of independence, p 's < .001.

Principal Field and Institutional Backgrounds

As shown in Table 2, roughly one-third of respondents were in the biological and biomedical sciences in both 2012 and 2005. Another 30% were researchers in the physical sciences and engineering. About 10-15% came from clinical and medical sciences, and just over 10% came from the social and behavioral sciences. The remainder included agricultural sciences, education, humanities and arts, and other non-listed fields. The similarity in distribution of fields of study from 2005 to 2012 was remarkably stable (especially given that some of the naming conventions changed slightly from the 2005 to the 2012 survey).

Just over 70% of respondents were working in public institutions in both the 2012 and 2005 surveys. Based on Carnegie classifications, 90% of institutions in both time periods were judged to be doctoral research, high research, or very high research. The breakdowns across years are difficult to compare based on changes in the Carnegie ranking rubric between surveys. Nevertheless, well over half of the respondents in both time periods were working within comprehensive doctoral degree granting programs with very high research productivity. Over three-quarters of these were at institutions which have medical schools. Independent research institutes and medical schools/centers were home to an additional 8-9% of respondents, while roughly 1-2% of respondents were at non-doctoral degree granting institutions.

The distribution of respondents changed slightly with respect to the level of institutional federal funding. In both periods, at least 65% of respondents were at institutions with over \$200 million in annual federal funding. Nevertheless, there were proportionately fewer respondents from these higher earning institutions in 2012 than in 2005. At the same time, there were proportionately more respondents in 2012 as compared to 2005 from institutions with less than \$100 million in federal funding (14% versus 10%), and proportionately fewer respondents from institutions receiving between \$100 million and \$200 million (18% versus 22%). This difference in distribution is significant, $X^2(3) = 212.52$, $p < .001$, and suggests that more of the respondents from 2012 than 2005 were from institutions with lower levels of annual federal funding.

Table 2. Respondent Principal Fields and Institutional Characteristics, 2012 versus 2005

2012 Principal Field (N=13453)			2005 Disciplinary Affiliation (N=6081)		
Biological and Biomedical Sciences	4346	32%	Biological or Life Sciences	1992	33%
Physical Sciences and Mathematics	2192	16%	Physical Sciences/Mathematics	897	15%
Engineering and Computer Sciences	1836	14%	Engineering/Computer Science	827	13%
Social and Behavioral Sciences	1618	12%	Social Sciences/Psychology	598	10%
Clinical Sciences and Medicine	1281	10%	Health Sciences	897	15%
Agricultural Sciences	553	4%	Agriculture	269	4%
Education	423	3%	Education	139	2%
Humanities/Arts and Architecture	160	1%			
Business/Law	74	1%			
Other	967	7%	Other	507	8%
2012 Institutional Control			2005 Institutional Control		
Public	9704	72%	Public	4330	71%
Private	3749	28%	Private	1727	28%
2012 Institution Carnegie Classification			2005 Institution Carnegie Classification		
Very High Research w/ Med	8414	63%	Comprehensive Doc w/Med	4293	71%
Very High Research w/o Med	2262	17%	Comprehensive Doc w/o Med	913	15%
HR&DR LG and/or Med School	374	3%	Doctoral – Focused	321	5%
HR&DR Not LG w/o Med School	923	7%			
Medical Schools/Centers	821	6%	Medical	511	8%
Non-Doctoral Large Masters	136	1%	Post-Baccalaureate	41	1%
Non-Doctoral Others	146	1%			
Independent Research Institutes	377	3%			
<i>(UG= Undergraduate, LG=Land Grant, HR=High Research; DR=Doctoral Research)</i>					
2012 Institutional Federal Funding			2005 Institutional Federal Funding		
Less than \$100M	1931	14%	Less than \$100M	653	10%
\$100M - \$200M	2400	18%	\$100M - \$200M	1317	22%
Over \$200M	8683	65%	Over \$200M	4078	67%
\$201M - \$300M	2038				
\$301M - \$400M	2564				
\$401M - \$500M	1249				
Over \$500M	2832				
Not available	439	3%	Not available	33	1%

Respondent Funding Characteristics

Table 3 provides data on funding patterns in 2012 as compared to 2005. Although the overall patterns are similar, there are some noteworthy changes. Reliance on federal funding seems to have increased; the proportion of research sponsored by federal sources averaged 73% in the 2012 survey versus 65% in 2005. Over the same time period, the average number of grants per investigator reduced slightly, even though the typical size of grants remained largely unchanged.

Although the vast majority of investigators in both surveys reported working on 1 to 3 federal grants, the proportion who had more than 3 grants decreased substantially from 2005. Less than 15% of 2012 respondents (versus 19% in 2005) were working on 4-6 grants, and only 3% (versus 4% in 2005) played a lead role on more than 6 grants. Nevertheless, overall reported federal funding rates were very similar from 2005 to 2012. The modal direct costs received in both periods were between \$100,000 and \$299,999. There was, however, a slight increase (from 8% to 9%) in direct costs that exceeded \$1 million.

Table 3. Respondent Federal Funding Characteristics

Question (2005 and 2012 wording may vary)	Possible Responses	2012 Base (N=13453)	2005 Base (N=6295)
% Research Time Funded by Federal Sources	Mean=	72.8%	65.0%
	Standard Deviation=	26.2	30.2
	Median=	80.0%	75.0%
Number of Federal Grants/Contracts Serving as PI/Co-PI	0-3 grants:	82.7%	77.5%
	4-6 grants:	14.5%	18.7%
	>6 grants:	2.8%	3.8%
Total Direct Cost Received for Federal Grants and Contracts	<\$100,000:	21.3%	21.1%
	\$100,000 to \$299,999:	39.1%	40.8%
	\$300,000 to \$999,999:	30.7%	30.1%
	≥\$1 million:	9.0%	8.0%
Federal Agencies Funding Research Projects (Select all that apply)	NIH/National Institutes of Health:	46.9%	49.6%
	NSF/National Science Foundation:	37.1%	31.3%
	U.S. Dept. of Defense:	11.1%	10.5%
	U.S. Dept. of Agriculture/NIFA:	7.8%	8.7%
	U.S. Dept. of Energy:	8.7%	7.8%
	U.S. Dept. of Health/Human Services:	4.2%	6.4%
	Other:	24.5%	24.2%

As was the case in 2005, over 75% of investigators report receiving funds from either the National Institutes of Health (NIH) or the National Science Foundation (NSF), or both. There was a 3% decrease in the percentage reporting funding from NIH and a 6% increase in the percentage reporting support from NSF. Other typical funding agencies include the U.S. Department of Defense, the U.S. Department of Agriculture, and the U.S. Department of Energy, with between 8 and 11% of investigators receiving funding from these sources.

Researcher Workload Distribution

Distribution of Work Time

Table 4 displays average reported work time percentages for principal investigators. When asked to divide work time in terms of research, instruction, and service, respondents reported that roughly half of their average day was focused on research responsibilities. This represents a substantial decrease from research time reported in 2005; however, some of this difference may be due to wording changes across surveys. Average instruction time was consistent across surveys at approximately 20% of the average day. Service directly related to research comprised roughly 10% of the average day in both survey periods. Service not directly related to research was reported as taking up more time in 2012 than 2005. On average, respondents estimated that non-research related service took up 20% of their time in 2012, up from 14% in 2005.

Table 4. Comparison of Reported Workload Distributions in 2005 and 2012

Question (2005 and 2012 wording may vary)	Possible Responses	2012 Base (N=13453)	2005 Base (N=6295)
<i>% Work Time (Mean)</i>	<i>Research: (SD: 19.4, 22.7)</i>	49.8%	58.1%
	<i>General instruction: (SD: 14.0, 17.5)</i>	20.1%	19.2%
	<i>Service directly related to research: (SD: 6.6, 7.9)</i>	9.7%	9.1%
	<i>Service not directly related to research-- Administrative, clinical, other: (SD: 16.0, 22.1)</i>	20.4%	13.7%

Note: For italicized questions, differences found could be due to disparities in item wording

Of the time spent on research, almost three-fourths consisted of work on federally-funded projects. This percentage was higher than in 2005, when roughly 65% of all research time was devoted to federally-funded projects.

Time Spent on Activities Associated with Federally-funded Research

The primary analysis explores the amount of time spent on active research compared with other activities associated with the administrative responsibilities related to federal grants. Survey respondents were asked to divide their work time related to federally-funded research into the following categories (as described):

- **Active research:** Reviewing literature, designing studies, running experiments, collecting/analyzing data, writing up findings, presenting and publishing research, etc.;

- **Pre-award proposal preparation activities:** Writing/submitting proposals and preparing budgets;
- **Pre-award administrative activities:** Applying for approvals, developing protocols, drafting security plans, etc.;
- **Post-award administrative activities:** Purchasing supplies/equipment, supervising budgets, managing project personnel, complying with regulations, monitoring safety/security plans, etc.;
- **Post-award report preparation activities:** Writing/submitting required progress/final reports.

Figure 1 compares the research workload distribution data from the 2012 Faculty Workload Survey to the 2005 survey. The findings are remarkably stable. In both 2005 and 2012, on average, participants estimated that only 58% of their time associated with federal grants was spent on active research. In both time periods, the remaining 42% of time is roughly evenly split between pre-award and post-award activities. In 2012, pre-award activities were divided into proposal preparation and pre-award administrative activities. This revealed that proposal preparation takes up the vast majority of the time spent on pre-award activities (~15% versus ~6% for pre-award administration). Post-award activities were divided into report preparation and post-award administrative activities. In this case, post-award administration consumes roughly twice as much time as report preparation (~14% versus ~8%). Nevertheless, each of these four components takes substantial time away from active research on federal grants.

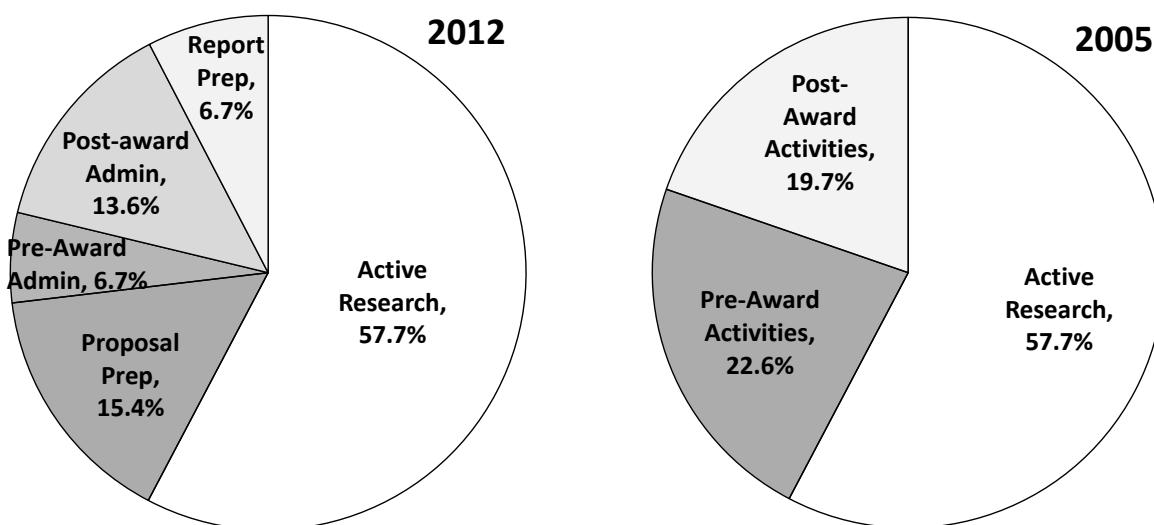


Figure 1. Comparison of reported research workload distribution in 2012 versus 2005.

Proposal and Report Preparation

Taken together, proposal preparation and interim/final reports were estimated to take up almost one quarter of the research time available for work on federally-funded projects. Some might

reasonably argue that portions of proposal preparation and report writing fall outside a strict definition of "administrative workload" and that some aspects of these activities may contribute to the content of the research. Nevertheless, these tasks are mandatory requirements associated with federally-funded research, and fulfilling these requirements takes time that might otherwise be devoted to active research. Just as other requirements can be explored to gain potential efficiencies, the 25% of research time devoted to proposal and report writing might be reduced through an exploration of aspects of these requirements that might be simplified. Suggestions along these lines can be found in the second part of this report describing the many comments offered by researchers regarding their frustrations and concerns related to proposal and report preparation for federally-funded projects.

Table 5. List of Administrative Requirements Associated with Federally-funded Research

GENERAL RESEARCH ADMINISTRATION

- Personnel:** Personnel administrative issues (including hiring, managing, visas, evaluation)
- Finances (Non-ARRA):** Managing grant/contract expenditures
- Effort Reporting:** Federal time and effort reporting, including training
- Data Sharing:** Meeting federal requirements for resource and data sharing
- Cross-Agency:** Dealing with differences in administrative requirements and forms across federal agencies

COMPLIANCE

- COI:** meeting federal conflict of interest requirements
- HIPAA:** meeting Health Insurance Portability and Accountability Act (HIPAA) requirements
- IACUC:** meeting federal animal care and use requirements
- IRB:** meeting federal human subjects research requirements
- RCR:** meeting Responsible Conduct of Research requirements for trainees on federally funded projects

SAFETY/SECURITY

- Biosafety** (including biohazards and blood-borne pathogens)
- Chemical safety** (including chemical inventory management)
- Controlled substances/narcotics**
- Export controls**
- General laboratory safety/security** (including laboratory inspections)
- Protected Critical Infrastructure Information** (within Department of Homeland Security's PCII Program)
- Radiation safety** (including radioisotopes)
- Recombinant DNA**
- Select agents**

OTHER

- ARRA:** Requirements associated with American Recovery and Reinvestment Act project funding
 - Clinical Trials:** Responsibilities associated specifically with conducting clinical trials
 - Intellectual Property** (including patent/copyright applications, licensing agreements, invention, disclosures, Materials Transfer Agreements, etc.)
 - Subcontracts:** Responsibilities associated with managing subcontracts to other entities
-

Pre-award and Post-award Administration

Because many of the administrative requirements associated with federally-funded research occur both in the pre-award and post-award phases, follow-up questions regarding these responsibilities were not differentiated by phase. A review of typical responsibilities yielded a total of 23 areas of responsibility commonly associated with federally-funded research. The areas explored are described in Table 5. Respondents were asked to consider each of the areas and to provide a yes or no response regarding whether each responsibility applied to any of their federal grants or contracts during the 2010-2011 academic year. For each affirmative answer, a follow-up question was asked regarding how much time was taken away from active research by that responsibility. Possible ratings were: 1= not at all, 2=a little bit, 3=some, 4=quite a bit, 5=very much.

Of these 23 areas, on average respondents reported experiencing 8.67 areas (median = 8) with 95% of respondents experiencing between 0.8 and 16.6 different administrative responsibilities over the course of the year. Figure 2 displays the prevalence of particular administrative responsibilities measured as the percentage of respondents who reported experiencing each responsibility. Responsibilities are ordered from left to right from the most to the least prevalent responsibilities. The three most commonly experienced administrative responsibilities came from

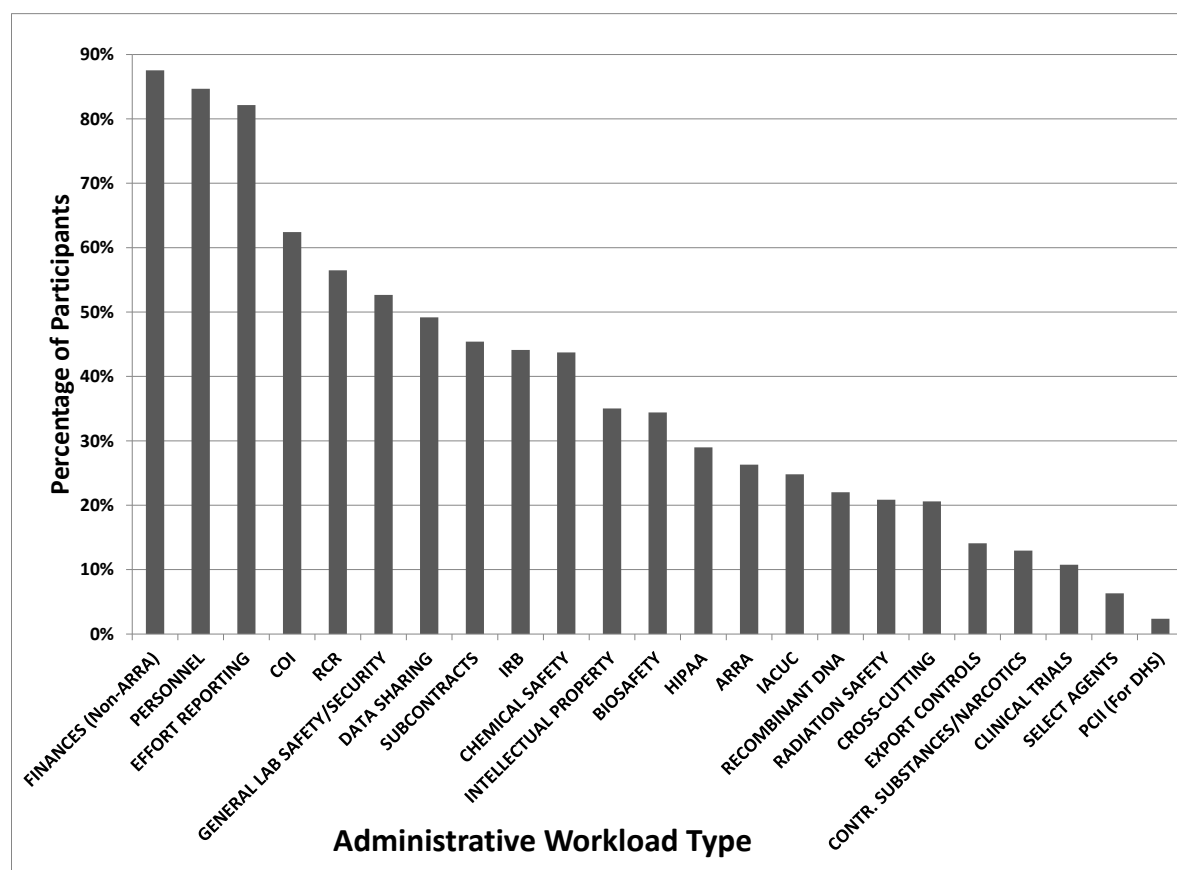


Figure 2. Prevalence of 23 administrative responsibilities.

the category of general research administration responsibilities, and comprised project finances, personnel, and effort reporting. At least 80% of respondents reported having to deal with these issues associated with their federal grants and contracts. Other administrative responsibilities that were experienced by at least half of our respondents included conflict of interest responsibilities, responsible conduct of research responsibilities, and general lab safety and security responsibilities. Between 40 and 50% of respondents also experienced responsibilities associated with data sharing, subcontracts, human subjects research, and chemical safety.

Among those who reported a particular responsibility, there was also an estimate of the time that the task took away from their active research. Persons who reported that a task or activity took some, quite a bit, or very much time away from their active research were grouped into the category of respondents for whom the responsibility was deemed to take substantial time. Considering only those who experienced the given responsibility, the percentage who reported having substantial time taken away from active research are indicated for each responsibility in Figure 3. The items have been reordered to list from left to right those responsibilities that are most to least commonly associated with substantial time commitments by those who experience the responsibility.

The two responsibilities that most consistently took time away from active research were those associated with studies involving animal or human subjects. For respondents who completed compliance activities related to Animal Care and Use (IACUC), almost 80% indicated that this activity took a substantial amount of time away from active research. For those complying with Human Subjects Protection requirements, approximately 70% indicated that IRB tasks took appreciable time away from active research. Although only about 25% of respondents dealt with animal subjects and fewer than half dealt with human subjects, for those researchers, compliance related to protecting subjects was typically among the most time-consuming responsibilities.

Some of the most commonly experienced administrative responsibilities were also routinely associated with substantial time commitments. Two of the responsibilities experienced most often by respondents, finances and personnel, were also among the activities most likely to take substantial time away from active research. Roughly 67% of those who dealt with the management of project expenditures or with personnel issues on their federally-funded projects agreed that these responsibilities require significant amounts of time. Another commonly experienced responsibility, effort reporting, was judged to take considerable amounts of time by almost half of the respondents who indicated that they had completed effort reports during the period of the survey.

More than 50% of those who ran federally-funded clinical trials or oversaw federally-funded subcontracts to other institutions reported that the related administrative responsibilities represented a substantial time commitment. Differences in responsibilities across federal funding agencies took a substantial toll on research time for about half of those who were involved with multiple federal funding agencies.

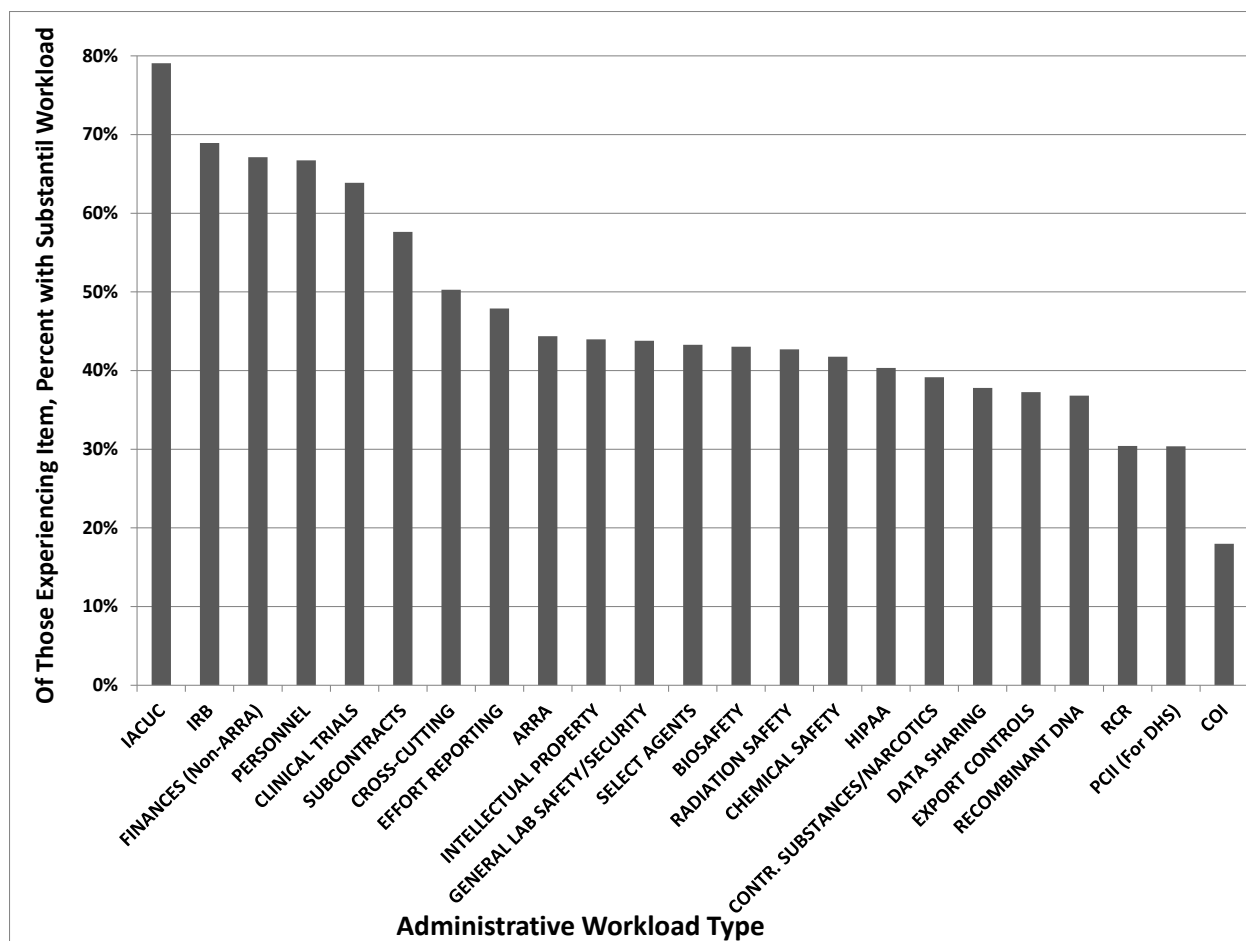


Figure 3. For participants who experience a given type of workload, percentage reporting substantial (some to very much) time taken by that responsibility.

Other responsibilities that were deemed to be time-consuming by at least 40% of those experiencing the responsibility included tasks related to ARRA (American Recovery and Reinvestment Act) regulations; intellectual property requirements; safety and security requirements such as general lab safety, select agents, biosafety, radiation safety, and chemical safety; as well as requirements due to HIPAA (Health Insurance Portability and Accountability Act) regulations.

Almost all of the remaining responsibilities were judged to take substantial amounts of time by at least 30% of those who experienced the responsibility. This included dealing with controlled substances and narcotics, responding to data sharing requirements, complying with export control restrictions, meeting recombinant DNA guidelines, providing training in responsible conduct of research (RCR), and completing requirements associated with the Department of Homeland Security's Protected Critical Infrastructure Information (PCII) Program.

It is worth noting that the only requirement that fewer than 20% found to take considerable time away from research was the conflict of interest requirement. However, since the time of this

survey, revised regulations have been enacted by the Department of Health and Human Services regarding Financial Conflicts of Interest (FCOI). It is expected that these changes may well increase investigators' time away from their federally-funded research programs.

Although the administrative responsibility items included in the 2012 Faculty Workload Survey were updated and refined relative to the 2005 survey, it is still possible to do a rough comparison to see whether experiences of time commitment have changed since 2005. Figure 4 below compares the mean rankings at the two time periods for all those investigators who reported that a given administrative responsibility took at least a little time away from their research. The items are ordered from the most to the least time-consuming as of 2005.

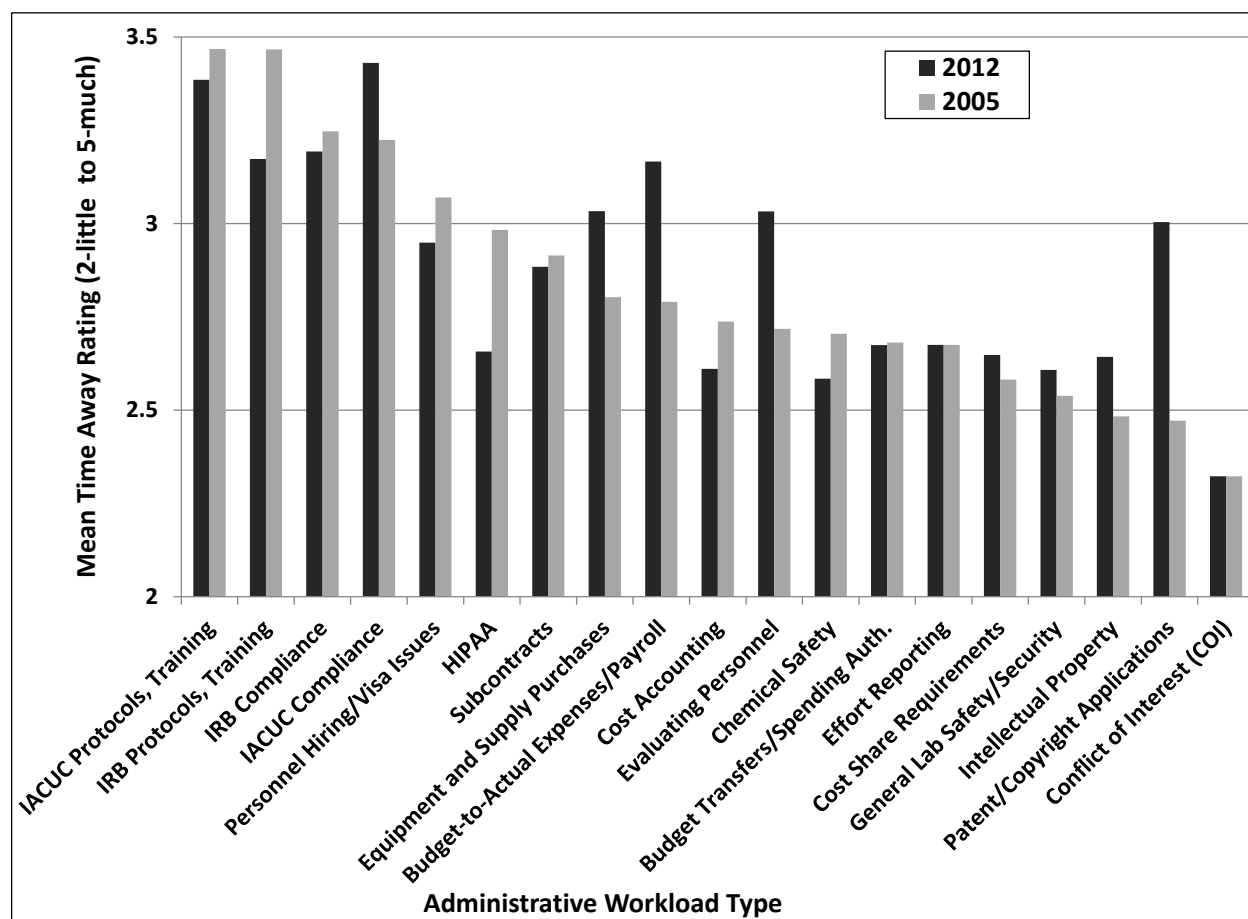


Figure 4. Comparison of administrative workload ratings from 2012 and 2005. *Note.* Some comparisons are approximate due to wording differences across the two surveys.

Overall, the pattern across the two time periods is similar, with the most time-consuming responsibilities associated with animal and human subjects. Nevertheless, there seem to be some noteworthy changes (though wording differences may be partially responsible). Since 2005, perceived time commitment seems to have increased slightly for some IACUC responsibilities, but decreased slightly for IRB protocols and training. In both cases, however, reported time taken away from research remains high.

Increases in time commitment from 2005 to 2012 were also evident for financial and personnel responsibilities. Rated time commitments increased for equipment and supply purchases as well as payroll and matching budgets to actual expenses. Ratings also increased for the time taken away from research by personnel evaluation.

The most noticeable increase occurred for patent and copyright applications. Mean ratings increased from less than 2.5 to 3.0. There is also a small increase associated with time related to intellectual property. These increases may at least in part reflect the increasing focus by federal agencies, universities, and other research institutions on applied research innovation and technology transfer.

Few decreases in ratings of time commitment since 2005 were observed. The only decrease other than that associated with IRB protocols and training, was for HIPAA responsibilities. We speculate that this reduction may have to do with the fact that HIPAA was fairly new in 2005. Since then, many of the early problems associated with computer software and firewalls may well have been resolved, and procedures refined to improve efficiencies. Although many of the remaining differences (in both directions) are statistically significant, they are relatively small.

The 2012 Faculty Workload Survey included several additional items to further investigate the specific obligations associated with each of the administrative workload items. The analysis of these results is reported in the section entitled *Analysis of Specific Workload Responsibilities and Associated Frustrations*. This section also includes a content analysis of related comments that help elaborate the major frustrations associated with each of the responsibilities.

Potential Time Savings from Additional Assistance

Investigators were also asked about the extent to which they felt skilled assistance could allow them additional time for active research on their federally-funded projects. Investigators estimated that they could reclaim a median of approximately 27% of the time they spent on administrative requirements if they had adequate administrative assistance. This estimate is significantly higher than the 21% median estimate observed in the 2005 survey ($p < .001$). Although most respondents reported values of 11-50% potential savings in their administrative time, there was wide variation. Roughly one quarter of respondents in the current survey felt that they would save 10% or less of the time they spent on administrative requirements if they had additional help, whereas another 20% of respondents felt that they could conceivably save over half of their administrative time if aspects of the requirements could be assigned to someone else for completion.

When converted into an hourly estimate of potential time savings from additional help, respondents reported an estimated median of just over five hours per week (versus approximately 3.5 in 2005) that might be regained for active research with sufficient administrative assistance. As with percent estimates, values varied considerably. Approximately 30% reported that they would gain no more than two hours per week from assistance, and another 30% reported that they might gain as much as nine hours or more of additional weekly research time with skilled administrative assistance.

Comparisons of Administrative Workloads by Respondent Characteristics

We were also interested in the distribution of the administrative requirements associated with federally-funded research as a function of respondent characteristics in terms of demographics, institution type, appointment type, administrative roles, areas of research and amount of federal funding.

Demographic and Institutional Characteristics

Figure 5 shows the percentages of research time respondents reported spending on specific research-related administrative tasks by demographic and institutional characteristics. Overall, there were small but notable differences in administrative workload as a function of demographic characteristics. African Americans reported the greatest proportion of time taken by administrative workload, followed by Hispanics, with Asians reporting the smallest proportion of administrative workload. Administrative workload was also slightly higher for females than for males. Younger respondents tended to report spending a slightly greater amount of time on proposal and report preparation than older colleagues, but generally spending slightly less time on pre-award and post-award administration. By institution, administrative workload was highest for degree-granting institutions outside of the Very High Research Carnegie classification, particularly non-doctoral degree-granting institutions. Those at public universities typically reported greater administrative workloads than their private counterparts.

Proposal preparation: The percentages of research time spent by respondents on proposal preparation did not vary by sex (males 15.5%, females 15.4%) but did vary by race and age. Asian respondents spent more research time (17.7%) on proposal preparation than other respondents who reported spending approximately 15.0% of research time on proposal preparation ($p=0.01$). Respondents 46 years of age or younger reported a higher percentage of research time preparing proposals than did respondents 56 years of age or older (16.3% versus 14.4%, $p=0.01$). The percentage of time spent on proposal preparation also varied by type of institution, with individuals working at non-doctoral institutions reporting that 13.3% of research time was spent on proposal preparation, compared to percentages of 17.0% and 17.4% at special medical focus or independent research institutes, respectively.

Interim and final reports: The percentage of research time spent preparing interim and final reports did not differ by sex or race, but did differ by age. Respondents 46 years of age or younger spent 6.8% of time on interim and final reports, compared to a percentage of 8.5% among those 56 years of age or older ($p=0.002$). Research time spent preparing interim and final reports was highest among institutions categorized as Non-Doctoral (10.4%) or as High and Developing Research Institutions (9.1%).

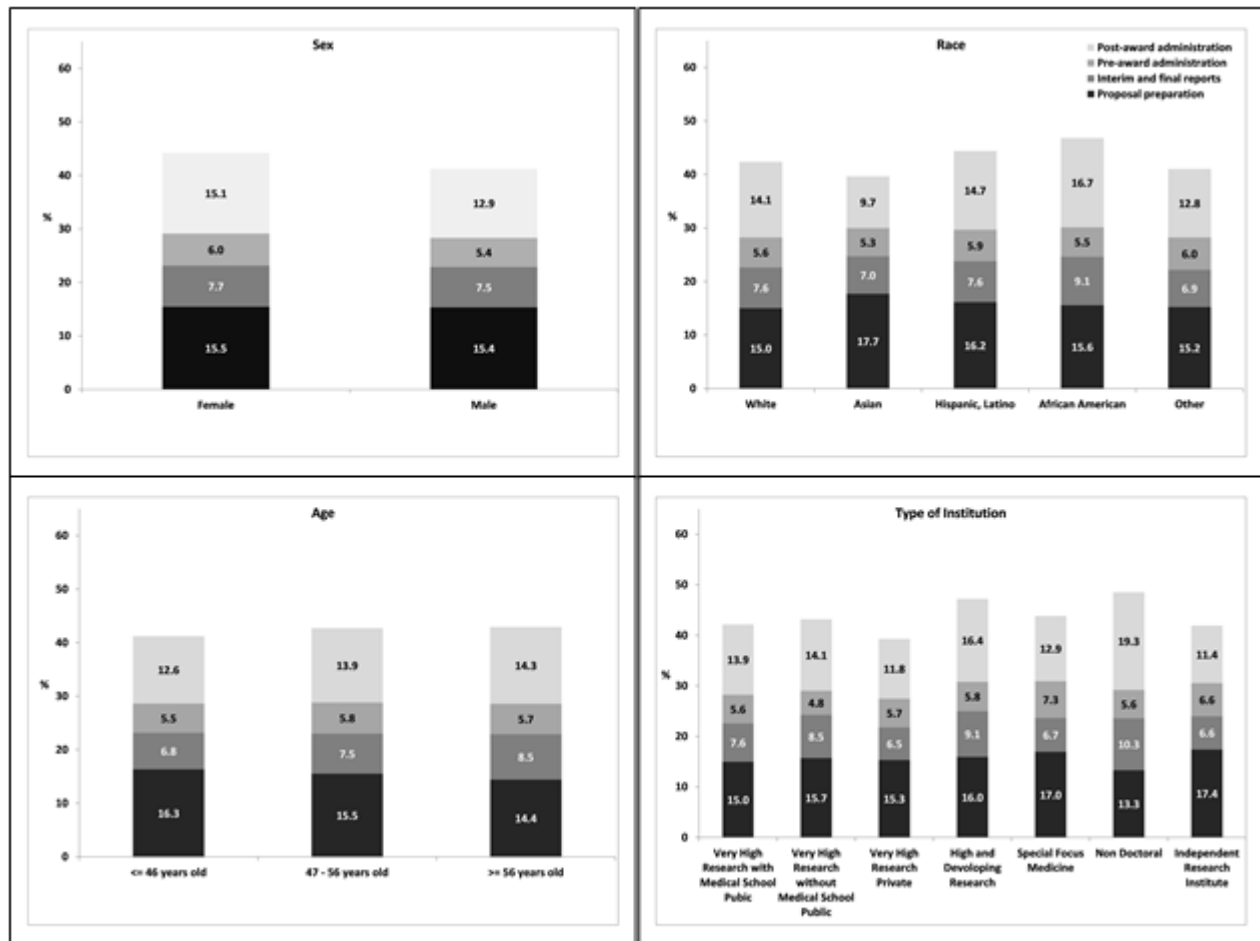


Figure 5. Time spent on administrative tasks by sex, race, age and type of institution

Pre-award administration: The percentage of time spent on pre-award administration did not differ by sex, race or age, but did differ some by type of institution. Respondents working in institutions with a special medicine focus reported spending 7.3% of research time on pre-award administration compared to a percentage of 4.8% among respondents from very high research institutions without a medical school.

Post-award administration: Female respondents spent more of their research time (15.1%) on post-award administration than did male respondents (12.9%, $p < 0.001$). The time spent on post-award administration also differed by race and age. African American respondents reported spending 16.7% of research time on post-award administration compared to a percentage of 9.7% among Asian respondents ($p = 0.004$). Respondents 56 years of age or older spent 14.3% of time in post-award administration compared to a percentage of 12.6% spent in post-award administration among those 46 years of age or younger ($p = 0.02$). Post-award administration percentages varied across institutional categories, the lowest being 11.4% at independent research institutes and the highest 19.3% at non-doctoral institutions.

Appointment Types and Administrative Roles

Figure 6 shows the percentages of research time respondents reported spending on specific research-related administrative tasks by appointment type and administrative roles. Faculty members with nine-month academic appointments tend to spend proportionately less time on administrative responsibilities than others. Similarly, professors at all ranks generally spend less time on administrative responsibilities than those with other job titles. Those with higher level administrative roles such as Provost, Vice President, or Dean reported proportionately more time taken away from research by administrative responsibilities than their colleagues. This is not surprising given their administrative job responsibilities and the fact that their research assignment is typically much reduced relative to most other faculty.

Proposal preparation: The percentages of research time spent by respondents on proposal preparation did not vary substantially by appointment length, but was slightly higher (17.5% vs. 14.8%) among those who were tenure earning compared to those who were not on a tenure track. Respondents at the highest administrative levels, Provost, Chancellor or Vice President (11.6%), or Dean (13.1%), spent the least amount of research time on proposal preparation when compared to Chairs (14.9%), Directors (16.1%) and respondents with no administrative role (15.2%). Respondents with a rank of Professor spent 14.9% of their research time on proposal preparation compared to percentages of 16.1% among Associate Professors and 17.0% among Assistant Professors. Those with a rank other than Assistant, Associate or Full Professor spent the least amount of research time on proposal preparation (12.9%).

Interim and final reports: When evaluated as a function of appointment length and tenure status, the percentage of research time spent preparing interim and final reports ranged from 4.7% among those with 9 month appointments to 6.5% among those with 12 month appointments, and from 6.5% among those seeking tenure to 8.0% among those in a non-tenure track position. Administrative role also affected the amount of active research time spent on interim and final report preparation, with respondents at the rank of Provost, Chancellor or Vice President reporting a percentage of 13.7% and those with no administrative role reporting a percentage of 6.8%. Respondents with a rank other than Assistant, Associate or Full Professor reported the highest percentage of research time spent on interim and final reports (9.4%) compared to 6.5%, 7.3% and 7.9% reported by Assistant, Associate and Full Professors respectively.

Pre-award administration: The percentage of research time spent on pre-award administration ranged from 12.1% for respondents with an appointment length < 9 months to 15.8% for those with an appointment length of 10 or 11 months, and from 5.4% among tenured respondents to 6.3% among respondents not on a tenure track. Individuals with the highest academic rank reported the highest percentage of active research time spent on pre-award administration: at 7.1% among those at a Provost, Chancellor or Vice President rank compared to 5.1% among those with no administrative role. Time spent on pre-award administration did not differ by academic rank.

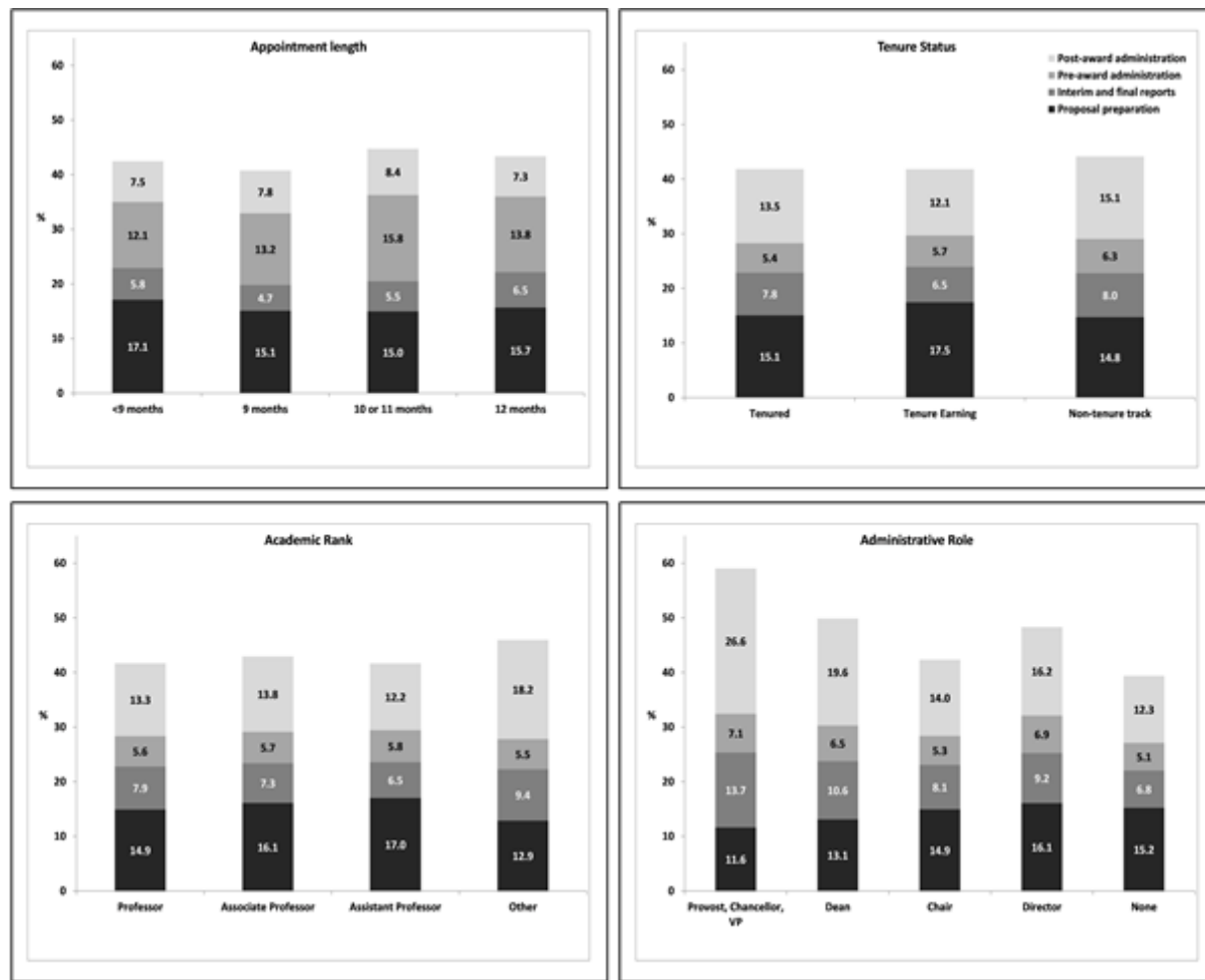


Figure 6. Time spent on administrative tasks by appointment type and administrative role

Post-award administration: Active research time spent on post-award administration ranged from 7.3% among those with a 12 month appointment to 8.4% among those with a 10 or 11 month appointment, and from 12.1% among those in a tenure earning position to 15.1% among those not on a tenure track. Administrative role had a large influence on active research time spent on post-award administration. Respondents with Provost, Chancellor or Vice Provost roles spent 26.6% of active research time on post-award administration compared to 12.3% among individuals with no administrative role. The percentage of time spent in post-award administration was highest among respondents with ranks other than Assistant, Associate or Full Professor (18.2%).

Funding Agency, Field of Study and Project Type

Figure 7 shows the percentages of research time respondents reported spending on specific research-related administrative tasks by funding agency, field of study and project type. There were large differences in the proportion of time spent on administrative tasks across all three

categories. Administrative workload percentage by funding agency was highest for the U.S. Department of Education, U.S. Department of Health & Human Services (non-NIH), and the U.S. Department of the Interior, and lowest for the National Science Foundation and the U.S. Department of Energy.

By field of study, administrative workloads were proportionately lowest for physical sciences and math, and highest for education and the humanities. It is important to note that education and the humanities also tended to have smaller research assignments, so that the same administrative workload would take proportionately longer. A similar pattern was observed for type of research project, wherein administrative workload was proportionately much higher for service, training, and curriculum development projects than for either basic or applied research projects. Again this partially reflects the smaller research assignments of the typical investigator on the non-research focused projects.

Proposal preparation: The percentage of active research time spent on proposal preparation as a function of funding agency ranged from 10.3% for the U.S. Department of Education and the U.S. Department of Energy to 16.3% for the National Institutes of Health. There were also differences in the percentage of active research time spent on proposal preparation as a function of field of study and type of research.

Respondents whose primary area of research was business spent 9.4% of their active research time on proposal preparation compared to a percentage of 17.4% reported by

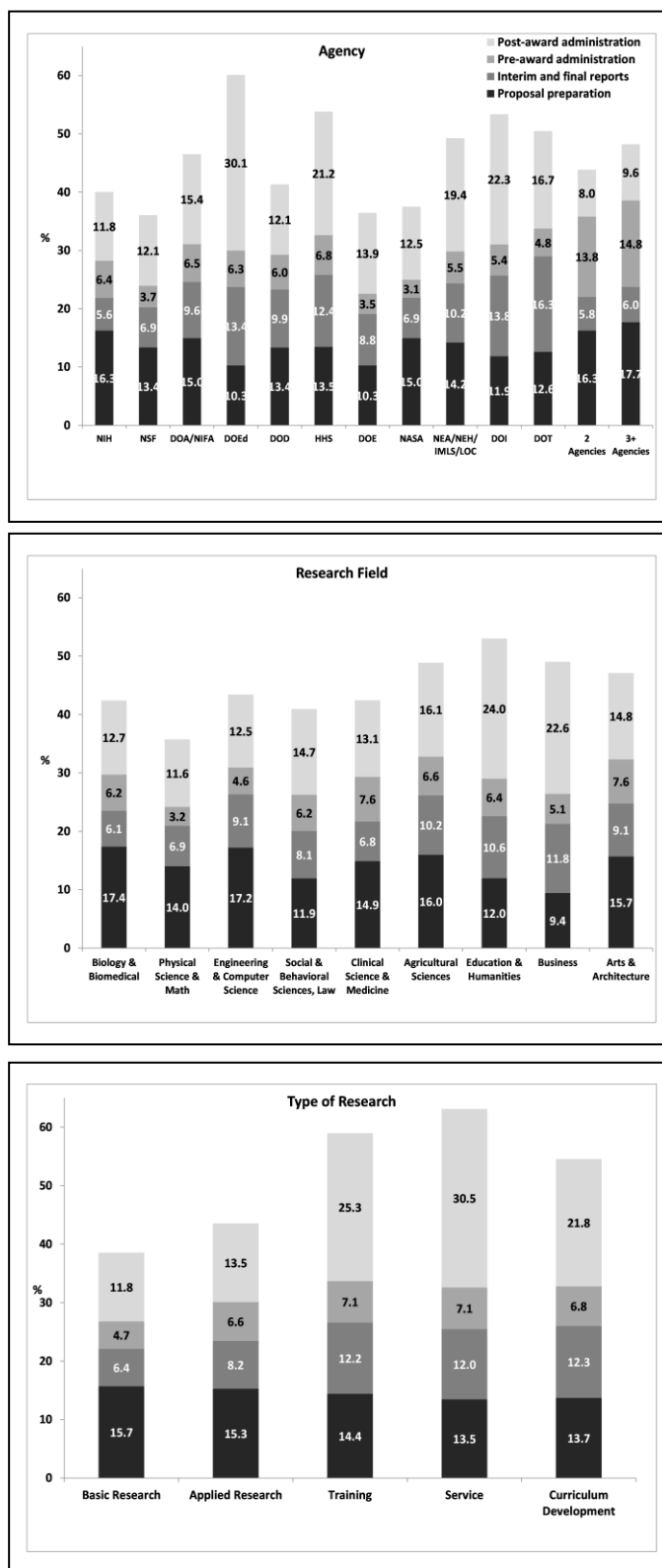


Figure 7. Time spent on administrative tasks by funding agency, field of study and focus.

those whose primary research field was biology or biomedical sciences. Respondents whose research focus was service or curriculum development reported 13.5% and 13.7% of their active research time engaged in proposal preparation compared to percentages of 15.7% and 15.3% among those whose focus was basic or applied research, respectively.

Interim and final reports: The amount of active research time spent on preparation of interim and final reports also varied across funding agencies with respondents whose funding was from the National Institutes of Health reporting 5.6% and those whose funding was from the National Science Foundation reporting 6.9% of active research time devoted to interim and final report preparation, compared to percentages of 16.3% among respondents whose funding was from the U.S. Department of Transportation and 13.8% among respondents whose funding was from the U.S. Department of the Interior. The percentage of active research time spent on interim and final report preparation also varied as a function of field and focus of research. Respondents in biology and biomedical sciences or physical science and math reported the lowest percentages (6.1% and 6.9%, respectively) and those whose fields were agricultural sciences or education and humanities reported the highest percentages (10.2% and 10.6%, respectively).

Pre-award administration: Active research time devoted to pre-award administration by funding agency ranged from 3.1% for the National Aeronautics and Space Administration to 6.8% for the U.S. Department of Health and Human Services. The percentage of time engaged in pre-award administration ranged from 3.2% among researchers whose grants were focused on physical science and math to 7.6% among those with grants focused in clinical science and medicine or arts and architecture. Respondents with a basic science focus spent the least amount (4.7%), and respondents with either training or service focus spent the most amount (7.1%) of active research time engaged in pre-award administration.

Post-award administration: Respondents whose funding was from the U.S. Department of Education reported the highest percentage of research time engaged in post-award administration (30.1%). Post-award administration percentages were also high among those whose funding was from the U.S. Department of the Interior (22.3%), and the U.S. Department of Health and Human Services (21.2%). Respondents reporting the least amount of active research time spent engaged in post-award administration were those whose funding was from the National Institutes of Health (11.8%), the U.S. Department of Defense (12.1%), and the National Science Foundation (12.1%). Post-award administration required the highest amount of active research time for those whose research field was in education and the humanities (24.0%) and the least amount of active research time for those whose research field was in physical science and math (11.6%). Active research time spent engaged in post-award administration was highest among respondents whose research focused on service (30.5%), training (25.3%) and curriculum development (21.8%).

Amount and Number of Federal Grants and Percent Funding from Federal Dollars

Figure 8 shows the percentage of research time respondents reported spending on specific research-related administrative tasks by amount and number of federal grants, and by percentage of total grant funding from federal dollars. Principal investigators with direct costs of \$1 million or more and those with five or more federal projects reported proportionately more time dealing with administrative tasks. Those for whom less than 70% of their project funds came from federal sources also reported relatively higher administrative workload, however, on average these investigators also tended to have somewhat smaller research assignments.

Proposal preparation: The percentage of active research time spent on proposal preparation did not vary widely by amount of federal funding, and it ranged from 13.8% among those with total award amounts greater than \$3 million to 15.8% among those with total award amounts in the \$500,000-999,000 range. Active research time engaged in proposal preparation was higher among those with five or more grants or contracts (17.5%) than among those with one contract (13.7%). Active research time spent on proposal preparation decreased as the percentage of funding from federal sources increased. Those with 70% or less funding from federal sources reported spending 16.6% of active research time on proposal preparation compared to 13.5% among those with 91% or more of their funding from federal sources.

Interim and final reports: Active research time spent on interim and final reports increased with increasing amounts and number of federal grants or contracts and decreased as the percentage of

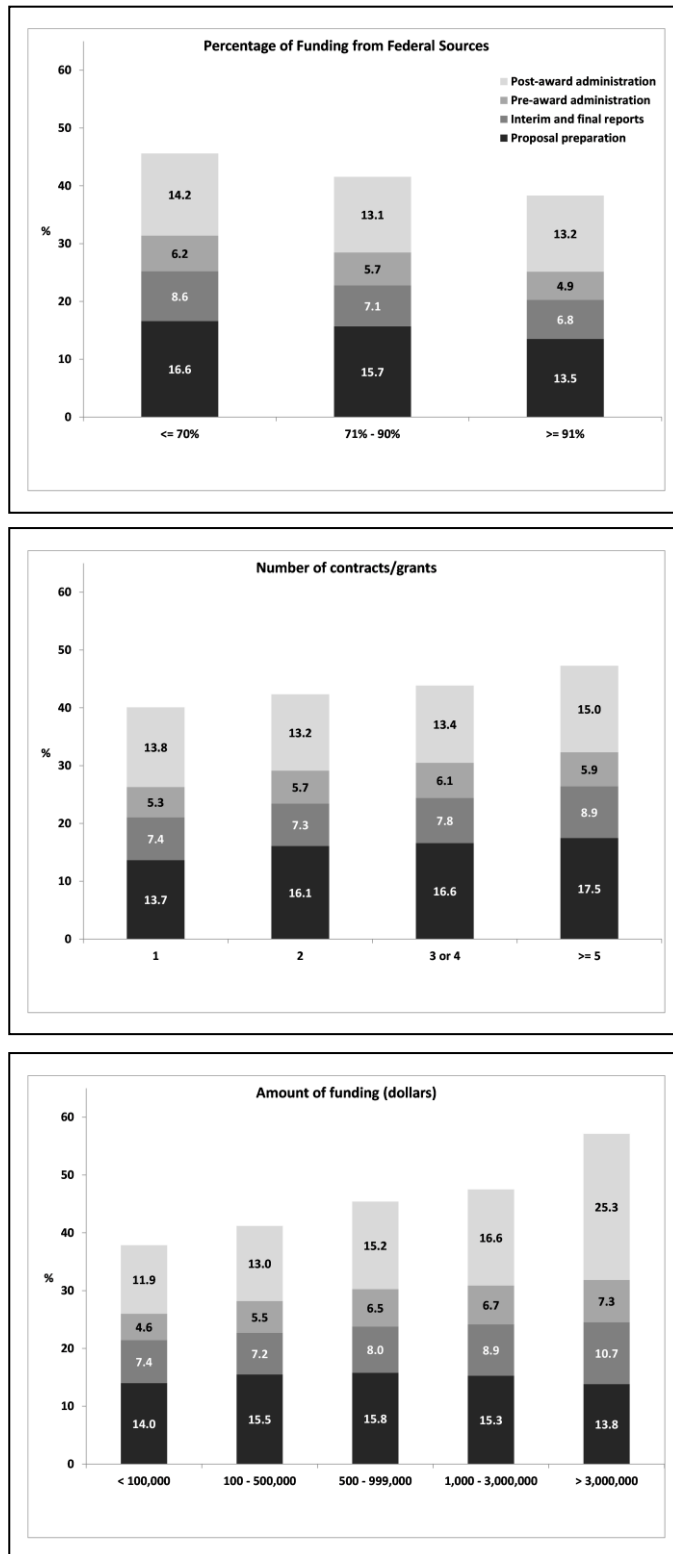


Figure 8. Time spent on administrative tasks by amount of federal funding.

total funding from federal sources increased. Those with dollar amounts greater than \$3 million reported spending 10.7% of active research time on interim and final report preparation compared to a percentage of 7.4% among those with less than \$100,000 in funding. Those with five or more grants or contracts reported spending 8.9% of active research time engaged in interim and final report preparation compared to 7.4% among those with only one grant or contract. Respondents with 70% or less funding from federal sources indicated that 8.6% of their active research time was spent on interim and final report preparation compared to 6.8% among those with 95% or more of total funding from federal sources.

Pre-award administration: The percentage of active research time spent on pre-award administration increased with increasing amounts of federal grants or contracts, and decreased as the percentage of total funding from federal sources increased. Active research time spent on pre-award administration ranged from 4.6% among those with less than \$100,000 in funding to 7.3% among those with greater than \$3 million in funding. Respondents with 70% or less of their research funding from federal sources spent 6.7% of active research time engaged in pre-award administration compared to a percentage of 4.9% among those with 91% or more of their funding from federal sources.

Post-award administration: Active research time spent on post-award administration increased with increasing amounts of federal grants or contracts and decreased slightly as the percentage of total funding from federal sources increased. Those with less than \$100,000 in total awards spent 11.0% and those with more than \$3 million spent 25.3% of active research time on post-award administration. Respondents with 70% or less of their research funding from federal sources spent 14.2% of active research time engaged in pre-award administration compared to a percentage of 13.2% among those with 91% or more of their funding from federal sources.

In summary, these data indicate that the amounts of time spent on specific administrative tasks varied some by general demographic characteristics and type of institution, but differed more as a function of academic appointment and administrative role, with those in non-tenure track positions and those with higher administrative roles spending proportionately more time performing tasks associated with interim and final report preparation and with post-award administration. Respondents whose funding was from the National Science Foundation or the U.S. Department of Energy reported spending the least proportion of time on administrative tasks and those whose funding was from the U.S. Department of Education, (non-NIH) U.S. Department of Health and Human Services and the U.S. Department of the Interior reported proportionately the most amount of time on administrative tasks. Consistent with these findings were reports of relatively high post-award administrative workload for projects in the education and humanities fields (though overall research assignments also tend to be smaller in these fields), and for those with a focus on service, training, or curriculum development.

Administrative Workload Profiles

The next analysis was conducted in order to develop a small set of distinctive administrative workload profiles that can be used to understand which types of responsibilities tend to co-occur. These profiles may prove useful for identifying classes of principal investigators that are likely to be especially inundated with excessive exposure to many different responsibilities, and to isolate particular populations that may be especially susceptible or immune to various aspects of workload associated with federally-funded projects. These profiles may also prove useful in organizing types of workload for future analysis and interpretation at the institutional level.

The analysis begins with the 23 subcategories of administrative workload responsibilities described previously as comprising pre-award and post-award administration. Based on the previous analysis, a set of Common Responsibilities was identified as those responsibilities shared by over 80% of respondents. This set includes Finances, Personnel, and Effort Reporting (FPE) requirements. The remaining 20 subcategories were subjected to a Principal Component Analysis to determine the extent to which different types of administrative workload tend to cluster together. The data for each subcategory were participants' ratings of the time taken away from research by the administrative task wherein ratings were: 1= not at all, 2=a little bit, 3=some, 4=quite a bit, 5=very much. A score of 0 was imputed for those participants who reported that they did not experience the administrative responsibility.

Principal Component Analysis was used to identify shared variance among subgroups of responsibilities. This type of analysis is closely related to Factor Analysis, and is typically used to conduct exploratory analyses to explain shared variance among variables. The analysis proceeded by extracting independent principal components of variance to reveal aspects of the inherent structure of the original dataset. Each extracted principal component is independent of the other components, and the total number of components that can be extracted is less than or equal to the original number of variables.

Typically, the goal of Principal Component Analysis is to extract the smallest number of components sufficient to explain a majority of the variance in a data set. Earlier components necessarily explain more variance than later components, so a stopping rule is typically used to determine how many components to extract. One of the most common stopping rules relies on an index known as an eigenvalue. When an eigenvalue is less than one, the associated principal component explains less variance than one of the original variables and, thus, is not considered worth including.

Identifying Administrative Workload Profiles

For the current dataset, a total of five principal components were selected based on the coherence of results and increments in variance accounted for by additional components. All eigenvalues were greater than one and the total variance accounted for by the five components was 53%, or

just over half of the variance associated with responses to the 20 administrative responsibility categories. The list of five components and their associated administrative responsibilities appears in Table 6.

The first principal component accounted for almost one quarter of the variance and included administrative responsibilities associated with assuring research safety and protecting animal subjects. This suggests that investigators who deal with one type of safety requirement are likely to have to deal with several others as well. For instance, a typical investigator who needs to deal with biosafety is more likely to deal with chemical safety and radiation safety as well. Those who deal with safety issues are also more likely to conduct research involving animal subjects, and therefore have to comply with IACUC requirements as well. The next principal component accounted for over 10% of the variance in responses and represents requirements specific to human subjects research. This set of responsibilities routinely includes IRB requirements and may also involve HIPAA requirements and duties associated with clinical trials.

The last three components represented between 5 and 10% each of the variance in ratings of time taken away from research. The General Compliance component includes compliance requirements that exist in different forms across different agencies such as conflict of interest, data sharing, and responsible conduct of research requirements. The National Security component includes regulations regarding export controls, select agents, and critical infrastructure. The Contract-related component captures those unique responsibilities relating to managing subcontracts, dealing with intellectual property, and complying with reporting requirements for funding associated with the American Recovery and Reinvestment Act.

Table 6. Five Extracted Principal Components Illustrating the Shared Structure of the Original 20 Categories of Workload Responsibilities

Principal Component	Percent of Variance Accounted For	Characteristic Responsibilities
Safety & Animals	22.4%	general laboratory safety, chemical safety, biosafety, IACUC, recombinant DNA, radiation safety, controlled substances
Human Subjects	11.8%	IRB, HIPAA, clinical trials
General Compliance	8.0%	COI, RCR, data sharing, cross-agency differences
National Security	5.5%	export controls, select agents, protected critical infrastructure
Contract-related	5.1%	subcontracts, intellectual property, ARRA

Prevalence of Administrative Workload Profiles

The prevalence of these clusters of responsibilities among principal investigators was evaluated. To determine which components applied to each of the respondents, standardized rating scores on each of the original variables were multiplied by the appropriate component weights or loadings to get the associated component score. A respondent was coded as experiencing the responsibilities associated with a given component if the corresponding component score was greater than 2.00. The distribution of administrative workload profiles appears in Figure 9.

The left-hand side of the figure shows the two groups of participants who did not fall within any of the profiles identified by principal components analysis because they did not experience a sufficient number of the administrative responsibilities within those components. Roughly 27% of respondents reported only experiencing the common FPE workload, and another 6% reported no systematic set of responsibilities. These two profiles can be combined into a group of roughly one-third of respondents who experience no more than the most common of responsibilities.

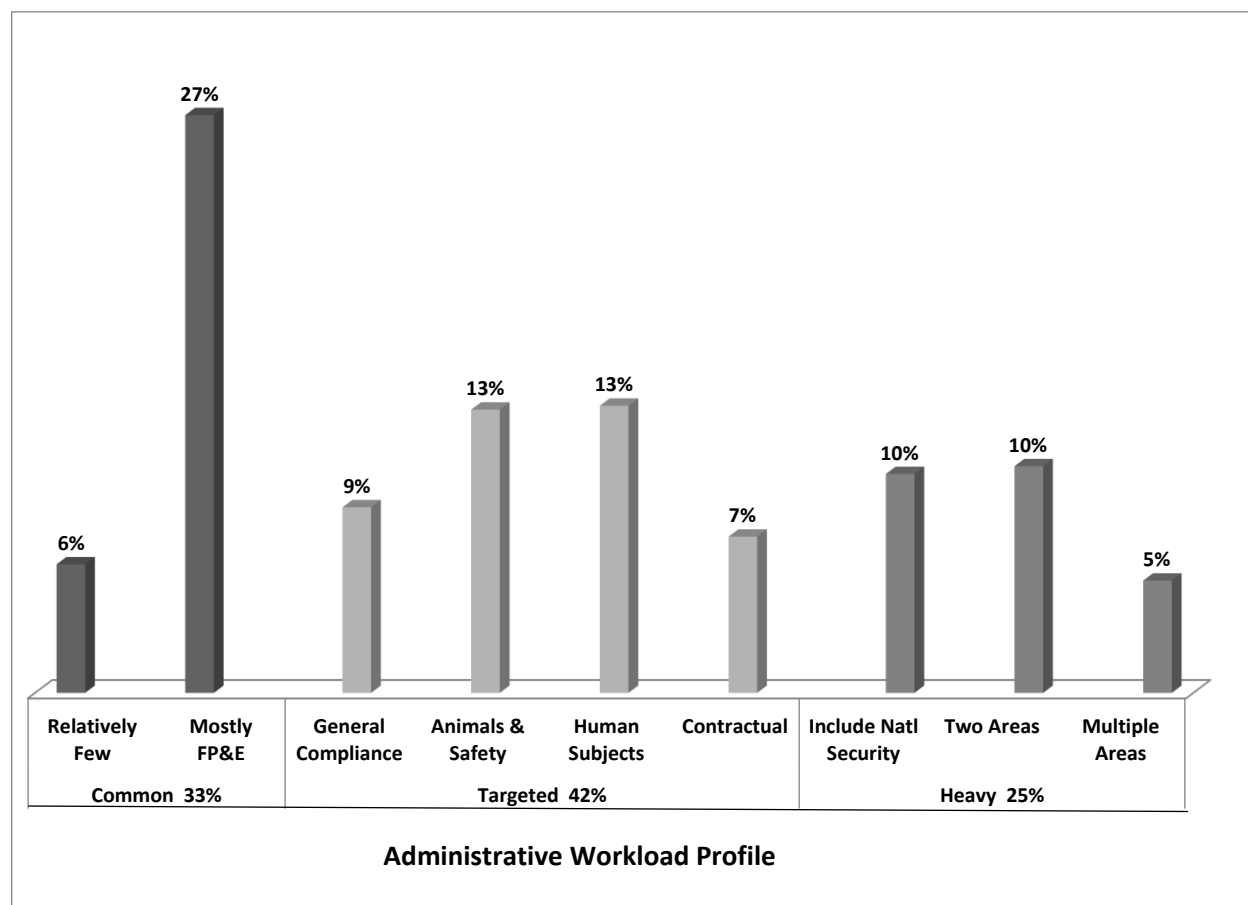


Figure 9. Distribution of administrative workload profiles. *N*=12,816 representing all those with complete data for all 23 original administrative workload categories.

The middle section of the graph represents those who, in addition to having FPE responsibilities, were identified as having a targeted cluster of responsibilities represented by one of the principal components. Just over 40% of respondents fall into one of these profiles, with 13% experiencing safety and animal subject responsibilities, 13% experiencing human subject responsibilities, 9% focusing on general compliance concerns, and 7% handling contract-related responsibilities. These differences in groupings show that different investigators need to focus on different administrative responsibilities, depending on fundamental characteristics of their research.

The right-hand section of the graph describes the remaining 25% of PIs who experienced FPE responsibilities plus two or more of the targeted sets of responsibilities. Almost all of the respondents who experienced responsibilities associated with national security concerns also experienced at least one of the other categories of targeted responsibilities. This group makes up about 10% of all respondents. Another 10% experienced FPE responsibilities plus two targeted workload areas, and the final 5% experienced three or more of the targeted workload areas.

These findings indicate that over half of the respondents are required to respond to targeted sets of responsibilities beyond those associated with FPE, and often they need to respond to more than one targeted set of responsibilities. The clustering of responsibility types within these profiles may be instructive for both training purposes and for evaluation with an eye to streamlining processes associated with meeting those responsibilities.

Administrative Workload Profiles and Time Away from Active Research

One question of interest involves differences in the administrative workload implications of having particular profiles. Are there systematic differences in the amount or focus of time taken away from active research? Table 7 shows the mean report of percent time taken away from research by the primary areas of workload responsibility.

As might be expected, moving from top to bottom of the table shows decreases in the average amount of time spent on active research and increases in time taken away from research by administrative responsibilities. This follows from the fact that those in the top categories reported experiencing fewer of those responsibilities and those in the categories toward the bottom of the table reported experiencing a higher number of those responsibilities.

Overall those reporting relatively few administrative responsibilities associated with their federally-funded projects estimate that approximately 31% of their research time is devoted to requirements (including proposal and report preparation). This increases dramatically to 40% for those who experience the common FPE responsibilities of project finances, personnel, and effort reporting. Adding on a targeted set of responsibilities such as animals/safety, human subjects, general compliance, or contract-related workload increases estimates of time taken away from research to an average of approximately 43%. Those who have a heavy workload with two or

more targeted and/or national security requirements report an average of 46% of their research time, or almost half, is taken up dealing with these administrative responsibilities.

Table 7. Report of Average Percent of Research Time Devoted to Active Research versus Administrative Requirements as a Function of Administrative Workload Profile

Administrative Workload Profile	N	N%	Average % Research Time Devoted to Each Activity				
			Active Research	Proposal Preparation	Pre-Award Admin	Post-Award Admin	Interim/Final Reports
Relatively Few	757	6	68	13	3	8	7
Mostly FPE	3402	27	60	13	4	14	9
FPE plus							
Safety/Animals	1093	9	55	16	6	15	9
Human Subjects	1668	13	59	17	6	13	5
General Compliance	1691	13	58	14	7	14	7
Contract-related	920	7	54	15	5	16	9
FPE plus							
Include Natl Security	1289	10	54	18	7	13	7
Two Areas	1335	10	54	18	7	14	8
Multiple Areas	661	5	54	18	8	13	7
Overall	12816		58	15	6	14	8

Note. FPE = Finances, Personnel, and Effort Reporting.

Time taken away from research by proposal preparation and pre-award administrative responsibilities increase gradually as one moves from the less intensive administrative workload profiles to the more intensive profiles. In contrast, time taken away by post-award responsibilities increases sharply from those who report relatively few administrative responsibilities to those who report only the common FPE responsibilities. This suggests that these three responsibilities are especially large contributors to post-award administrative workload.

Although proposal preparation increases from the lighter to the heavier administrative workloads, interim and final report preparation time stays relatively steady independent of workload profile. Approximately 7-9% of research time is consistently taken up by report preparation. For all profiles, proposal preparation and post-award administration tend to take substantially more time away from research than pre-award administration or report preparation.

Administrative Workload Profiles and Benefits of Additional Assistance

As might be expected, estimates of potential time savings from the addition of administrative assistance varies systematically as a function of administrative workload profiles. The perceived time savings from additional administrative help increases as administrative workload increases.

Those who reported relatively few administrative requirements felt that additional administrative assistance would reduce their administrative workload by an estimated average of 29%. Those whose primary experience was limited to the common FPE requirements provided an estimated median decrease in administrative workload of 33% with the addition of needed help. For those with only a single targeted source of administrative workload, those working with human subjects reported the greatest potential percent time savings (41%), followed by general compliance (38%), and then contract-related (35%) and animals & safety (34%) requirements. Finally, those experiencing multiple targeted sources of administrative workload reported a potential savings of 40-42% of their administrative time.

Absolute estimates of potential benefits of more administrative assistance also increased systematically as administrative workload increased. In terms of hours that might be regained for active research, median estimates were approximately two hours per week for those with relatively few administrative requirements, four hours per week for those experiencing the common FPE requirements, about five hours per week for those with a single source of targeted administrative workload, and approximately six hours per week for those with multiple targeted sources of administrative workload.

Analysis of Specific Workload Responsibilities and Associated Frustrations

To gain a more detailed understanding of specific aspects of workload responsibilities that take time away from active research on federally-funded projects, both quantitative and qualitative analyses were conducted. The quantitative analysis examined data provided by respondents who experienced substantial workload from particular administrative responsibilities. For these respondents, additional ratings were collected regarding specific tasks within 22 of the 23 pre-award and post-award administrative tasks described previously. They rated the extent to which each of the separate tasks within a given administrative responsibility took time away from active research on federally-funded projects. Possible ratings were: 1= not at all, 2=a little bit, 3=some, 4=quite a bit, 5=very much.

The qualitative analysis explores the content of responses to the following open-ended item: *Please comment on the administrative responsibilities of federally-funded research that are most frustrating or problematic in your view.* The goal of this analysis was to determine both the number and types of frustrations volunteered by respondents, not only to corroborate but also to expand the items that were included in the survey. We also hoped to gain insight into some of the specific tasks that could later become the focus of streamlining efforts.

After removing all blank and N/A comments for the open-ended frustration item, comments from a total of 6,105 respondents were subjected to the coding analysis. A systematic search of terms was conducted to identify all comments related to (1) proposal preparation, (2) interim/final reports, and the 23 administrative workload requirements specifically identified within the survey. Comments could be coded as referring to one or more areas. Keyword searches of

words or word stems were accomplished using the search and conditional formatting functions within Microsoft Excel. The initial coding was followed by a sort-and-review process for each of the 25 categories. For each category, all preliminary items were reviewed (1) to determine whether they did in fact belong in the category, and if so (2) to identify recurring themes within the category. Potential themes were noted throughout the sort-and-review process, with attention to the frequency of these themes within the category. Review by a second, and occasionally third, coder occurred for several subsets of the comments, demonstrating high levels of agreement among coders.

In addition, a review was also conducted to identify potential emergent themes. After review of all comments, suggestions were obtained from each of four reviewers, and the emergent theme categories were then developed through consensus. A total of 11 categories resulted for the frustration item. Keywords were identified for these emergent categories as well, with the same sort-and-review process described previously.

The results are presented beginning with proposal preparation and report preparation, followed by each of the 23 pre-award and post-award administrative responsibilities ordered according to workload profiles described in the previous analysis. These are organized roughly in the order of the most common and most intensive administrative responsibilities. All of the results include the qualitative content analysis including: a report of the number of comments within each category, a list of search keywords, a summary of content themes, and details of the content analysis for categories with over 50 comments. For the pre-award and post-award administrative categories, we also include the quantitative results showing mean ratings for specific subcategories of tasks within the responsibility. For completeness, we conclude this section by identifying and describing emergent themes within the 'frustration' comments that were not explicitly included as items within the survey.

Proposal and Report Preparation

The first two categories of responses to be examined are proposal preparation and interim/final reports, as these were categories within the FDP Faculty Workload Survey that by themselves were estimated to take up almost one quarter of the research time that might otherwise have been allocated to active research on federally-funded projects.

Although there are some aspects of proposal preparation and report writing that may fall outside a strict definition of "administrative workload," these tasks are nevertheless direct responses to requirements associated with obtaining and conducting federally-funded research, and they have the capacity to take time away from active research. Proposal and report preparation requirements for federally-funded research are relevant to the extent that these requirements may needlessly reduce the nation's capacity for research and reduce the efficiency of the nation's scientists. Like other potentially burdensome requirements associated with federally-funded research, these were included in the Faculty Workload Survey as instrumental to the goal of

increasing the efficiency and effectiveness of the administrative processes associated with federal research funding.

The value of including these categories is reflected in the frequency with which proposal preparation and interim/final report preparation were identified as especially frustrating responsibilities associated with federally-funded research. Proposal preparation was volunteered as one of the most frustrating responsibilities by almost 1,000 survey respondents, and interim/final report preparation was specifically cited by over 600 respondents. Tables 8 and 9 provide summaries of the primary themes of frustration comments for proposal preparation and report preparation, respectively.

Proposal Preparation

Researchers are routinely concerned about the immense time that proposal writing takes away from research. Over 300 researchers specifically expressed concern about the time drain associated with proposal writing, using phrases such as “overly time-consuming,” “excessive time requirements,” and “waste of time.” A related topic expressed in almost one-third of the proposal-related comments referred to the low cost-benefit ratio associated with proposal writing. Since so few proposals are funded, the odds are very high that the direct payoff will be nothing. This is an enormous source of frustration, and brings a sense of futility. Many report that this is by far the most unnecessarily time-consuming and ultimately most wasteful aspect of research-related workload.

Because a researcher’s time devoted to preparing proposals is not supported by federal funds, the requirement can only be fulfilled through the investigator’s institution-funded research assignment. Even if the project is eventually funded, excess time spent on proposal preparation prevents actively engaging in research. If the project is not funded, the entire proposal-writing exercise undermines the researcher’s ability to make progress on his or her program of research. As the comments repeatedly emphasized, this is especially detrimental when low funding rates ensure that the vast majority of proposals will not be funded. The problem is compounded when investigators need to write multiple proposals, either because they need more than one funded project at a time to support their research program or because their funding typically lasts for only a short period.

A third common complaint involves the extensive requirements and details required in proposals that may not be necessary, or could at least be postponed until it is clear they will be useful. A common request is to delay any strictly administrative requirements until after a favorable scientific review. Again, this could eliminate (or substantially reduce) the wasted effort exerted for the 80-90% of proposals that do not get funded. Examples of requirements that could be postponed until after a favorable review or funding decision include IRB and IACUC requirements, budgets and budget justifications, RCR requirements, data management plans, current and pending support, and other compliance-related forms. In addition, requests for

simplification of proposal instructions --and overly detailed requirements--are frequent. The excessive need for details within the various different types of requirements could be reduced by removing redundancies, unnecessary or irrelevant information, inflexible response formats that often are not a good fit, and overly conservative measures aimed at rare problems, especially if the measures are not likely to ameliorate or prevent the problem.

Table 8. Themes of Frustration Comments Related to Proposal Preparation with Counts

(Total number of comments = 935)

Comment Theme: Proposal Preparation	Count
Overly Time-Consuming Process, Takes Time from Research	388
Too Much Effort for Too Little Benefit	347
Unnecessary Requirements/Excessive Details	334
Issues in the Review and Approval Process	132
Unreasonable Expectations Regarding Budgets	103
Different Requirements and Forms Across Agencies	56
Constantly Changing Requirements, Formats and Content	50

Note. A given comment covered on average 1.5 of the above themes, including a total of 91 comments that were not specific about why proposal preparation was considered frustrating.

One area of proposal writing that is considered especially onerous by respondents is the preparation of detailed budgets and budget justifications. In addition to appeals to move toward a just-in-time provision of budget information, researchers are also requesting that the requirements for budget detail be reduced. Some focus on particular areas, such as detailed travel or supply cost estimates, whereas others advocate a holistic or modular approach in which rough estimates for virtually all expenses would suffice. Many respondents point out that developing budgets is extremely time-consuming, cannot be predicted with precision, and is a task completely removed from the research itself. Developing budgets leads to frustration, again, because of the low likelihood of funding but also because, when a proposal is successful, the budget typically needs to be modified before the award is finalized. In addition, many researchers find it difficult to complete budget-related functions without effective administrative support.

Another source of frustration in proposal writing involves aspects of the review and approval process. In many cases, researchers would appreciate longer lead times when requests for proposals are released by funding agencies in order to gain a better opportunity to prepare a high-quality proposal. On the other hand, they would also like shorter turn-around times between proposal submission and funding decision, and less delay between a favorable decision and receipt of the award. Another common theme is the desire for a fair and meaningful review process. Some complain about proposals being rejected for minor formatting errors. Others complain that reviews are often conducted by people who may not read the proposal carefully,

who may lack the necessary expertise to evaluate the proposed work, or who may be biased in some way. Review feedback is not always helpful and can be inconsistent from one reviewer to another or, for re-submitted proposals, from one review panel to another. This again is seen as wasteful in that addressing reviewer comments from one source may actually hurt resubmissions if the next reviewer has a conflicting point of view. Some wonder why previous reviews and reviewers are not explicitly included as part of the resubmission process, offering the typical journal review process as a working example. Still others question why the resubmission process is limited in some competitions.

Other aspects of proposal writing that are seen as particularly burdensome include differences in requirements across agencies and continual changes in requirements, formats, and content. Keeping up with all of the differences across agencies and changes over time makes compliance difficult, and necessarily creates the need for ever-more bureaucratic solutions. It also introduces the need for strategies to regularly develop and update training programs both for researchers and administrative staff. Large amounts of time are spent by investigators to re-format the same information onto different/complex forms for different funding agencies (e.g., budgets and budget justifications, biosketches, current and pending support, RCR training documentation, IRB/IACUC documentation). In addition, researchers point out that newly introduced changes almost always increase the amount and complexity of proposal requirements rather than decreasing them. It also opens the door to various sources of inconsistency and conflict. One particularly troublesome example occurs when conflicting guidelines create a double-bind wherein satisfying one set of requirements automatically violates the other set.

Progress/Final Report Preparation (non-ARRA)

Once a federally-funded project has been awarded, there are routine requirements for interim reports during the project and a requirement for a final report at the end of the project. Over 600 researchers volunteered that these reports are among the most frustrating requirements associated with federally-funded research. Table 9 summarizes the primary sources of frustration, which are in many ways similar to concerns with proposal preparation.

The most commonly articulated frustration with reports again involves the sense that research time is being wasted. Many respondents were concerned that interim/final reports take significant time to prepare, but that the information in the reports is not used for anything. The frustration arises from the combination of the need to spend large amounts of time coupled with the perception that the time does little or nothing to advance the research (or to communicate to others about the research). Some feel that the required information is of little substance, and does not accurately capture or demonstrate research progress. The one-size-fits-all approach that is common to reporting is often seen as too rigid to effectively communicate research objectives and accomplishments. Researchers are also reluctant to submit reports that they believe are rarely read, and for which no useful feedback is received.

Although timing and frequency vary with agency, another common concern is that reports are required too frequently and at arbitrary intervals. Researchers were especially apt to question the need for monthly and quarterly reporting, with some also noting that routine phone calls and meetings with program officers are sometimes added to the reporting requirements. In terms of timing, researchers worry that arbitrary timetables for reporting sometimes means that there is

Table 9. Themes of Frustration Comments Related to Interim/Final Reports with Counts

(Total number of comments = 612)

Comment Theme: Interim/Final Reports	Count
Overly Time-Consuming Process with Little or No Value	128
Too Frequent and Arbitrary Reporting Intervals	119
Unnecessary Requirements/Excessive Details	89
Ambiguities and Constantly Changing Requirements	89
Redundancies and Differences Across Agencies	86

Note. A given comment covered on average 0.8 of the above themes, including a total of 192 comments that were not specific about why report preparation was considered frustrating.

relatively little to report, especially in early reports when funding has been delayed or in longer-term projects when results are not immediate. The overriding concern is that the interim report will not be an accurate reflection of the progress being made—another frustration that adds to the sense that the effort to prepare the report is wasted.

As with proposals, researchers caution against overly restrictive, complex, and specific requirements within reports. Many are especially frustrated by forms that compartmentalize or force fit responses in ways that prevent a clear, straightforward accounting of progress. This rigidity also leads to a level of detail that many feel is unnecessary. For example, the necessity to create various kinds of tables (e.g., to report race and ethnicity of participants) is excessively time-consuming. Survey respondents suggest that many interim/final reports are longer than they need to be and contain much information that no one ever uses. Respondents essentially ask: Is there a way to streamline this reporting to capture only information that is actually needed or will actually be used?

Several researchers volunteer that all aspects of reporting are made more burdensome by ambiguities and uncertainties in procedures, constantly changing requirements, redundancies in input, and differences across agencies. Like proposals, the complexity of report preparation is multiplied when these other complicating factors are introduced. Researchers mention the many electronic systems and forms that they regularly need to master, only to move to a different system or an ‘upgraded’ form. Learning these new systems and forms, and dealing with the many differences across agencies adds a substantial workload that does not contribute in any way to accomplishing the research. Ambiguities in documentation, instructions, where to find the

latest requirements and forms, etc., lead to additional wasted time, first to clarify what is needed, and then to correct earlier versions. Vague instructions can also be a source of frustration. These frustrations are compounded by synchronization issues when working on multiple, large, or multi-site projects. Requirements seem to be added regularly, with little coordination across agencies, requiring ever more time for faculty to accommodate and prepare acceptable reports, leaving less time for active research.

Pre-Award and Post-Award Administrative Responsibilities

In addition to the estimated 23% of research time related to federally-funded projects that goes into proposal and report preparation, faculty surmise that about 19-20% of research time is spent on pre-award and post-award administrative responsibilities. The 2012 FDP Faculty Workload Survey asked researchers about 23 administrative responsibilities which can apply to federally-funded research and typically have both pre-award and post-award aspects. In what follows, we provide a summary of findings for each of these 23 responsibilities, including quantitative reports of group data from the survey, as well as outlines of the qualitative data reflecting the content analyses of frustration comments that specifically target the responsibility.

For each responsibility, we begin by summarizing the quantitative findings concerning the extent to which the responsibility took time away from the total time respondents spent on work related to federally-funded research. In each case, the summary includes information on prevalence, substantial workload, and subcategories (if available) within the responsibility. Prevalence is simply the percent of respondents who answered “yes” when asked whether the particular responsibility and/or requirement applied to any of their federal grants or contracts during the 2010-11 academic year. Those who answered “yes” were then asked to rate the workload associated with the responsibility. From that subset of respondents, we determined the percent who experienced substantial workload from the responsibility by calculating the proportion who reported “some” to “very much” time taken away from active research by the responsibility. If available, we also report summary data related to specific subcategories of the responsibility.

After providing this context for interpreting the comments, we then provide a descriptive outline of the content analysis identifying the common themes represented within the comments. The 23 responsibilities are ordered according to prevalence, or the frequency of being identified as among the most frustrating, starting with those that are cited most often. We then conclude the report with a description of additional emergent themes within the frustration comments.

Common Administrative Responsibilities

The most commonly experienced administrative responsibilities associated with federally-funded research include those related to finances, personnel, and effort reporting, each of which was experienced by over 80% of survey respondents. These responsibilities were also among the

most intensive, with substantial workload reported by roughly two-thirds of those experiencing finances and personnel requirements, and almost half of those with effort reporting requirements.

A summary of the quantitative breakdown of workload issues associated with these responsibilities as well as qualitative comments about frustrations with these tasks are provided in the next several pages. It is of interest to note that approximately one quarter of all of the comments volunteered about major frustrations and problems associated with administrative workload focused on requirements regarding finances. This was more than for any other established category of administrative responsibilities.

Finances

Survey Description: Managing grant/contract expenditures (non-ARRA)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 88% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 67% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 10. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Project Finances for Survey Respondents with Substantial Workload in This Area

Finances (Non-ARRA) (N = 7533)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Managing budget-to-actual expenses	 3.09	75%
	Dealing with equipment and supplies purchases	 2.89	66%
	Determining and justifying which tasks and related costs are allowable as direct charges	 2.34	40%
	Meeting other federal cost accounting standards (incl. budget transfers and spending authority oversight)	 2.09	32%
	Completing training regarding budgets/expenditures on federal projects	 1.74	19%
	Requesting, meeting, and tracking federally-mandated cost-share requirements	 1.71	20%

Finances (continued)

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 1,375 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Finance, Expen*, Purchas*, Track, Managing budget, Cost account, Costs, Cost shar*, Matching fund, Match requirement, Matching dollars, 1:1 match.
- **Summary of Content Themes:**
 - Unnecessarily detailed expenditure justifications,
 - Burdensome expenditure tracking,
 - Unreasonable purchasing restrictions,
 - Problems related to cost sharing,
 - Difficulties making budget changes,
 - Lack of administrative help,
 - Financial reporting burdens.

Content Analysis:

Unnecessarily Detailed Expenditure Justifications

- Justification of a small purchase is as difficult as a large purchase; there is no scaling.
- Justifications are especially frustrating for:
 - Items clearly for research but prohibited,
 - Purchases made months ago,
 - Minor expenses,
 - Purchases made multiple times,
 - Needs not specified in original budget,
 - Travel reimbursements.

Burdensome Expenditure Tracking

- Tracking of any expenditure is difficult to accommodate without administrative support.
- Tracking is particularly burdensome for:
 - Subcontract expenditures,
 - Travel-related expenditures,
 - Hourly wage distributions among individual projects.

Unreasonable Purchasing Restrictions

- There is an overly narrow definition of ‘allowable expense;’ many necessary research items are not included, such as:
 - Computers,
 - Administrative help,
 - Lab supplies,
 - Travel.
- There are overly rigid rules regarding from whom materials can be purchased, such as:
 - Minority-owned business requirements,
 - Fly America Act.

Finances (continued)

Unreasonable Purchasing Restrictions (continued)

- There are overly rigid rules regarding who can purchase materials, such as approval by PI for each purchase.
- There are unclear allowable expense rules; researchers sometimes feel forced to guess about issues, such as:
 - Direct versus indirect costs,
 - Division of allocation across grants (e.g., for various supplies),
 - Assignment of purchases to inflexible purchase categories.
- There is an inability to purchase items that were not directly written into budget, such as:
 - Purchase of new equipment due to failure,
 - Unexpected but necessary travel.

Problems Related to Cost Sharing

- The cost-share process is confusing and largely hidden from researchers.
- The cost-share process is especially difficult for multi-site research and non-federal institutions.
- Time is wasted trying to locate and/or raise matching funds.
- There are unrealistic cost-share expectations, e.g., institution funds “in-kind” costs only.
- Aspects of cost-share finances and accounting are difficult and unclear, such as:
 - Tracking of cost-share expenditures,
 - Documentation difficulties combined with fears of being audited,
 - Which expenses are included in the cost-share account,
 - Dividing cost-share expenses across accounts.

Difficulties Making Budget Changes

- Retroactive cuts in funding reduce quality of research and create budgeting challenges.
- More flexibility is needed within budget to accommodate research needs.
- Research is often disrupted due to delays in receiving approval/disapproval for requested budgetary changes.
- Aspects of carry-forward requests are often problematic, such as:
 - Delays in rolling over money to new fiscal year,
 - Forwarding funds for other projects.

Lack of Administrative Help

- PIs waste research time on tasks that could easily be done by others, such as:
 - Making purchases,
 - Tracking expenditures,
 - General accounting.

Financial Reporting Burdens

- Monthly/quarterly reporting of finances is excessive.
- It is difficult to constantly adjust to differences in reporting requirements for finances across agencies and institutions (including home institution-agency incompatibilities).

Personnel

Survey Description: Personnel administrative issues (including hiring, managing, visas, evaluation)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 85% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 67% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 11. Estimated Mean Time Taken Away from Research by Responsibility Subcategories if Project Personnel for Survey Respondents with Substantial Workload in This Area

Personnel (N = 7240)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Managing personnel	 3.55	92%
	Hiring personnel	 2.99	75%
	Evaluating personnel	 2.95	72%
	Dealing with issues related to visas	 1.89	28%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 265 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Hiring, Hire, Visa, Personnel, Evaluat*
- **Summary of Content Themes:**
 - Problems with quality of personnel,
 - Issues related to visas,
 - Lack of flexibility and delays,
 - Difficulties related to training personnel.

Personnel (continued)

Content Analysis:

Problems with Quality of Personnel

- Faculty spends too much time helping personnel or doing tasks themselves, especially due to personnel without the requisite knowledge.
- There is a lack of consistent funding, leading to high turnover, loss of quality people, and an inability to hire new people.
- There is little communication between different types of personnel.

Issues Related to Visas

- Meeting visa requirements are too time consuming.
- Changes in visa requirements seem unnecessary.
- Costs of getting visas are too high.
- It is especially difficult to obtain visas for non-faculty positions (e.g., post-docs, graduate students).

Lack of Flexibility and Delays

- It is difficult to move personnel to different projects quickly.
- It is difficult to hire or fire people quickly.
- There are often delays in making an offer after a position is made available.
- There are often delays in having a new hire available after making an offer.
- There are often delays in receiving award/money needed to pay a new hire.

Difficulties Related to Training Personnel

- It is difficult to manage training for multiple personnel.
- Training is often too time consuming to complete within/before the project period.
- People are required to complete training that is unnecessary for their job description.

Effort Reporting

Survey Description: Federal time and effort reporting, including training

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 82% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 48% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 12. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Effort Reporting for Survey Respondents with Substantial Workload in This Area

Effort Reporting (N = 5041)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Completing federal time and effort reports for myself	 2.66	56%
	Completing federal time and effort reports for others	 2.37	45%
	Completing training regarding time and effort reporting on federal projects	 2.08	32%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 348 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Effort Report, Effort Certification, Effort Allocation, Time and Effort.
- **Summary of Content Themes:**
 - Uncertainties in accounting for effort,
 - Difficulties in meeting requirements.

Effort Reporting (continued)

Content Analysis:

Uncertainties in Accounting for Effort

- It is unclear how to account for time spent doing activities often required of researchers, like brainstorming and reading.
- It is unclear how to report percentages and fractions of time, versus actual time or number of hours.
- It is unclear how to report time worked over 40 hours per week.
- Effort reporting is especially difficult when involved with:
 - Large grants,
 - Long-term projects,
 - More than one project,
 - More than one laboratory.

Difficulties in Meeting Requirements

- Information needed to complete requirements is not readily available.
- Requirements are unclear.
- Specifics are unnecessary.
- Questions and definitions are too rigid.
- Maintaining time records is too difficult and time consuming.

Human Subjects Administrative Responsibilities

Of the targeted responsibilities identified within the Administrative Work load Profile analysis, those associated with human subjects research are among the most common and the most intensive. Almost 1000 of the 6000 comments regarding major frustrations focused on issues related to IRB review. For those also having to deal with HIPAA requirements and/or conducting clinical trials, large amounts of time are spent meeting selective requirements for this type of research.

IRB (Institutional Review Board)

Survey Description: Meeting human subjects research requirements

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 44% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 69% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 13. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of IRB/Human Subjects for Survey Respondents with Substantial Workload in This Area

IRB/Human Subjects Protections (N = 3897)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Preparing IRB protocols and consent forms for initial review	 3.50	88%
	Completing protocol revisions requested by reviewers	 3.04	70%
	Waiting for feedback from review	 3.00	64%
	Completing annual continuing review of protocols	 2.92	66%
	Ensuring that study procedures meet protocols	 2.87	63%
	Fulfilling federal requirements for training in human subjects protections	 2.64	52%

IRB (continued)

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 843 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** IRB_, Human.
- **Summary of Content Themes:**
 - Unnecessary workload for minimal risk research,
 - Review delays that disrupt research progress,
 - Redundancies and complications with multiple IRBs,
 - Issues related to reviewers,
 - Problems related to training requirements,
 - Difficulties with changing requirements.

Content Analysis:

Unnecessary Workload for Minimal Risk Research

- There are unnecessary requirements for minimal risk research, such as:
 - Exempt studies,
 - Studies using archival data,
 - Studies using simple surveys,
 - Low/no risk studies.
- Protocols and process are overly long.
- The requirements take time away from research but do not assist in protecting human subjects (e.g., forms, training).
- Process is geared towards clinical trials and related research, and often is not appropriate for social/behavioral research.

Review Delays That Disrupt Research Progress

- Review process leads to delays in completion of requirements, such as:
 - Time required to receive questions and feedback,
 - Time required to provide answers and make revisions.
- Research is often delayed due to the amount of time it takes to get approval.

IRB (continued)

Redundancies and Complications with Multiple IRBs

- Differences in requirements (e.g., forms, trainings) between IRBs are trivial in content but time consuming to address.
- Completing multiple IRB submissions is redundant and time consuming.
- Lack of communication between IRBs creates unnecessary complication.

Issues Related to Reviewers

- What is considered acceptable or in need of revisions is inconsistent between reviewers.
- Reviewers often lack adequate knowledge about the type of research being conducted.
- Reviewers often provide vague or conflicting answers to questions.
- Reviewers often provide vague requests for revisions.
- Requests for revisions are not clearly related to protection of human subjects.

Problems Related to Training Requirements

- There can be confusion regarding what training is required for whom and how to access the training.
- People are required to complete training that is unnecessary for their job description.
- Re-training is required too often.

Difficulties with Changing Requirements

- There are too many changes.
- Changes are made too often.
- Changes often seem unnecessary.
- It is unclear why changes are being made.

Clinical Trials

Survey Description: Responsibilities associated specifically with conducting clinical trials

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 11% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 64% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 14. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Clinical Trials for Survey Respondents with Substantial Workload in This Area

Clinical Trials (N = 880)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Posting and updating trial progress to meet federal requirements	 2.51	49%
	Completing training regarding federal requirements for clinical trials	 2.36	40%
	Posting and updating trial results to meet federal requirements	 2.36	43%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 110 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Clinical, Trial, DSMB, DMC, Data Monitoring.
- **Summary of Content Themes:**
 - Challenges from Dealing with Multiple Organizations,
 - Problems Related to Clinicaltrials.gov,
 - Lack of Budget Flexibility.

Clinical Trials (continued)

Content Analysis:

Challenges from Dealing with Multiple Organizations

- It is difficult to deal with the many organizations involved in clinical trials, such as:
 - Compliance organizations,
 - Agencies,
 - Local IRBs.
- It is difficult to deal with discrepancies, like negotiating a protocol that will be accepted by all parties involved.
- It is difficult to deal with redundancies, with examples including:
 - Recording and reporting the same data in multiple ways,
 - Getting consent and approval more than once.
- It is especially difficult when having to keep up with changing requirements.

Problems Related to Clinicaltrials.gov

- Non-clinical trials are being posted.
- The design and organization are not intuitive.
- Reporting requirements for the website are:
 - Time consuming,
 - Complicated to complete,
 - Do not seem to be uniformly enforced (e.g., university versus industry).
- The software needs to be updated to facilitate reporting.

Lack of Budget Flexibility

- Salaries do not necessarily change as cost of living changes.
- It is especially time consuming to complete extra reporting for changes that cannot be predicted.

HIPAA (Health Insurance Portability and Accountability Act)

Survey Description: Meeting Health Insurance Portability and Accountability Act (HIPAA) requirements

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 29% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 40% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 15. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of HIPAA for Survey Respondents with Substantial Workload in This Area

HIPAA (N = 1498)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Ensuring HIPAA-required data security and integrity	 2.99	69%
	Preparing HIPAA-required documentation	 2.82	63%
	Fulfilling federal requirements for HIPAA training	 2.71	57%
	Interpreting federal requirements regarding HIPAA	 2.64	56%
	Dealing with computer difficulties resulting from HIPAA-related firewalls and software	 2.55	49%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 101 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** HIPAA, HIPPA.
- **Summary of Content Themes:**
 - Problems Related to Requirements,
 - Negative Effects on Recruitment,
 - Difficulties Related to Training.

HIPAA (continued)

Content Analysis:

Problems Related to Requirements

- Requirements are unnecessary when there are only simple personal identifiers and no other personal health information (PHI).
- The interpretation and application of requirements are different across organizations.

Negative Effects on Recruitment

- The approved consent forms seen by patients can be too complicated, too long, and too daunting.
- Clinicians, practitioners, hospitals, etc., are hesitant to participate in and support research due to fear of violating HIPAA.
- It is difficult to explain HIPAA regulations to international collaborators and patients.

Difficulties Related to Training

- Training is unnecessary for those who do not have access to PHI, yet it is still required.
- Training must happen too often.
- Training takes unnecessarily long to complete.

Animal Subjects and Safety Administrative Responsibilities

Animal care and use is the single most intensive of all of the categories of administrative responsibility associated with federally funded research. The vast majority of those who work with animal subjects reported that meeting IACUC requirements took substantial time away from their ability to actively conduct research. The prevalence and intensity of laboratory and related safety requirements varies considerably. Frustration comments often provide suggestions for reducing workload without compromising the important goals of these requirements.

IACUC (Institutional Animal Care and Use Committee)

Survey Description: Meeting animal care and use requirements

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 25% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 79% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 16. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of IACUC/Animal Subjects for Survey Respondents with Substantial Workload in This Area

IACUC/Animal Care and Use (N = 2513)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Preparing IACUC protocols for initial review	 3.62	90%
	Completing annual IACUC reviews and three-year re-writes of protocols	 3.38	82%
	Completing protocol revisions requested by reviewers	 3.29	78%
	Fulfilling federal requirements for training in animal care and use	 2.75	56%
	Satisfying federal requirements for funded projects (e.g. tracking animal numbers)	 2.63	51%
	Maintaining veterinary medical records	 2.25	38%

IACUC (continued)

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 630 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** IACUC, CUC, Animal.
- **Summary of Content Themes:**
 - Inefficiencies Related to Protocols,
 - Problems Related to Training Requirements,
 - Excessive and Unnecessary Annual Reviews,
 - Inconsistencies in Agency & Institution Requirements.

Content Analysis:

Inefficiencies Related to Protocols

- Required protocols are unnecessarily lengthy.
- Time commitment is excessive with electronic vs. paper protocols.
- Time is wasted for unnecessary modifications.
- Procedures for changing the protocol are very time consuming.
- Protocol renewal difficulties lead to research delays.

Problems Related to Training Requirements

- Requirements are excessive and cumbersome.
- Requirements can be too specialized and not helpful for some researchers.
- Animal training for new employees can substantially delay start of research.
- Re-training individuals already trained on the protocol is unnecessary.

Excessive and Unnecessary Annual Reviews

- Reporting on the use of animals can be pointless and troublesome, examples including:
 - The need to know exact strains of animals,
 - Requirement to report on animals that arrive to the lab already deceased.

Inconsistencies in Agency & Institution Requirements

- Examples of inconsistencies in institution requirements include:
 - Lack of standardization amongst IACUC reviewers,
 - Greater interest in legal responsibilities than welfare of the animals,
 - Excessive safety requirements not required at the federal level.
- Examples of inconsistencies in agency requirements include:
 - Redundant reporting requirements across agencies,
 - Lack of communication between agencies.

Biosafety

Survey Description: Biosafety (including biohazards and blood-borne pathogens)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 34% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 43% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 17. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Biosafety for Survey Respondents with Substantial Workload in This Area

Biosafety (N = 1897)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Fulfilling federal requirements for training in biosafety	 2.83	65%
	Dealing with federal requirements for handling biohazards	 2.79	64%
	Dealing with federal requirements for handling blood-borne pathogens	 2.28	45%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 58 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Biosafety, Biohazard, Pathogen.
- **Summary of Content Themes:**
 - Concerns about Inefficiencies and Time,
 - Discrepancies between Goal and Process,
 - Problems of Rigidity and Excessive Implementation

Biosafety (continued)

Content Analysis:

Concerns About Inefficiencies and Time

- Amount of time to renew protocols has increased dramatically in recent years.
- Delays in research are caused by the time needed to obtain permits.
- The required forms are excessive and could be shortened.
- Some feel that there is little time left to do more than adhere to overly strict compliance regulations.

Discrepancies Between Goal and Process

- Training occurs at intervals that are too frequent and unnecessary.
- Reporting is tedious and does not increase safety.
- It seems there are too many areas of compliance with which to adhere.
- Requirements are being added/changed too frequently without firm scientific support for the addition or change.
- Most agree that biosafety regulations are critical; however, the current requirements are not accomplishing what was intended.

Problems of Rigidity and Excessive Implementation

- Research is treated the same whether it involves potentially dangerous strains or those commonly known to be safe, resulting in
 - Desire to expand the list of strains exempt from strict biosafety rules.
 - Request to implement a less time consuming approach for researchers not using potentially dangerous bacterial strains.
- The typical worst-case scenario approach to research leads to large inefficiencies.
 - There are many excessive and unneeded measures for many researchers.
 - Approach does not facilitate research, and may instead discourage important research.

General Laboratory Safety/Security

Survey Description: General laboratory safety/security (including laboratory inspections)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 53% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 44% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 18. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of General Lab Safety/Security for Survey Respondents with Substantial Workload in This Area

General Lab Safety/Security (N = 2955)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	General laboratory safety requirements	 2.93	73%
	Laboratory inspections	 2.78	62%
	Fulfilling federal requirements for training in laboratory safety and security	 2.51	48%
	Controls on access to facilities, equipment and/or supplies	 2.23	37%
	Controls on access to computers and data/information	 2.15	35%
	Personnel issues related to laboratory security (e.g. foreign nationals)	 2.00	31%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 18 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Lab Safety.
- **Summary of Content Themes/ Content Analysis:**
 - Training requirements are too frequent,
 - The list of rigid safety requirements keeps expanding,
 - Monitoring adherence to lab safety increases the PI's time commitment and results in less focus on research.

Chemical Safety

Survey Description: Chemical safety (including chemical inventory management)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 44% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 42% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 19. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Chemical Safety for Survey Respondents with Substantial Workload in This Area

Chemical Safety (N = 2340)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	General chemical safety/security responsibilities	 2.94	74%
	Chemical cataloging and inventory management	 2.92	70%
	Fulfilling federal requirements for training in chemical safety	 2.64	57%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 24 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Chem*, Inventory.
- **Summary of Content Themes/ Content Analysis:**
 - Purchasing rules seem arbitrary,
 - Regulations are outdated,
 - Regulations are often replaced by those that are unnecessarily more stringent,
 - The chemical tracking system is ineffective and wastes time,
 - Some expressed a need for creation of separate inventories of materials,
 - Yearly chemical training is daunting and excessive.

Recombinant DNA

Survey Description: Recombinant DNA

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 22% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 37% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 20. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Recombinant DNA for Survey Respondents with Substantial Workload in This Area

Recombinant DNA (N = 1039)		
Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
Dealing with federal requirements for handling recombinant DNA	 2.92	67%
Fulfilling federal requirements for training in recombinant DNA safety and security	 2.78	61%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 19 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Recomb*, DNA, rDNA
- **Summary of Content Themes/ Content Analysis:**
 - Guidelines are outdated and cause over-regulation,
 - DNA registration required for long-term ongoing research with no evidence of hazard,
 - Training is arduous and lacks useful significance for properly handling agents,
 - Compliance is difficult due to frequently changing forms and requirements.

Radiation Safety

Survey Description: Radiation safety (including radioisotopes)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 21% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 43% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 21. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Radiation Safety for Survey Respondents with Substantial Workload in This Area

Radiation Safety (N = 1141)			
Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)		% with Substantial Workload
Fulfilling federal requirements for training in radiation safety	 2.61		53%
Dealing with federal requirements for handling radioisotopes	 2.60		56%
Ensuring security of machines and radioisotopes, including personnel procedures	 2.37		41%
Dealing with federal requirements for X-ray machines and other radiation-producing equipment	 1.76		25%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 13 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Radiation, Radioact.
- **Summary of Content Themes/ Content Analysis:**
 - Excessive “swipe tests” required when research involving radioactivity has not been conducted for an extended period of time,
 - Yearly retraining seems unnecessary,
 - Regulations on radioactive materials are not in line with the real world.

Controlled Substances/Narcotics

Survey Description: Controlled substances/narcotics

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 13% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 39% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 22. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Controlled Substances/Narcotics for Survey Respondents with Substantial Workload in This Area.

Controlled Substances/Narcotics (N = 650)		
Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
Dealing with federal requirements for handling controlled substances/narcotics	 3.00	71%
Interpreting and adapting to changing federal requirements concerning controlled substance/narcotics	 2.73	60%
Fulfilling federal requirements for training in controlled substance/narcotics	 2.64	53%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 9 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Narc*, Controlled, Illegal, Drug.
- **Summary of Content Themes/ Content Analysis:**
 - Availability of certain agents is decreasing, leading to increasing costs,
 - Required monitoring places lengthy time commitment on PIs,
 - Drug compliance is effortful.

Contract-related Administrative Responsibilities

The Contract-related Workload Profile represents a set of responsibilities that are especially common when working with projects that are awarded as contracts or require the creation of subcontracts to other entities in order to complete a project. Although just less than half of our respondents had to deal with subcontracts, a substantial majority of these respondents experienced a significant loss of time from active research due to the need to deal with requirements related to their subcontracts. Requirements associated with intellectual property, such as patent applications and licensing agreements, were experienced by about a third of our respondents, with just under half of these reporting that this represented a significant time commitment.

During the 2010-2011 academic year, one major source of federally-funded contracts was the American Recovery & Reinvestment Act. This provided federal contracts to stimulate the economy and in particular to encourage job growth, with associated requirements for quarterly reporting. This unique requirement was experienced by just over one quarter of our survey respondents, and created substantial workload for almost half of them. (For a more detailed report of institutional responses to the quarterly reporting requirements of ARRA, see the 2012 FDP ARRA Administrative Impact Survey Report by the FDP ARRA Subcommittee of the Research Administration Committee posted online at http://sites.nationalacademies.org/PGA/fdp/PGA_058836).

Subcontracts

Survey Description: Managing grant/contract expenditures (non-ARRA)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 45% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 58% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Subcontracts (continued)

Table 23. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Subcontracts for Survey Respondents with Substantial Workload in This Area

Subcontracts (N = 3354)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Overseeing progress toward project goals and deadlines	 3.31	80%
	Overseeing budgets, expenditures, invoices and other financial matters	 3.21	79%
	Overseeing compliance and safety/security issues	 2.07	31%
	Dealing with management issues specific to international subcontracts	 1.75	25%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 171 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Subcontract, Subaward, Sub Contract, Sub Award, Sub-Contract, Sub-Award, Sub Recip*, Sub-Recip*, Subrecip*.
- **Summary of Content Themes:**
 - Difficulties in collaborations across institutions,
 - Lack of flexibility,
 - Delays in funding.

Content Analysis:

Difficulties in Collaborations across Institutions

- Communication is indirect, inefficient, and slow.
- There is too much time and effort spent on negotiations and fulfilling requirements due to differences in requirements and efficiency.
- It is especially difficult when collaboration is between U.S. and international institutions.

Lack of Flexibility

- Minor and inevitable changes to the project require too much time and effort to change in the contract.
- Funding does not easily change as the project changes.

Delays in Funding

- Time between submission, notice of award, and receiving funding can be too long.
- Funding is sometimes only distributed at few, inopportune times of the year.

Intellectual Property

Survey Description: Intellectual property (including patent/copyright applications, licensing agreements, invention, disclosures, Materials Transfer Agreements, etc.)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 35% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 44% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 24. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Intellectual Property for Survey Respondents with Substantial Workload in This Area

Intellectual Property (N = 1973)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Completing patent/copyright applications	 2.51	53%
	Completing invention disclosures	 2.43	51%
	Completing Materials Transfer Agreements	 2.34	45%
	Completing licensing and use agreements	 2.26	41%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 21 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Intellectual, MTA.
- **Summary of Content Themes/ Content Analysis:**
 - Concerns were raised about counterproductive practices.
 - Intellectual Property Laws seem unnecessarily confusing and cumbersome.

ARRA (American Recovery & Reinvestment Act)

Survey Description: Requirements associated with American Recovery and Reinvestment Act project funding

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 26% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 44% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 25. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of ARRA for Survey Respondents with Substantial Workload in This Area

ARRA: American Recovery & Reinvestment Act (N=1495)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Quarterly progress reporting	 3.08	77%
	Quarterly reporting on expenditures	 2.68	58%
	Quarterly reporting on jobs/job creation	 2.55	51%
	Completing training regarding ARRA requirements	 2.03	29%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 177 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** ARRA, Stimulus.
- **Summary of Content Themes:**
 - Challenges of ARRA reporting,
 - Difficulties from changing ARRA requirements,
 - Miscellaneous ARRA-related issues.

ARRA (continued)

Content Analysis:

Challenges of ARRA Reporting

- 52 of the 177 comments about ARRA were regarding reporting, with examples of reporting issues including:
 - Too frequent (i.e., quarterly reporting),
 - Too strict deadlines,
 - Difficulties reporting labor hours,
 - Too detailed and involved (e.g., finance reporting),
 - Repetitive,
 - Largely unnecessary.
- The amount of money awarded is not worth administrative burden.

Difficulties from Changing ARRA Requirements

- ARRA requirements change spontaneously and without reason, creating confusion.
- Examples of changing ARRA requirements include:
 - Changes in funding expiration dates,
 - Loss of funds that were expected for long-term funding,
 - New budget plans that need to be made,
 - Trying to meet demands to accelerate spending,
 - Requirements imposed *after* grant has been awarded.

Miscellaneous ARRA-related Issues

- There are delays of up to one year between approval of funds and receiving the funds.
- It is difficult to hire people without offering them job security.
- The renewal period is too short (i.e., 3 years).
- ARRA transparency regulations are conflicting with some aspects of biomedical research.

General Compliance Responsibilities

The General Compliance Workload Profile includes a variety of responsibilities that are associated with responding to different requirements from different federal funding agencies. The most time-consuming aspect of this group of responsibilities is associated with cross-agency differences in the particular requirements or the ways in which different federal agencies implement requirements. These differences often lead to redundancies, ambiguities, and the need to take time to sort through exactly what the differences are. Other responsibilities in this area include data sharing, conflict of interest, and Responsible Conduct of Research requirements. Although conflict of interest was considered one of the least time-consuming administrative requirements by respondents, it should be recognized that this may have changed since revised regulations were enacted by the Department of Health and Human Services regarding Financial Conflicts of Interest (FCOI). These new requirements were not fully in force when investigators responded to the survey.

Data Sharing

Survey Description: Meeting federal requirements for resource and data sharing

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 49% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 38% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 26. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Data Sharing for Survey Respondents with Substantial Workload in This Area

Data Sharing (N = 2381)		
Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
Interpreting and adapting to changing federal requirements for data sharing	2.49	49%
Posting data and other resources (e.g. software and curricula) as required by federal funding agencies	2.48	50%
Clearing and posting publications to federal repositories as required by federal funding agencies	2.30	43%
De-identifying and refining data to meet federal requirements for data sharing	2.24	40%
Completing training regarding data sharing requirements on federal projects	1.93	26%

Data Sharing (continued)

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 63 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Data Shar*.
- **Summary of Content Themes:**
 - Problem of unfunded mandate,
 - Need for improved data-sharing infrastructure,
 - Inefficiencies in implementation of requirements.

Content Analysis:

Problem of Unfunded Mandate

- When there is a requirement for data sharing, more funding is needed to fulfill this obligation.
 - Requirements for independent data management plans are excessive.
 - New data share mandates are not needed and offer no reimbursement.

Need for Improved Data-sharing Infrastructure

- There is a general ineffectiveness of agency's data sharing infrastructure, with no centralized infrastructure within agencies to handle data share requirements.
- Data sharing requirements are not uniformly enforced.
- Researchers on multiple grants have to spend time sharing datasets with different agencies, which is redundant and time consuming.
- Public sites to share data are poorly developed and need to be more user-friendly.

Inefficiencies in Implementation of Requirements

- Data-sharing is largely unnecessary.
 - New NSF data-sharing requirements are impractical.
 - Making federally-funded research results available to the public is a beneficial concept, but is poorly implemented.
 - Data-sharing requirements are not amenable to some types of research, such as numerical or model simulations.

COI: Conflict of Interest

Survey Description: Meeting federal conflict of interest requirements

(*Note.* Responses to this item occurred prior to full implementation of the 2011 revised NIH Financial Conflict of Interest (FCOI) regulations.)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 62% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 18% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 27. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of COI for Survey Respondents with Substantial Workload in This Area

COI: Conflict of Interest (N = 1438)			
Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)		% with Substantial Workload
Filing annual and transactional disclosures	 2.69		62%
Contributing to the development of management plans	 2.40		48%
Complying with terms of management plans	 2.36		46%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 84 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** COI_, Conflict of Interest.
- **Summary of Content Themes:**
 - Challenges of new and changing rules,
 - Overly complex rules and paperwork,
 - Process perceived as ineffective,
 - Process perceived as invasion of privacy.

COI: Conflict of Interest (continued)

Content Analysis:

Challenges of New and Changing Rules

- New rules are increasingly obstructive and complicated (e.g., new 2012 travel rules).
- New rules change which types of projects can be funded with grant money.
- COI requirements differ across institutions and agencies.

Overly Complex Rules and Paperwork

- The COI rules and regulations are not clear.
- Writing separate COI reports for each collaborator, including subcontracts, for each grant proposal is excessive.
- Paperwork is still complicated when there is no COI to report (e.g., COI reporting while working with a non-profit organization).
- Too much pressure on institutions to comply, causing delays in research.

Process Perceived as Ineffective

- New COIs must be filled out for each grant and IRB submission.
- The COI concept is good, but implementation is ineffective and it does not prevent researchers from lying.
- There are doubts on whether or not anyone reads COI reports.
- Current regulations fail to identify truly important COIs.

Process Perceived as Invasion of Privacy

- Agencies and institutions should have more trust in researcher's ability to avoid COI.
- Listing of personal investments is an invasion of privacy.
- Reporting money received from outside talks and travel is intrusive.

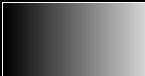
RCR: Responsible Conduct of Research

Survey Description: Meeting Responsible Conduct of Research requirements for trainees on federally funded projects

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 56% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 30% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 28. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of RCR for Survey Respondents with Substantial Workload in This Area

RCR: Responsible Conduct of Research (N = 2202)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Interpreting and adapting to changing federal requirements regarding RCR	 2.61	55%
	Tracking and documenting completion of RCR requirements	 2.61	53%
	Developing or providing training activities to meet RCR requirements	 2.53	52%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 49 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** RCR, Responsible Conduct.
- **Summary of Content Themes/Content Analysis:**
 - Questions about the value of some aspects of RCR training,
 - Issues related to the frequency of training,
 - Difficulties with changing requirements.

Cross-Agency Differences

Survey Description: Cross-cutting: Dealing with differences in administrative requirements and forms across federal agencies

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 21% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 50% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Note. No responsibility subcategories were included in the survey.

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 125 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Cross Agenc*, Between Agenc*, Inter-Agenc*.
- **Summary of Content Themes:**
 - Variation across agencies,
 - Call for uniformity.

Content Analysis:

Variation across Agencies

- There are substantial variations across agencies, with examples including:
 - Forms,
 - Proposal submission requirements,
 - Reporting requirements, e.g. yearly versus quarterly,
 - Websites for submitting and reporting, e.g. Grants.gov,
 - Administrative differences,
 - IRB requirements.
- Each agency requires different administrative knowledge, including idiosyncratic needs, which can make funding from one agency more favorable than another.

Call for Uniformity

- Researchers would like to see some uniformity between agencies, especially in the following:
 - Standardized forms,
 - Standardized reporting requirements,
 - One well-functioning website for all submission and reporting.
- Researchers would like to avoid specialized requirements to meet idiosyncratic desires of each agency, as this seems a preventable waste of time.

National Security Administrative Responsibilities

The National Security Workload Profile includes responsibilities that are less commonly experienced but that often contribute substantial workload. Having to deal with requirements concerning export controls, select agents, and/or protected critical infrastructure can be difficult. As noted earlier, these responsibilities are almost always experienced along with those from other targeted workload profiles, which means that the national security responsibilities are added on to several other administrative responsibilities.

Export Controls

Survey Description: Export controls

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 14% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 37% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 29. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Export Controls for Survey Respondents with Substantial Workload in This Area

Export Controls (N = 673)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Interpreting and adapting to changing federal requirements regarding export controls	 2.97	69%
	Ensuring security of controlled information or items	 2.60	54%
	Obtaining proper authorizations consistent with federal requirements	 2.58	53%
	Completing training regarding federal requirements for export controls	 2.22	37%
	Providing federally-required technical and contextual information	 2.14	36%
	Obtaining federally-required security clearances	 1.97	31%

Export Controls (continued)

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 93 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Export, ITAR.
- **Summary of Content Themes:**
 - Problems in interpretation of ITAR (International Traffic in Arms Regulations),
 - Restrictive export law,
 - Difficulties associated with permits.

Content Analysis:

Problems in Interpretation of ITAR (International Traffic in Arms Regulations)

- Law is vague and confusing - largely left to interpretation,
- Interpretations of ITAR are not consistent across institutions,
- Law is inconsistent with Office of Foreign Assets Control (OFAC) and internally inconsistent,
- Consequences of violating ITAR are dire.

Restrictive Export Law

- There are unnecessary restrictions on sharing materials and ideas with nations that have the same technologies,
- Too many common items are listed on the U.S. export control list,
- Compliance is especially troublesome for NASA researchers working with space instrumentation,
- Regulations regarding software sharing are outdated and useless.

Difficulties Associated with Permits

- Permits are needed for too many research-related activities that do not threaten national security, such as:
 - Innocuous materials,
 - Biological materials,
 - Sending materials back to their place of origin,
 - Inviting foreign speakers.
- Conflicting/unclear answers are given regarding when a permit is needed and how to obtain the permit.

Select Agents

Survey Description: Select Agents

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 6% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 43% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 30. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Select Agents for Survey Respondents with Substantial Workload in This Area

Select Agents (N = 351)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Dealing with federal requirements for handling select agents	 2.86	59%
	Interpreting and adapting to changing federal requirements regarding select agents	 2.78	56%
	Fulfilling federal requirements for training in handling select agents	 2.74	54%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 16 comments out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** Select Agent.
- **Summary of Content Themes/ Content Analysis:**
 - Requirements seem an exaggeration of regulations,
 - Regulations are often inconsistent and are constantly changing,
 - It is expensive (without reimbursement) to comply.

Protected Critical Infrastructure Information

Survey Description: Protected Critical Infrastructure Information (within Department of Homeland Security's PCII program)

Quantitative Responses: Prevalence, Substantial Workload, & Subcategories

- **Prevalence:** 2% experienced time taken away from research by this responsibility.
- **Substantial Workload:** 30% of those experiencing this responsibility reported “some” to “very much” time taken away from active research by the responsibility.

Table 31. Estimated Mean Time Taken Away from Research by Responsibility Subcategories of Protected Critical Infrastructure Information (PCII) for Survey Respondents with Substantial Workload in This Area

Protected Critical Infrastructure Information (N = 92)			
	Responsibility Subcategory	Mean Time Taken from Research (1=None, 5=Very Much)	% with Substantial Workload
	Interpreting and adapting to changing federal requirements regarding protected critical infrastructure	 2.79	67%
	Ensuring security of controlled information or items	 2.75	61%
	Obtaining proper authorizations consistent with federal requirements	 2.71	60%
	Providing federally-required technical and contextual information	 2.55	54%
	Completing training regarding federal requirements for protected critical infrastructure	 2.48	49%
	Obtaining federally-required security clearances	 2.42	47%

Qualitative Responses: Frustration Comment Frequencies and Content Themes

- **Frustration Count:** 1 comment out of 6,105 cited this general area as one of the most frustrating administrative responsibilities.
- **Search Keywords:** PCII, Critical Infrastructure.
- **Summary of Content Themes/ Content Analysis:** N/A.

Emergent Themes

Among respondent comments, several essential themes arose that were not adequately captured by the 25 categories itemized in the Faculty Workload Survey. The two primary emergent themes of frustration were easily apparent from the frequent repetition. The first involved concerns about practices within institutions and federal agencies that undermine efficient research. The second was a repeated and urgent plea to address the needless complications associated with federal research requirements that waste valuable research time. Other less common but noticeable themes included issues related to training, problems associated with electronic systems and forms for submitting proposals and reports, and complications stemming from international issues in federally-funded research. Each of these themes is outlined in Table 32 and will be briefly summarized below.

Table 32. Emergent Themes from Frustration Comments with Comment Counts

Institution and Agency Roles (<i>n</i> = 2195 of 6105; 36%)		
	<u>Theme</u>	<u>Count</u>
	Institution-related Issues	967
	Agency-related Issues	826
	Need for Administrative Support	586
	Risk Intolerant Audit/Legal Culture	204
Needless Complication and Wasted Research Time (<i>n</i> = 2005 of 6105; 33%)		
	<u>Theme</u>	<u>Count</u>
	Detrimental Loss of Research Time	924
	Changes, Ambiguities, and Inconsistencies	774
	Overwhelming Forms/Paperwork	690
	Rigidity and Micromanagement	155
Other Specific Pervasive Issues (<i>n</i> = 636 of 6105; 10%)		
	<u>Theme</u>	<u>Count</u>
	Issues Related to Training	296
	Problematic Electronic Systems/Forms	214
	Complications Related to International Issues	119

Note. A given comment covered on average 1.1 of the above themes, including a total of 2,273 comments that did not fit into any of these themes.

Institution and Agency Roles

Institution-related Issues. Although institutions and federal agencies are essential in supporting the research process, there are sometimes problems associated with various practices that may be unique to a given institution or agency. Several respondents complained about their experiences in their own institution or with a particular funding agency. One of the most common types of complaint involved the lack of adequate administrative support, either from their department's or

the institution's research support staff or the agency's grant/contract program or administration staff. In addition, researchers regularly complained that the ubiquitous fear of federal audits and the consequences from some audit findings are creating unwarranted demands that go well beyond the actual federal requirements for conducting research.

Almost 1000 respondents volunteered comments about institution-related frustrations. These frustrations included burdensome institution-specific regulations, problems associated with institutional staff, concerns about institutional funding or funding practices, difficulties associated with training, and problems collaborating with multiple institutions.

Many respondents were especially frustrated by highly detailed practices within their institution that went beyond anything required by federal regulation or federal agencies. By far, the most common examples were institutional policies for overly detailed accounting of time (e.g., effort reporting) and accounting of funds (e.g., justification of purchasing). Other common complaints were about institution-driven excessive and overly frequent training requirements, and needless or redundant paperwork. Often, researchers suggested that these practices were put in place to provide additional protection for the institution, but with undue burden for faculty. Researchers routinely complained of the institutional tendency to interpret federal requirements in an overly strict and inflexible fashion, and to develop policies that unnecessarily waste time and make the research process more difficult with no benefit (but possibly a false sense of security). In some cases, institutional policies have created unnecessary redundancy through duplicative reporting using institution-specific forms or formats, or by requiring institution-specific training when these requirements are already fulfilled in other ways.

Another hindrance to research communicated by respondents is the lack of or the ineffectiveness of support from institutional staff. In some cases, institutional staff members are viewed as not being up-to-date in their knowledge of requirements and deadlines, which becomes particularly troublesome when these are constantly changing. Furthermore, institutional staff members are sometimes characterized as lacking appropriate training and oversight. Researchers acknowledged that high turnover rates and lack of funds to hire and keep quality staff contributes to the problems in this area. When it comes to conducting research, respondents often felt that they did not receive adequate help in managing and writing budgets, that they had to wait too long for responses from staff, and that problems were particularly pronounced with respect to local IRB and IACUC staff.

Other institution-related frustrations expressed by researchers include issues regarding internal funding policies. Institutions were frequently viewed as taking too much of the indirect cost returns and not using them to pay for much-needed faculty support. There was also frustration with the sense that the institution often serves as the 'middle man' when it comes to distributing federal funding for research. Some researchers complained that this has resulted in delays in receiving notice of funding and the funding itself. Some researchers also complained that their institution did not do enough to make sure that the PI's themselves had adequate training with

regards to administrative responsibilities. PIs suggested that their institution should, but often did not, offer appropriate or useful training, especially regarding federal reporting requirements and administrative responsibilities. Researchers often commented that, if they must continue to take on more administrative responsibilities, they need to receive efficient and effective training in those areas.

Finally, some researchers also described concerns about collaborating with multiple institutions. For example, each institution interprets federal rules and requirements differently and also maintains its own internal rules and requirements. Taken together these can often lead to redundancies, incompatibilities, and confusion. In addition, this often results in delays due to the additional need for coordination, delays in response time, and problems with or a lack of communication between institutions. The upshot of these concerns is that researchers find it especially difficult to conduct their research efficiently when other institutions are involved (which is becoming increasingly common). Administering subcontracts efficiently, managing subcontracting requirements and negotiations, and managing IRB submissions for multi-site projects were viewed as being particularly difficult.

Agency-related Issues. Over 800 respondents commented specifically about agency-related frustrations related to funding practices, program officers or managers, reporting issues, and general rigidity. As in the general comments, by far the most frequent topic about agencies within the frustration comments had to do with a lack of funding. Researchers complained that funding was simply too low. Due to inadequate funding rates and low paylines, researchers contend that preparing grant proposals and obtaining permissions and permits for projects that are never funded is a disheartening and unreasonable waste of time. When funds are granted, PIs argued that they are often inadequate, awarded late, and come with little security in terms of funding long-term projects. This lack of adequate funding is seen by researchers as the leading cause of their feeling over-worked, under-paid, and simply frustrated or disillusioned with research in general.

Regarding grant/contract administration, frustrations with federal program officers were not uncommon. Respondents reported that there is a great amount of variance in the availability, knowledge, and helpfulness of program officers. Various researchers stated that their federal program officers were routinely unreachable, had poor response times, gave conflicting answers to questions, or were unfamiliar with the research being conducted. Some respondents felt that their federal program officers were more concerned with the formatting and logistics of the research than helping to facilitate the progress of research.

Other agency-related frustrations involved unique reporting requirements and perceived agency rigidity. Some respondents pointed out that the variation in frequency and formatting of reports across agencies created a large increase in the amount of time required to correctly complete reports. Additionally, quarterly reporting was seen as far too frequent to be useful, and another large waste of time. Grant reporting sites (e.g., Grants.gov and some agency-specific sites) were

also implicated as large and unnecessary time sinks. Sites were often described as not being user-friendly and as slowing down rather than facilitating the reporting process. Respondents recommended a more flexible approach to managing and tracking research progress, which would be more conducive to research objectives. Additional complaints centered on difficulties with frequent changes to post-award requirements, especially those involving increased rigidity in policies. For example, simple budgetary changes, such as moving funds from one category to another, might take months to be approved depending on an agency's policies.

Need for Administrative Support. More generally, respondents reported that the entire process of preparing, submitting, and monitoring grants is an arduous and time-consuming task for researchers. Review of more than 500 comments showed that many researchers feel that they have very little to no administrative support or that the administrative support available is not helpful, and in some instances, actually creates additional burden. Some researchers described a general lack of administrative efficiency at their institutions. A considerable number of respondents commented that their administrative staff is significantly undertrained and unable to provide answers to even basic questions. The examples most commonly provided were questions surrounding budget preparation, requests for the release of awarded funding, and purchasing assistance. Many respondents felt that their administrative burden was increased by administrative staff members' inability to provide answers to inquiries or sometimes even providing incorrect information. Some respondents were concerned that the lack of availability or lack of competence of administrative staff increases the administrative responsibility for which they would be held accountable. Some researchers commented that they felt compelled to seek needed information on their own to avoid the possibility of being provided erroneous information or of not receiving an answer within the needed time frame.

The most common agency-related frustration discussed also centered on the issue of undertrained administrative staff. Many respondents voiced frustration about interacting with program officers. As mentioned previously, there were many complaints about the inability to receive answers to questions in a timely manner and the variability in answers received when interacting with different program officers. Respondents expressed a desire to improve the communication between researcher and agency to create a more streamlined system with less inconsistency.

Risk Intolerant Audit/Legal Culture. Several researchers commented on the general climate at their institution, suggesting that the fear of potential audit findings or legal challenges can have adverse effects in the form of administrative responsibilities that go beyond the federal requirements. Over 200 comments reflected a view that institutions are becoming overly conservative in interpreting federal regulations, which creates excessive work and simultaneously hinders research productivity. Although often it is the fear of audits that can promote overly detailed practices, sometimes the audit findings themselves represent an overly rigid interpretation of federal guidelines. In these cases, the audit findings may supersede the force of the federal guidelines. These overly conservative findings then drive the policies and practices of other institutions which fear that they too will be found lacking even though they

may believe that the findings overstep what regulations require. The potential impact of audit findings and fears about audit findings can be pervasive and multi-dimensional, affecting areas such as review of IRB/human subjects research, review of IACUC/animal subjects research, effort reporting, need for expenditure justification, response of research support staff, and functioning of finance and budget personnel. Approximately 10% of the comments in this category specifically mentioned the problem of a “CYA” or “Cover Your A**” mentality; institutions can become focused on protecting themselves from audit or legal findings, rather than protecting investigators from unnecessarily rigid practices that impede research progress.

Needless Complication and Wasted Research Time

Detrimental Loss of Research Time. Perhaps one of the most ubiquitous frustrations expressed by researchers concerned the unnecessary, complicated nature of many research administrative requirements and the resulting waste of research time. Research now involves managing an excessive amount of paperwork, constant changes in requirements, and other unnecessary difficulties. This is compounded by inflexibility imposed on researchers at both the federal and institutional level. The cumulative effect of these issues is often especially frustrating, and sometimes overwhelming, to researchers.

Respondents regularly asserted their desire to be able to efficiently conduct research, arguing that much of the time that should be going to research is being wasted on administrative tasks that do not seem to accomplish anything. Many reported a sense that the bureaucracy is so intense that they have lost the ability to focus on their research. Through the combination of the continuing need to submit proposal after proposal and report after report, to meet time-consuming administrative obligations of all sorts, and to manage regular changes and differences in requirements, they maintain that scientific innovation is being put on hold.

Concerns about the unhealthy cost-benefit ratio in the proposal funding process were widespread. Researchers expressed great apprehension about acquiring funding, and the uncertainty surrounding ongoing support and renewals. This has led not only to increases in the burdensome cycle of constant submissions and re-submissions, but also a diminished motivation to apply for funds because of the small likelihood of the return on time invested. Additionally, the lack of funds hinders a researcher’s ability to financially provide for the training of graduate students and post docs, our next generation of scientists. Some respondents noted that the funding climate is so dismal that they are highly discouraged from continuing research, or are altering the direction of their research to an area that has greater funding opportunities.

In addition to proposal preparation, researchers generally agree that an exorbitant amount of time must be spent on non-research related activities. Although the combination of administrative responsibilities is particularly overwhelming, respondents are especially sensitive to the excess time spent on paperwork for IRB/IACUC compliance, effort reporting, data management plans, and justification of expenditures. Researchers feel that the number of rules and regulations that

are in place to maintain compliance are increasing in virtually all areas, without any evaluation of benefit, which results in a waste of both time and money.

Several researchers cited research inefficiencies caused by multiple delays within their institutions and federal agencies. Some suggested that these delays were commonly encountered in almost every step of the research process. Institutionally, delays are routine when submitting IRB/IACUC applications or modifications for approval, when preparing necessary proposal documents, and across post-award responsibilities during the grant management phase. There was frequent mention of struggles to obtain funding disbursed to the institution, and delays due to excessive demands for justification of allocated funds and inconsistencies in interpretations of guidelines for appropriate spending.

Frustration with delays associated with agencies was primarily focused on proposals and funding. In the proposal stage, respondents were frustrated with the lengthy amount of time between grant submission, review, and final notice of award (or rejection). There were many advocating that the funding process be accelerated. The vigilant review of pre-award budgets was one example of a practice that respondents suggested could be minimized to expedite the initial review process. Respondents expressed concerns about the notification of funding, and some provided specific instances of award notices being received well after the official start date of the project. A related issue occurred when reporting requirements started before the grant had been funded or before the funding had been released to the institution. Both of these agency-related issues decreased the availability of funds, significantly delaying or interfering with research progress.

Changes, Ambiguities, and Inconsistencies. Changes, ambiguities, and inconsistencies emerged as a chronic source of frustration that was pervasive in virtually every part of the research process. A minimum of 700 comments reflected that the accumulation of changes, ambiguities and inconsistencies created a chronic sense of unnecessary burden and inefficiency in the research process.

Changes in proposal and reporting requirements, agency and institutional level policies, and IRB and IACUC regulations routinely create delays, confusion, and wasted time. Policies get changed, and researchers may not know why they were changed, exactly how they were changed, what the implications of changes may encompass, or who to turn to for knowledgeable answers. The perception is that most changes tend to add on additional responsibilities rather than alleviate the already heavy burden.

In addition to change, ambiguities and inconsistencies across agencies and institutions are an especially sore point among investigators, who are eager to “get it right” but are thwarted when answers are not clear or are different—and sometimes incompatible-- between agency and institution or across agencies. At times, researchers are placed in a double-bind by direct conflict between agency and institution regarding training, use of funding, and compliance requirements.

When conflicts like these occur, researchers' hands are tied, needlessly trying to sort out how to proceed rather than focusing on the content of their research.

Overwhelming Forms/Paperwork. More than 650 respondents explicitly expressed concerns over the excessive number of forms and amount of paperwork required for federally-funded research. Paperwork converted to computer application was often seen as creating as many or more time delays as the original paper forms. Whether paper or computer, concerns revolved around the time consuming, unnecessary nature of many of the forms and requirements, either in their entirety or in their level of detail. Again, these concerns are compounded by constant changes in forms and in requirements.

Some suggested that cost-benefit analyses are essential for minimizing time intensive and (therefore) expensive practices associated with (overly detailed) forms and paperwork that do not contribute substantially to the intended purposes. Researchers complained that new forms and paperwork are added routinely whereas none or very few are eliminated. Many of these requirements were viewed as occurring much too frequently to provide added benefit. Some suggested that the excessive requirements for completing forms and paperwork often serves primarily to protect the institution or agency, with little or no benefit to the research, the researcher, or animal/human subjects.

Forms were often described as needlessly repetitive, both within and between reports. Additionally, some forms (especially in interim and final reports) were criticized for being a poor fit to the research and required even when they are not applicable to the research type. In some instances, investigators felt that they are asked to provide information that they do not or cannot readily provide, such as quantitative breakdowns of the division of laboratory equipment and project personnel across multiple related projects or predictions/assessments of the many possible impacts of their research. Unnecessary rigidity and detail within forms were frequent sources of frustration, especially when simple mistakes could delay research. Often directions were not viewed as useful when completing forms and paperwork, as they were often unclear or unhelpful. Questions about completing forms and paperwork were often difficult to answer in a time-effective manner. In some cases, rigid formatting requirements also created unreasonable delays.

Perhaps the most debilitating aspect of completing required forms and paperwork is captured by what several researchers described as 'death by 1000 cuts.' It may not be any one form, requirement, or change that was viewed as particularly onerous. Instead the accumulation of all of the various research-related administrative responsibilities was viewed as taking an immense and under-appreciated toll. Often this accumulation was described as very nearly overwhelming, and in some cases researchers contended that the associated burden is enough to dissuade potential investigators from engaging or continuing in research. Overall, researchers implored those who require or develop forms and paperwork and related requirements for federally-funded

projects to carefully consider what is absolutely necessary versus what constitutes an inefficient use or potential waste of valuable research time.

Rigidity and Micromanagement. One other theme that emerged involved a perception of inflexibility and micromanagement imposed both on the federal and institutional level. Rigidity with respect to deadlines, the use of grant money, and IACUC/ IRB regulations were frequently cited as troublesome for researchers. Respondents argue that conducting research is not always predictable, and a certain level of flexibility is helpful to accommodate unforeseeable or unanticipated occurrences. Rigidity in how grant money can be used complicates simple transactions, such as transferring funds between budget categories to cover equipment failures. Rigidity in deadlines may create unrealistically short timelines, and the IACUC/ IRB “one-size fits all” format may not be amenable to some types of investigations. In addition, some researchers suggested that many (institution and/or agency) personnel seem more interested in policing adherence to regulations than assisting researchers in complying with them. Some complained that the intent of rules and regulations is often lost, and in its place is a relentless push to “dot i’s and cross t’s” even if the process accomplishes nothing of substance. Several researchers expressed that the trust between agency and researcher, or institution and researcher, is gone, resulting in what is differentially described as an unapproachable, antagonistic, and/or overbearing regulatory system.

Other Specific Pervasive Issues

The final set of emergent themes represents the “miscellaneous” category of recurring comments about frustrations associated with the administrative workload on federally-funded research. These themes include comments related to training, electronic reporting/submission sites, and international complications.

Issues Related to Training. Nearly 300 of the frustration comments were concerned with requirements for training. The most common frustration reported was that much of the required training for researchers and project personnel is ineffective or unnecessary. Some feel it is too frequent, it is often redundant, and some aspects are not relevant to their area of research. Researchers suggested biennial rather than annual requirements for health and safety, as well as improvements in the training-to-research fit. Several researchers commented that they were required to complete HIPAA training even though they do not work with patients or with patient data. Another example comes from those required to complete hazardous material training when they do not work with hazardous materials. Completion of these unnecessary trainings is seen as a waste of valuable time and resources.

Adding to the problem of unnecessary training is the issue of repeated training on the same topic. Training often varies across agencies and institutions, so that a training certification from one may not satisfy the requirements of the other. Researchers in this position may have to take

several trainings on the same topic to be in compliance both federally and institutionally. Again, this seems wasteful. Better streamlining could reduce these kinds of redundancy.

There was one area in which some researchers felt that too little training was the most common problem. This area was administrative duties. Researchers complained about a lack of training in administrative duties for not only for administrative staff but also for themselves. Although many researchers suggested that many administrative duties should be shifted to administrative personnel, others did not question the increasing expectations of administrative work, but instead focused on their desire to have a better sense of exactly what was required. Areas in which some researchers would've liked to have a better understanding included budgeting, obtaining permits, filing various reports, etc. Some argued that if researchers are expected to do these administrative duties, then they wanted to do them correctly, and because of this, they requested additional training on those duties.

Problematic Electronic Systems/Forms. Just over 200 comments directly addressed problems related to electronic grant submission and reporting sites. Both general problems regarding electronic proposal submissions and reporting, as well as specific technical difficulties were mentioned throughout these comments. Typically, researchers noted that electronic-based submissions and reports take longer to complete and are more work than the previous paper versions. A few researchers speculated that the “ease” of electronic forms has made constant changes and additions easier too. This then translates into a steady growth of forms and paperwork that accumulate to the point of being unmanageable. This increase in electronic paperwork is especially felt by more experienced researchers who suggest that the added forms and requirements have resulted in a noticeable decrease in their annual number of proposal submissions.

Many of the comments regarding electronic systems pointed out problems associated with particular websites. Grants.gov was the most commonly listed culprit, with a variety of complaints about the added difficulty in submitting proposals and reports, idiosyncrasies in formats that create frustrations and delays, and a general lack of user-friendliness. Researchers in some cases were concerned about the need to learn to use several different grant submission sites (e.g., Grants.gov vs. Fastlane). In addition, some investigators pointed out that the differences in submission and reporting requirements of each agency substantially increases the amount of time it takes to correctly submit a proposal and/or report. A single vehicle for submission/reporting with a uniform format was suggested by a number of respondents.

In addition to the more general complaints, respondents replied with some rather specific complaints about electronic submissions and reporting. Specific complaints include, but are not limited to, expiring passwords, unfriendly website interface, no copy/paste function, compatibility issues for Mac users, problems uploading documents, non-functioning data portals, unhelpful or no FAQ sections, and unclear directions on what is required for submissions.

Complications Related to International Issues. The final topic not explicitly covered by any other pre-existing category concerns international complications. Issues relating to international students and international research collaborations were a primary concern for over 100 survey respondents. Although the majority of researchers do not work internationally, the ones that do face significant research barriers. The most frequently cited problems were associated with obtaining visas. The visa process for international students, as well as visiting researchers, was described as lengthy, convoluted, and costly. Visas can take months to get approved, and then, to satisfy the visa can take a few more weeks. The visa process was described as so unappealing that it discourages researchers and students from studying in the United States.

Other barriers that impede or prevent international collaborations involve issues with obtaining IRB approval for human subjects research. The current IRB system in the United States is not equipped to handle collaborations involving the international equivalent of IRBs. Obtaining IRB approval from international research sites is not always feasible, especially in countries with fewer restrictions on human subjects research, or those with no guiding system for human subjects research at all. There is also the perception that U.S. IRBs impose stricter rules and guidelines for international research than they would for essentially the same research in the United States. Complexities associated with cultural differences in expectations and understandings make the approval process even more difficult. All of these added difficulties can discourage researchers from engaging in international research involving human subjects, which often serves to limit the scope and generalizability of research.

These three issues are examples of some of the unanticipated problems that may emerge as the federally funded research process continues to change and develop. There are likely to be additional issues that pose significant barriers to different subsets of researchers. As technology advances, and laws change, some burdensome responsibilities may be alleviated while others are created or increased (e.g., solutions and problems associated with electronic submissions). This changing landscape suggests the continuing need to work towards streamlining responsibilities in the interest of honing the most efficient and effective systems in support of federally-funded research.

Perceptions of the Climate for Research

In the final section of the survey, investigators were presented with a series of 13 statements reflecting on the climate for research and the impact of research administration. Respondents were asked to state whether they agreed or disagreed with each statement using a 5-point Likert-type scale in which: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree. As shown in Table 33, responses were evaluated both in terms of average ratings and in terms of the percentage of respondents who agreed with the statement (i.e., gave ratings of 4 or 5. The statements are listed in order from the highest mean rating (i.e., greatest agreement) to the lowest.

Table 33. Average Ratings and Percent Agreement for Items Concerning the Current Climate for Research

Research Climate Opinion Items	Average	SD	%Agree
Sponsored research activity is a primary factor in my institution's promotion and tenure policies.	4.27	0.89	85%
If I had it to do over again, I would still choose an academic research career.	4.15	1.00	79%
Administrative workload associated with federally-funded research grants has increased in the last 5 or 6 years.	3.93	0.93	68%
In my department/program, research is considered more important than teaching.	3.90	1.02	71%
If funding rates at federal agencies were higher, then the associated administrative workload would seem reasonable.	3.75	0.94	64%
The federally-mandated requirements for research serve as a roadblock to research productivity.	3.40	0.97	49%
The administrative workload associated with federally-funded research is exhausting.	3.25	1.04	42%
Research administrative workload is discouraging my graduate students from pursuing academic research careers.	3.05	1.02	33%
The federally-mandated requirements for research accomplish their intended goals.	2.97	0.84	26%
In my department/program, I have the option of buying out of teaching assignments.	2.91	1.35	40%
The time spent meeting federal requirements for research provides benefit worth the cost.	2.74	0.94	21%
Because of research administrative workload, I am generally less willing to submit federal grant proposals than in the past.	2.67	1.17	26%
When I have questions about federal regulations related to research, obtaining answers is straightforward.	2.65	0.96	21%
Rating Scale: 1=Strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree.			
%Agree: Percent who rated the item as 4=agree or 5=strongly agree.			

Evaluation of Individual Items

The responses raise some interesting insights into investigators' perceptions of research at their institutions, and of the effects and effectiveness of the administrative processes related to this research.

Importantly, the faculty reaffirmed their affection for their academic careers, with 79% agreeing that "If I had it to do all over again, I would still choose an academic career," providing a mean ranking, of 4.15, which falls in the agree to strongly agree range. This was the second most positive response to the questions and shows the commitment of the faculty to academic careers.

However, 31% of the faculty also agreed with the statement that the administrative workload associated with research is discouraging my students from pursuing academic careers”, while 31% disagreed and 38% neither agreed nor disagreed. In a time when there are concerns about the training of future scientists and about the factors affecting the career choices and career development of individuals in the researcher “pipeline,” this issue merits further exploration.

The responses underscore the Faculty’s perception that research is critical to the success of their academic careers. Most faculty felt that sponsored research activity was a primary factor in their institutions’ promotion and tenure policies (with the highest mean numerical ranking on the list (4.27) and 85% of the respondents agreeing with this statement). 71% felt that research was considered more important than teaching in their department or program (mean ranking 3.90). 40% reported that their department or program allowed them to “buy time” from their teaching assignments in order to perform research. This last statement shows the importance of salary funding from grants in allowing many faculty to perform research, as it implies that in some departments/programs faculty who are unable to obtain external research funding or who lose grant funding will be required to spend more time teaching and will have less time available for research.

The faculty generally felt that the administration burdens associated with federally sponsored research had increased in the past 5-6 years (68% agreeing; mean rating 3.93). In addition, 42% of the faculty agreed with the statement that this administrative workload was “exhausting”, while only 26% disagreed with this statement.

Sixty-four percent of the respondents felt that the administrative workload would seem reasonable if funding rates at federal agencies were higher, probably reflecting the time spent preparing and submitting unsuccessful competing and renewal applications, as well as the associated compliance protocols and other documents in a time of low success rates for funding. Only 26% of the respondents agreed with the statement that they are generally less willing to submit federal grant proposals than they were in the past, while 50% disagreed with that statement. However, the fact that *all* of the faculty who received the survey were PIs on federally-sponsored research suggests that the problem may be larger than it appears here. If many of the most committed and successful researchers regard the combination of low finding rates and high administrative workload as an impediment to submission, one can only wonder how many would-be PIs have simply given up trying.

Faculty clearly questioned the value and efficacy of at least some administrative requirements. Only 21% agreed with the statement that “the time spent meeting federal requirements for research provides benefit worth the cost,” while 38% disagreed and 41% neither agreed nor disagreed. The faculty were also asked whether they agreed with the statement that “the federally mandated requirements for research administration accomplish their intended goals.” Only 26% of the respondents agreed with this statement, 26% disagreed, and the other 48% neither agreed nor disagreed. Overall, 74% of the faculty answering this question were not sure that the federal

requirements actually accomplished their intended goals of ensuring the quality and integrity of the research.

The support available to faculty to help them understand federal requirements appears to be inadequate. In response to the statement “when I have questions about federal regulations related to research, obtaining answers is straightforward” only 21% agreed and 46% disagreed. The question and responses do not allow us to determine whether the difficulty in obtaining information reported by almost half of the faculty reflects a failure of the agencies, the institutions, or both. It is clearly a problem that only 21% of the respondents find it straightforward to obtain the answers to their questions about the federal regulations related to their research.

Comparison with the 2005 Survey

Some comparisons can be made to the responses obtained in the 2005 survey, but care must be taken in these comparisons both because the rating scale used in 2005 was slightly different from that used in the current survey and because there were some minor differences in the wording of the questions used in the two surveys. Not every question in the 2012 survey mirrored a question on the previous 2005 survey. As shown in Table 34, the responses were similar in both surveys, with relatively minor changes that may or may not indicate changes of true, practical significance.

Table 34. Comparison of 2012 Average Ratings for Items Concerning the Current Climate for Research with Similar Items from 2005

Research Climate Opinion Items	2012 Average	2005 Average
Sponsored research activity is a primary factor in my institution's promotion and tenure policies.	4.27	4.51
If I had it to do over again, I would still choose an academic research career.	4.15	4.52
Administrative workload associated with federally-funded research grants has increased in the last 5 or 6 years.	3.93	4.00
In my department/program, research is considered more important than teaching.	3.90	4.43
Research administrative workload is discouraging my graduate students from pursuing academic research careers.	3.05	3.30
In my department/program, I have the option of buying out of teaching assignments.	2.91	3.01
Because of research administrative workload, I am generally less willing to submit federal grant proposals than in the past.	2.67	2.40
Rating Scale: 1=Strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree.		
Note. Item and rating scale wording were slightly different in the 2005 survey.		

Analysis of General Comments

In addition to providing open-ended responses about frustrations concerning specific workload responsibilities, survey respondents were also given the opportunity to provide an open-ended response to the following general item at the very end of the survey: *Please provide any additional comments you would like to share.* A total of 2,964 open-ended comments were elicited for this item. Many of these comments were fairly lengthy, averaging 295 characters (*median* = 218; *SD* = 287), or roughly about 30-35 words.

The content analysis for this item proceeded in a fashion similar to that for the emergent themes within the responses to the open-ended question regarding frustrations. Each of four reviewers read through all of the comments and created a list of themes that they identified as recurring repeatedly. These lists were then brought together and discussed in order to develop a list of primary emergent themes. Four overarching categories with 11 subcategories were identified through consensus.

Keywords were then developed for these emergent categories. As before, keyword searches of words or word stems were conducted using the search and conditional formatting functions in Microsoft Excel. These keywords were used to identify the subset of comments that were relevant to a given emergent theme. The subset was then subjected to the same sort-and-review process described previously. For each emergent theme, the subset of potentially relevant comments was reviewed (1) to determine whether it did in fact pertain to that theme, and if so, (2) to identify general patterns of responding within the category. The frequency of comments relevant to each of the themes was recorded, and descriptive summaries have been provided below. On average, a given comment would be relevant to 1.5 of the themes we identified (*SD* = 0.86), with 337 comments that did not fit into any of the themes. Table 35 summarizes the counts for the several themes that emerged.

Broader Issues

In a surprising consensus, almost 40% of the comments (1,142 or 39%) pointed out a broader concern about the status of federal research funding beyond frustrations with federal regulations. Researchers are overwhelmingly concerned about the general health of the research funding process. Over 700 respondents agreed that problems with federal funding are the driving issue in undermining the fundamental ability to conduct high quality research, and that current funding rates cannot adequately sustain existing or developing research programs. With funding rates averaging between 10% and 20%, at least 80% of proposals are being rejected. As respondents point out, this translates into a waste of at least 80% of the time spent writing grant proposals (even if the most efficient of proposal processes were assumed). Moreover, researchers note that the drop in award amounts and award durations means that more proposals need to be funded in order to sustain the same size research program. Combined with the low funding rates, this creates an even larger resource drain in which researchers feel that they are becoming little more

than a ‘mill of proposals’ rather than the leader of focused scientific investigation and discovery. Almost 20% of those who provided comments volunteered that their time devoted to active research is becoming increasingly compromised, especially by the need to constantly complete tasks associated with securing support rather than focusing on the research itself.

Table 35. General Comment Themes (Total number of comments = 2,965)

Theme		Count
Broader Issues (n = 1,142)		
	Insufficient funding/unsuccessful proposals	748
	Threat to science/research productivity	514
	Disincentive for research career	334
	Dysfunctional system for supporting research	97
Administrative Workload (n = 1,868)		
	Elaboration of specific administrative frustrations	1173
	Corroboration of negative impact of administrative workload	599
	Administrative workload not seen as problematic	270
	Administrative workload accommodated by staff	55
Indirect Costs		154
FDP Faculty Workload Survey (n = 417)		
	Recommendations for improvements	270
	Gratitude for bringing attention to research workload	121
	Concern over potential inaccuracy of rough estimates	65

Note. A given comment covered on average 1.5 of the above themes, including a total of 337 comments that did not mention any of the themes.

More than 500 respondents explicitly voiced concern about the future of U.S. science, and the obvious disruption to research productivity that accompanies low funding rates and excessive administrative workload. Many are concerned about the competitive advantage being gained by countries that are focused on investing in research and shielding researchers from other demands. This concern is especially pronounced with respect to the research pipeline. Over 300 respondents volunteered that there is a clear disincentive in the U.S. to work in scientific/medical fields, particularly in academia. Respondents report that the pressure to seek ever-dwindling federal funding in order to build and maintain a research program is discouraging students at all levels from considering science as a career. The need to deal with excessive administrative workload makes research careers even less attractive. Many suggested that these conditions are driving current scientists to consider retiring early or changing career directions. Some even volunteered that they were seeking administrative appointments—noting that, ironically, these appointments tend to pay more and be more stable sources of revenue than research appointments (even though the administrative positions in many cases were developed to support the research mission).

The overall tone of these comments reflected emotions ranging from discouragement and frustration to near despair, with an urgent plea to make changes that could set the research funding system in a healthier direction. Almost 100 respondents specifically commented on the system for supporting research in this country, suggesting that something be done to restore what is seen as a system that is either rapidly deteriorating or entirely broken.

Administrative Workload

Several other themes were identified within the general comments. A very large group (1,173) elaborated on some aspect of the many frustrations that will be detailed in the next section. Twenty percent of comments (599) provided corroboration that federal requirements are taking a serious toll on active research. In contrast, over 300 respondents volunteered that their own situation was not especially burdensome in terms of federal requirements. For some of these, they added that they had good administrative support on their research team or within the university, and that without this support, they would undoubtedly have a more challenging administrative workload.

Indirect Cost Recovery

Comments from 154 respondents addressed some aspect of indirect costs (IDCs; also commonly referred to as overhead costs or facilities and administration [F & A] costs). Most complained about the over-reliance of institutions on IDCs and the potential misdirection of funds recovered as indirect costs. Many felt that an insufficient amount of the indirect cost recovery was being returned to the researcher or to the benefit of the research project. Others complained that too much of their project budget had to be dedicated to indirect costs, leaving an inadequate amount for the direct costs of the project. Some recommended that a portion of the indirect costs—or perhaps direct costs—be allocated to project personnel to assist with administrative workload. Others suggested that the administrative cap on indirect costs needs to be lifted in order to obtain sufficient assistance with administrative workload. Those conducting education and training projects complained that the 8% IDC cap creates a serious obstacle through underfunding of actual project costs and creating a disincentive at the level of the institution. Finally, some point out that with a decrease in administrative requirements, the administrative costs of research could be reduced.

Reactions to the FDP Faculty Workload Survey

Other comment themes addressed the survey itself. Some provided feedback regarding ways in which the FDP Faculty Workload Survey could be improved (270) and others thanked the FDP for examining the issue of research workload (121). Some respondents cautioned that survey estimates of time should be interpreted with care (65), recognizing that the values could suffer from inaccuracies and potential bias. Finally, several comments (337) provided clarification of an idiosyncratic situation to help in interpreting that particular individual's responses (e.g., on sabbatical, emeritus, non-research project).

Conclusions and Recommendations

The findings from this 2012 FDP Faculty Workload Survey provided a replication and extension of findings from the 2005 survey. Overall, the situation with respect to administrative workload seems to have changed very little over the past several years. The investigators in both surveys reported that an average of 42% of their research time associated with federally-funded projects was needed to fulfill related requirements rather than to actively engage in the content of their research projects.

Reducing the administrative workload associated with federally-funded projects is critical for increasing the efficiency and effectiveness of research. The current levels of administrative workload routinely reduce the ability of highly qualified scientists to focus on the goals of their research, hampering the rate of discovery and innovation. The results of this survey suggest that both larger scale and more focused interventions will be needed to begin to ameliorate this situation and bring about a healthier balance between administrative workload and research productivity.

On the larger scale, federally-funded researchers in our survey are fundamentally concerned with deficiencies in the system for funding research that threaten and impede research productivity. Three essential needs emerged repeatedly. These involve finding ways to:

- (a) factor in impacts on research quality and productivity when weighing the costs and benefits of research policies;
- (b) strengthen research programs by minimizing distractions, interruptions, and an environment of uncertainty; and
- (c) reduce disincentives for conducting research and following a research career path.

Although the FDP is not in a position to address these on its own, its relationship with federal funding agencies and other related organizations, as well as member institutions, can play a key role in keeping these issues at the forefront. In addition, various kinds of demonstrations may be developed to help illustrate the impact of addressing these issues while maintaining accountability.

Toward a Healthy Research Culture

The importance of maintaining sensitivity to the tradeoffs between costs and benefits was evident throughout the survey both implicitly and explicitly. Almost 80% of investigators are not convinced that the time spent meeting federal requirements for research provides benefit worth the cost. Realizing that roughly 42% of investigators' time is still being spent on requirements makes it obvious that there might be better, more efficient ways to accomplish the goals of those requirements. This is true not only when establishing federal requirements but also when implementing those requirements.

The FDP is especially well-positioned to enable collaborations that will assist institutions in identifying particularly efficient and effective methods of implementing requirements. Specific areas that the survey identified as high priority include proposal and report preparation, project finances, human subjects, animal subjects, effort reporting, and personnel. The FDP's collaboration with federal agencies can also assist those agencies by providing demonstrations of ways to address the need for accountability while minimizing the impact on investigators' research time. It is clear from the survey that researchers are deeply concerned about wasting research time. It is likely that institutions and federal agencies are interested in minimizing waste of this valuable time as well. The FDP can be the conduit to help identify solutions.

The FDP's mission of reducing administrative burden can also include a more holistic approach to promoting healthy research cultures within institutions. Administrative offices, in their zeal to perform well, may overemphasize administrative goals without comparable attention to the impact on research time, which may compromise research quality and productivity. Developing systemic methods for explicitly prioritizing research time side-by-side with administrative priorities (e.g., protecting against audit and legal concerns) can help ensure that there is a mechanism for maintaining a healthy balance of research and administrative goals when developing and implementing institutional research policies and practices. This approach is also likely to increase general efficiency, both for researchers and for administrative staff.

FDP demonstrations can provide evidence for the value of this type of balanced approach. For example, FDP demonstrations could show the increased efficiency of targeting high-risk conditions and high-likelihood problems, while reducing workload in more benign situations. FDP demonstrations of this sort might help in the development of criteria for "materiality" to help minimize time spent on administrative requirements when risk or impact is low. The FDP can use these types of demonstrations to help ensure that audit/legal/CYA concerns do not override the goal to support research and researchers.

An Efficiency Checklist

The 2012 FDP Faculty Workload Survey provides a rich resource for targeting specific issues that have a substantial effect on administrative workload. Quantitative ratings provide useful information regarding those aspects of administrative workload that are particularly prominent and time-consuming, such as finances, IRB, and IACUC concerns. Qualitative data in the form of comments can help guide FDP demonstration projects. Both serve to confirm the existence and impact of issues related to administrative workload on federally-funded projects.

Example demonstration projects might include:

Project Proposals:

- Use of simplified or just-in-time budgets, IRB, and/or IACUC documentation;
- Comparison of productivity from competitive versus non-competitive renewals;
- Feasibility, structure, and advantages of simplified or uniform application forms;

Project Finances:

- Reduced reporting, documentation, and/or monitoring for small expenditures/purchases;
- Streamlined approaches for justifying and tracking expenditures/purchases;
- Methods for combined optimization of administrative assistance and researcher oversight;
- Focused approaches to easing administrative workload associated with cost sharing, subcontracts, and project-related travel;

IRB and IACUC Requirements:

- Reduced reporting, documentation, and/or monitoring for low risk research;
- Streamlined approaches for completing, reviewing, and renewing protocols;
- Reduced reporting and documentation for benign modifications;
- Methods for dealing with multiple institution and international projects;
- Approaches to minimize inconsistencies and redundancies in cross-agency and agency versus institution requirements.

Many of the particular concerns that are pervasive throughout the survey (including the bulleted list of examples above) are already weaved into the fabric of ongoing FDP efforts. These might be combined to be thought of as an *efficiency checklist* for consideration in future FDP demonstrations and projects.

Sample Efficiency Checklist Items

- simplify;
- coordinate/unify, reduce inconsistencies;
- respond to scale (less work for minor issues);
- minimize unnecessary change;
- reduce delays;
- eliminate redundancy; and
- strive for clarity.

Although the results of the survey reinforce the importance of bringing this type of efficiency checklist to initiatives within (and hopefully beyond) the FDP, the survey makes it less obvious

how challenging it can be to simultaneously satisfy many of these goals. A creative approach will be needed to balance these recommendations with one another and with other priorities. Staying up-to-date makes it difficult to minimize change; simplifying may compromise flexibility; unifying can reduce the ability to meet particular needs. The survey indirectly illuminates the importance of striving for solutions that can satisfy multiple needs. The FDP is especially well-positioned to foster hard-to-find solutions by:

- routinely bringing together researchers, administrators, and agency representatives to identify the many different needs and concerns associated with different administrative requirements;
- serving as a forum and test bed for exploring innovative ways to alleviate pressing problems;
- providing a mechanism for effective communication of efficient practices and potential resolutions to specific difficulties.

Reducing Disincentives for Conducting Research

Perhaps the most unsettling concern raised in the 2012 FDP Faculty Workload Survey involves questions about the continued viability of the federally-funded research enterprise. The survey points out the fundamental inefficiency associated with research competitions in which only 10-20% of projects can be funded. De facto, 80-90% of the proposals written will not be awarded. The more time that these proposals take to prepare, and the more a researcher's ultimate success is tied to these competitions, the less attractive the enterprise becomes. It is likely to serve as a serious disincentive to learn that conducting the highest quality science will not be sufficient to ensure a successful research career, but that success is tied to a funding system fraught with uncertainty in which large amounts of time must be committed to fulfilling administrative requirements that may not contribute to (and may sometimes take away from) the content of a program of research.

Over 1,000 of the survey's respondents volunteered general comments raising concern about the current system for funding research. Virtually all of these targeted the inefficiency associated with insufficient funding for research, but most also agreed about the more general concern that the current system of low funding rates and high administrative workload constitute a serious threat to science and research productivity in the country. Many were explicit about the concern that potential young scholars are being dissuaded from embarking on research careers because these factors make a research career seem unappealing and too uncertain.

Although the FDP cannot address this concern on its own, it may play a role by bringing attention to this potential threat to the research pipeline, and by working to alleviate concerns wherever possible. Fully one-third of survey respondents agreed that administrative workload is a major disincentive for graduate students considering an academic research career. To the

extent that the FDP can identify ways to reduce this workload, it may help ease the problem. The FDP may also identify other ways in which it might encourage or strengthen the research pipeline, including projects such as ongoing collaborative efforts to support work-life balance initiatives at institutions and federal agencies.

Future Potential for the Workload Survey

Moving forward, it will be important to continue to collect data to monitor progress. Although the FDP Faculty Workload Survey provides valuable information about administrative workload in federally-funded research, it only represents one piece of the puzzle. Without comparable information about the workload among administrative staff, it is not possible to get a complete picture of the costs of administrative requirements, or the potential for enhancing efficiency. For instance, does a relatively large administrative staff at an institution ensure that researchers experience less administrative workload? To what extent do experiences of administrative staff match experiences of researchers; do they identify the same problems? Future iterations of the Workload Survey might do well to include data regarding research administration within member institutions to facilitate an understanding of how levels and types of administrative support impact faculty workload.

Future iterations of the survey might also include methods for validating respondent estimates of workload. The estimates provided by researchers are only that—we cannot be sure of the specific accuracy of these estimates, though it is reassuring to see the surprising consistency across the 2005 and 2012 surveys. Nevertheless, more objective data on administrative workload should be a goal in order to corroborate these findings and to provide a basis for more accurately assessing the costs associated with additional administrative requirements.

Finally, future data collection might attempt to generate information about effective practices and ideas for creative solutions that could be shared among the FDP membership, and beyond. These might involve both faculty and staff suggestions, as well as reports of which institution policies and practices seem especially useful or worthwhile.

With continued access to input from and interaction among researchers, administrators, federal agency representatives, and other interested parties, the FDP can remain a leader in developing and sustaining the collaborative relationships that are necessary to shape a more efficient and effective research enterprise.

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