FEDERAL DEMONSTRATION PARTNERSHIP (FDP)

2018 Faculty Workload Survey

RESEARCH REPORT: Primary Findings

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Executive Summary

The **Federal Demonstration Partnership** (FDP; Phase VI) is a cooperative initiative among 10 federal agencies and 154 institutional recipients of federal funds, convened by the **National Academies** and its Government-University-Industry Research Roundtable, with a purpose of reducing administrative burdens **associated with federal research grants and contracts**. In early 2018, the FDP conducted a survey of principal investigators (PIs) of federally-funded projects to gather empirical evidence to inform efforts to help streamline the research process. The goal of the survey was to determine researcher perceptions of the amount of time taken from active research by the various administrative and related requirements associated with federally-funded research. This was a follow-up survey to the 2005 and 2012 FDP Faculty Workload Surveys of federally-funded investigators (see Decker et al., 2007; Schneider et al., 2014).

Response Rate. In the current survey, responses were obtained from **11,167 PIs** with active federal grants during the 2016-17 academic year from 111 (non-federal) FDP member institutions. The **response rate** was roughly **20%**, which is typical for online surveys, but slightly less than in the previous two surveys (24% with 12,816 respondents in 2012 and 26% with 6,081 respondents in 2005). The large number of respondents from a variety of institutions across the country provides a rich set of data, though the response rate suggests that caution in interpretation is warranted as some views may not be represented.

Respondent Characteristics. Respondent characteristics were remarkably similar across the three time periods, with a minimal increase in diversity with time across cohorts. The **modal participant** was a PI at a public university (70%) that was deemed a Very High Research (84%) institution based on the Carnegie Classification of Institutions of Higher Education (2017). Most commonly, the institution had upward of $500 million in annual research expenditures and had a medical school. The typical respondent was a white (79%), male (62%), full (49%) professor with an average age of 52 years. The PI typically had 1 to 3 federal grants during the 2016-17 academic year with less than $500,000 in annual direct costs. The principal field of research was most likely to be biological and biomedical sciences (40%) or physics, math, and engineering (28%). Funding was most often provided by the National Institutes of Health (NIH, 47%) or the National Science Foundation (NSF, 33%).

Time Taken from Research by Requirements. The previous surveys in both 2005 and 2012 revealed that faculty researchers estimated that approximately 42.3% of their research time was devoted to fulfilling administrative and other requirements associated with obtaining and managing federally-funded projects. In 2018, this value increased by 2% (or about 30 minutes per week), with PIs estimating that an average of **44.3% of their research time** associated with federally-funded projects was spent on **meeting requirements** rather than conducting active research. Thus, the trend seems to be that **time taken from research by requirements is increasing, not decreasing**. PIs reported that almost half of their available research time for

federal projects had to be allocated to fulfilling requirements instead of focusing on the content of their research projects.

A comparison of the reported time taken by activities associated with conducting federally funded research is summarized below for 2012 and the current survey. In both time periods, proposal preparation and post-award administration tended to take the largest portions of time away from research. A slight uptick since 2012 in reported time away from research was evident in all areas except post-award administration.

	2012	2018
Proposal preparation	**15.4%**	**16.0%**
Pre-award administration	**5.7%**	**6.3%**
Post-award administration	**13.6%**	**13.7%**
Report preparation	**7.6%**	**8.3%**
Active Research	**57.7%**	**55.7%**

Proposal Preparation. Proposal preparation took the largest portion of time away from active research. However, some of this time may contribute to shaping the content of the PI's research program. We asked PIs to report how much of their proposal preparation time contributed to their scholarly efforts. On average, they reported that as much as **38.7% of their proposal preparation time (or 6.2% of their overall research time) contributed to their scholarship.** Nevertheless, the **number of proposals submitted in the last 3 years** (median = 4) **was one of the strongest predictors of reported time away from research** (r=.20), and was often cited as a particularly egregious burden on time given the **low likelihood of receiving funding based on the associated effort**.

Administrative Requirements. As in the 2012 survey, PIs were asked about the workload associated with as many as **22 different pre-award and post-award administrative responsibilities**. On average, researchers reported having to fulfill **9.2 of these responsibilities** within the one-year time frame of the survey, which was an increase from 8.7 in 2012. Researchers estimated that **additional administrative assistance could reduce their time spent on administrative responsibilities by an average of 29%**, which was similar to 2012.

As in 2012, 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 **animal or human subjects**, the related **IACUC** (Institutional Animal Care and Use Committee) **and IRB** (Institutional Review Board) **requirements** were by far the most time-consuming. Other areas viewed as particularly time consuming were those involving **clinical trials, subcontracts, data management,** and **biosafety**. Since 2012, we observed substantial **increases** in both the prevalence (% experiencing responsibility) and intensity (% reporting substantial workload) of responsibilities associated with **data management** and **conflicts of interest**, with smaller increases in both measures for subcontracts, project finances, responsible conduct of research,

and clinical trials. There were few decreases in percent reporting substantial workload and all were small.

When asked about which administrative workload areas were high priority areas to reduce administrative burden, IACUC/Animal Subjects was most likely to be identified, with 42% of those experiencing these responsibilities rating it as high priority and 35% rating it the single highest priority area in need of change. Clinical trials, IRB/Human subjects, and project finances were also among those areas most commonly identified as high priorities for change to reduce unnecessary burden. Additional drilldowns provide detailed input for several of these areas.

Consistent with 2012 findings, several **differences in administrative workload** were found as a function of **research assignment**, **amount of funding, principal field of research, funding agency,** and **institution characteristics**. Most often these differences were particularly pronounced in the areas of post-award administration and proposal preparation, followed by interim/final report preparation. Many of the same variables cited above influenced not only the overall amount, but the patterns, of research-related administrative workload.

Agency-Specific Requirements. In a newly developed addition to previous surveys, PIs were asked to answer a series of questions about agency-specific requirements with respect to a federal agency that was currently funding their research. PIs rated both pre-award and post-award requirements for the agency that they perceived to have the most burdensome requirements.

Among those PIs who experienced the responsibility, **pre-award agency-specific requirements** associated with **animal research and human subjects research** were most likely to be rated as high priority needs for change to alleviate unnecessary burden. Twenty-seven percent of researchers with animal care and use requirements and 27% of researchers with human subjects protections requirements reported that these areas are high priority needs for change at the agency level (independent of the IACUC and IRB procedures implemented at the university level). Other agency-level pre-award responsibilities commonly seen by PIs as having a high priority need for change included **budgets and justifications** (25% of those experiencing this responsibility), **data management plans** (20%), and **collaborators/affiliates forms** (18%).

The **post-award agency-level requirement** that was most commonly identified as having a high priority need for change was **clinical trial monitoring** (24%). Post-award requirements for **animal care and use** (23%) as well as **human subjects protections** (21%) were also frequently deemed to have a high priority need for change. **Interim/final report narratives** (20%) and **expenditure reports** (17%) as well as **subcontract/subaward monitoring** (17%) were also commonly viewed as high priorities for reducing administrative burden at the agency level.

Perceived of the Climate for Research. In 2018, we repeated several opinion items regarding perceived research climate, and included additional new items focused on aspects of the institution's research administration. Generally small but consistent changes were observed in responses to the items repeated from 2012. Although most respondents (79%) reported that they

continued to be committed to their own academic/research careers, 45% were concerned that the administrative workload associated with research is **discouraging graduate students from pursuing academic careers**. This value was 33% in 2012. Most respondents (75%) also agreed that **administrative workload** associated with federally-funded research **has increased** in the past 5 to 6 years, with as many as 31% suggesting that this increased workload was **discouraging them from submitting federal grant proposals**, up from 26% in 2012. In addition, 62% believed that administrative burden associated with federally-funded research seriously compromises research productivity.

New items focusing on the institution's climate revealed that roughly 60% felt that their **institution effectively assists faculty with applying for and managing federally funded grants** and contracts, and that their **institution has a culture of trust** in researchers. Just **less than half** reported that their institution makes it straightforward to **find answers about federal regulations** related to research (48%) and that their institution works to **alleviate hurdles in collaborative research** (44%). Even fewer (41%) agreed that their institution ensures that **researchers have an active voice on issues affecting research**. Only 30% felt that their institution **avoids overreactions based on audit or legal concerns** and less than one quarter (22%) felt that their institution regularly **explores ways to reduce administrative burden on researchers**.

Emergent Themes. Qualitative measures were also used to identify areas of focus with respect to alleviating administrative burden associated with federally-funded research. These included open-ended suggestions and reports of most and least helpful administrative institution research practices. In general, the results were similar to those found in 2012.

Approximately one-third of almost **3,500 suggestions** targeted **institution-specific roles a**nd another one-third targeted **agency-specific roles**. Twenty percent reported a general **sense of futility** due to perceptions of wasted time through inefficient processes and lack of a connection between effort and achievement of goals (e.g., unnecessary forms, IRB practices that do not contribute to subject protections). About 36% of suggestions involved issues related to either **proposal or report preparation**. In addition, 12% of open-ended responses focused on **administrative support**, 10% referenced **IRB processes**, 8% discussed aspects of requirements regarding the management of **finances** on federally funded projects, and 6% referenced **IACUC processes**. (The IRB and IACUC suggestion rates are noteworthy given that only a minority of investigators experience these responsibilities [~45% IRB, ~25% IACUC].)

Emergent themes were also identified regarding the ways in which the PI's institution was most or least helpful in alleviating administrative burden associated with federally-funded research. Within the 3,565 responses, PIs were most likely to report that some aspect of **administrative support or personnel** provided the **most helpful contribution** to alleviating unnecessary burden (36%). PIs also commonly reported appreciation for help with some aspect of **managing finances** (30%) or some contribution to **proposal preparation** (24%).

The 3,348 responses regarding **least helpful practices had almost the same pattern**. Roughly 25% complained about some aspect of administrative support or personnel. Another 25% were concerned with some aspect of managing finances and 13% were concerned with proposal preparation issues. This suggests that assistance from administrative personnel, especially with regard to finances and proposal preparation, are particularly important in shaping PI perceptions of the institution's effectiveness in reducing unnecessary administrative burden associated with federally-funded research. One exception to similarities among most and least helpful areas was the pervasive presence of statements among the least helpful group that reflected a sense of futility surrounding efforts to obtain and manage federal funding, with 27% reporting **discouragement with what was perceived as unnecessary or futile workload**.

Conclusions. Reducing the administrative workload associated with federally-funded projects is one of the primary ways of increasing the **efficiency and effectiveness of research**. The most recent FDP Faculty Workload Survey suggests that this administrative workload may be increasing, further reducing the **ability of highly qualified scientists and other investigators to focus on the content of their research**. Our results identify numerous areas at the level of the **institution** and **agency** that could be improved to substantially reduce unnecessary workload on investigators. Solutions may differ somewhat across fields and types of research, and the most effective interventions may differ based on the characteristics and needs of the funding agency, recipient institution, and PI. Nevertheless, the need for **larger-scale collaborative solutions**, in addition to more **focused initiatives,** continues to be evident by the growing PI dismay 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 details of this survey can provide empirical input to the FDP and others for devising methods to gain efficiencies in processes associated with obtaining and managing federally-funded research, allowing more time for scientific discovery.

Federal Demonstration Partnership
2018 Faculty Workload Survey
Report of Primary Findings

Overview

Study Description and Rationale

Through its partnership with research institutions and federal agencies, the Federal Demonstration Partnership (FDP) has maintained a longstanding interest in reducing unnecessary administrative burdens associated with conducting federally-funded research. To this end, the Faculty Committee of the FDP administered its third in a series of national web-based surveys to explore the impact of federal regulations on the time faculty spend pursuing active research. In both the 2005 and 2012 FDP Faculty Workload Surveys, it was estimated by respondents that an average of 42.3% of faculty research time related to federally funded projects was spent completing required tasks associated with the administration of research rather than actively conducting research.

The **2018 Faculty Workload Survey** provides a re-assessment of estimates of research workload surrounding federally-funded projects. Volunteers were solicited from among a pool of federally-funded research personnel working as Principal Investigators during the 2016-2017 academic year within 111 FDP member organizations. **Almost 12,000 investigators provided responses to the survey**. The results of the survey suggest that, if anything, **time taken away from research by administrative and other requirements has increased, with average estimates of _44.3%_ of faculty research time related to federally-funded projects dedicated to fulfilling these requirements**. The detailed findings extend the earlier survey findings by (1) evaluating perceived priorities for reducing excessive administrative burden, (2) examining views on the workload associated with various agency requirements, and (3) exploring variations in workload across institution types, research areas, and funding sources. The results of this study will be used by the FDP to strategically plan activities for Phase VII, and prioritize new demonstrations examining areas to reduce administrative burden.

The current report summarizes the primary findings involving estimated research workload related to federally-funded projects, along with providing a description of the methodology and the respondents. Separate reports provide detailed results concerning perceptions of the current climate for research, priorities for reducing administrative burden, and agency-specific workload.

Background

The **Federal Demonstration Partnership** is a cooperative initiative among 10 federal agencies and 154 institutional recipients of federal funds, now in Phase VI of its 30-year history. The FDP

is a program sponsored by the Government, University, Industry Research Roundtable (GUIRR) of the National Academies of Sciences, Engineering, and Medicine. Its purpose is to improve the productivity of federally-funded research, in part, by increasing efficiency and reducing administrative burdens associated with research grants and contracts. The interaction between FDP's 500 or more university and federal representatives of member institutions takes place during FDP's three annual meetings and, more extensively, in the many collaborative working groups and task forces that meet often by conference calls and video conferencing in order to develop specific demonstrations and work products. The FDP is a unique forum for administrative, faculty, and technical representatives from universities and nonprofit research organizations to work collaboratively with federal agency officials to improve the national research enterprise.

About 25 years ago, the FDP (at that time called the Federal Demonstration Project) completed a survey of faculty from FDP institutions to evaluate the value of the "expanded authorities" that had recently been negotiated between FDP organizations, participating federal agencies, and the Office of Management and Budget (OMB). The primary focus of that survey was to determine whether changes in the requirements affecting federally-funded research, specifically those aimed at reducing burden associated with prior approvals, pre-award costs, no-cost extensions, and the carryover of unexpended funds, had saved faculty time and, if so, whether the saved time had been re-invested in research activities.

Over 2,500 faculty responded to that survey confirming that the new, more flexible policies saved researchers significant time. Of this liberated time, it was estimated that 90% was refocused toward scholarly activity and of that 90%, 73% was spent directly conducting research. These observations implied that research productivity could be increased by widespread adoption of these types of "expanded authorities" across federal agencies. However, open-ended comments from among the surveyed faculty indicated that a substantial portion of the free time resulting from 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, several new federal regulations were added to the workload of investigators pursuing or working on federal grants and contracts, which put further pressure on the amount of time that researchers 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 administrative staff. In **2005**, FDP conducted the **first Faculty Workload Survey**, which asked faculty investigators to estimate how they allocated their research time. **Among the roughly 6,000 investigators who participated, the average estimate of the percent of their research time focused on federal projects which was spent completing tasks related to research requirements (rather than actively conducting research) was 42.3%** (see Decker et al., 2007, downloadable from the Federal Demonstration Partnership (FDP)). The results were highlighted 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).

In **2012**, a **second Faculty Workload Survey** suggested that the time taken away from active research by requirements associated with federally-funded research remained unchanged. **Again, with respect to federally-funded projects, the average estimate of faculty research time spent on research requirements rather than active research was 42.3%.** The largest component of this time was devoted to preparing proposals, which was viewed by many as particularly wasteful given low funding rates and the focus on many details that would only become relevant if the project were selected for funding. Among the other most common and time-consuming administrative responsibilities were those associated with managing project budgets and expenditures, dealing with issues related to project and support personnel, and completing effort reports. In addition, for those working with animal or human subjects, there was a pronounced burden associated with excessively time-consuming administrative requirements for IACUC and IRB review, even for minimal risk research.

Detailed analyses of results for these and other requirements can be found in the 2012 Faculty Workload Survey Research Report (see Schneider et al., 2014). The results of this report have been used to inform several FDP activities and have been cited in a broad range of national efforts to reduce research-related administrative burden. These include reports of the National Science Board (2014), the Government Accountability Office (GAO; 2016), and the National Academies (2016). The findings of the survey also contributed to the inclusion of Section 2034, calling for a reduction in administrative burden for researchers, into the *21st Century Cures Act* which was signed into law in December, 2016.

The 2018 rendition of the survey was designed to determine whether ongoing efforts had reduced reports of the administrative workload associated with federally-funded research or whether changes in the research environment since 2012 had resulted in an uptick. Several revisions were made to improve the current survey. These additions included a focus on perceived priorities for changes in specific responsibilities, a new section concerning agency-specific pre-award and post-award responsibilities, new items assessing perceptions of institution climate for research, and an exploratory study of the alignment between percentage and hourly estimates of research time spent per week, as well as an initial attempt to separate the time spent on proposal writing that contributes to scholarship from the time that does not. At the same time, we remained particularly interested in historically high-burden areas such as those associated with human and animal subjects research as well as highly prevalent responsibilities especially those related to project finances. As in previous surveys, we were interested in exploring differences in estimates of time taken from active research as a function of type of institution, funding agency, field of research, and various professional and demographic variables. In addition to quantitative summaries, we also evaluated qualitative assessments of priorities and suggestions for streamlining the research process.

The current report starts with a summary of the methodology, followed by a review of the characteristics of respondents and how they compare to those of previous surveys. It then

provides details of estimates of time taken away from active research by various requirements associated with federally-funded research. Results provide insight into priorities for change associated with specific administrative responsibilities at the level of the institution as well as the federal agency. Finally, the report explores the perceived climate for research in general and within the institution. Supplementary reports are available with detailed results concerning (a) demographic variables; (b) variations in time lost as a function of several different variables including institution characteristics, funding agency, workload assignment, type of research, principal field, and basic demographic categories; (c) breakdowns of priorities for reducing administrative workload for requirements at specific agencies; and (d) open-ended suggestions for improving the research process and reducing unnecessary burden in administrative workload.

Method

Participants

A request was made to each of the non-federal member institutions of the FDP 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 2016-2017 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 111 of the 154 member institutions (72%). As shown in Table 1, this level of institution participation was similar to 2005, but less than 2012.

Table 1. Comparison of Response Rates across Three Faculty Workload Surveys

Period Assessed	FDP Institutions	PIs Invited	Participants	Response Rate
AY2016-2017	72% (111 of 154)	56,869	11,167	20%
AY2010-2011	83% (99 of 119)	53,428	12,816	24%
AY2004-2005	74% (73 of 99)	23,325	6,081	26%

Note. AY=Academic Year (12-months), PI=Principal Investigator. Some FDP Member Institutions represent university systems which may be broken out into specific locations within other institution counts.

In total, we solicited participation from 56,869 investigators. Approximately 500 of those could not be contacted due to address-related problems. A total of 15,847 potential participants entered the survey, with 13,056 of those providing their consent to participate and continuing on to take the survey. This yielded an overall response rate of 23%. Of those, 11,705 provided content-related data (i.e., answered more than the first few descriptive items). When post-doctoral students and part-time personnel were removed (to be analyzed separately), the final number of

base respondents for analyses was 11,167, yielding a final faculty PI response rate of approximately 20%. As shown in Table 1, this response rate was slightly lower than either the 2012 or 2006 Faculty Workload Survey. This response rate is typical of online surveys, which tend to have lower response rates than other survey formats, but may also reflect the consistent national trend of declining response rates in surveys across all formats (Couper & Miller, 2008; Daikeler et al., 2019). Despite this, a 20% response rate still provides a rich dataset representing a sizable portion of the population of interest. At the same time, it is important to keep in mind throughout that the results reported here may not accurately reflect the views of other members of the population.

As outlined in Table 2, most of the participants (84%) were from very high research (VHR) universities (54 public and 25 private) as identified by the 2015 Carnegie Classifications Data

Table 2. Number and Type of Institution with Corresponding Number of Respondents

Institution Classification	Number of Institutions	Number of Respondents
Very High Research Private $900M+	6	866
Very High Research Private $500M-$899M	7	1003
Very High Research Private $300M-$499M	7	666
Very High Research Private $100M-$299M	5	269
Very High Research Public with Medical School $900M+	6	1686
Very High Research Public with Medical School $500M-$899M	10	1797
Very High Research Public with Medical School $300M-$499M	9	907
Very High Research Public with Medical School $100M-$299M	12	1024
Very High Research Public without Medical School $500M-$899M	6	692
Very High Research Public without Medical School $100M-$299M	11	508
Independent Health Research	8	306
Medical School/Center	8	385
High Research Doctoral $100M-$499M	7	442
High Research Doctoral $60M-$99M	6	276
High Research Doctoral <$60M	13	215
Moderate Research Doctoral <$60M	4	52
Non-Doctoral	24	73
	149	11167

Note. Institution categories were assigned according to the updated 2015 Carnegie Classifications for which Medical School includes granting of MD, DDS, DMD, DO, and/or DVM degrees; dollar amounts listed correspond to institution expenditures (in M=millions) reported by NSF for Higher Education Research and Development: Fiscal Year 2016. Wherever feasible, institution systems are separated into individual locations.

File Version 14 (http://carnegieclassifications.iu.edu/downloads.php; as updated February 24, 2017). This is not surprising as these institutions are engaged in large amounts of research, and tend to be larger universities with large numbers of active researchers. Nine percent of the respondents were from 26 high or 4 medium research doctoral research universities, 6% were from 8 independent health research institutes or 8 special focus medical schools/centers, and the remaining 1% represented 24 non-doctoral colleges or universities.

Design and Procedure

Like the previous versions, the 2018 Faculty Workload Survey was a web-based multi-item survey. Participants were asked to respond with respect to their research activity during the 2016-2017 academic year. The survey consisted of six sections: Background, Your Work, Your Research, Research Responsibilities (General Research Administration, Compliance, Safety and Security), Federal Agency Requirements, and About You. The question formats included multiple choice, fill-in, and open-ended text entry items. The length of the survey varied for each participant depending primarily 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 20-30 minutes to complete.

The survey was administered by SoundRocket (https://www.soundrocket.com/; previously Survey Sciences Group, LLC (SSG)), a full-service survey research provider located in Ann Arbor, Michigan. (SoundRocket, as SSG, was also involved in 2005/2006 and 2011/2012 when the previous FDP Faculty Workload Surveys were conducted.) SoundRocket contracted with 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 late January of 2018, all 56,869 PIs on the lists provided by participating institutions were sent an email from the research team announcing the upcoming survey. (It is estimated that no more than 1% of these remained undeliverable after attempts to remedy any address-related problems.) During the following week, the official email invitation was sent, which 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. Data collection was completed within about 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

Institution Characteristics

The institution characteristics of respondents in 2018 were similar to those in 2012, as shown in Table 3. In both surveys, almost **three fourths of respondents were from public institutions**, with a **large majority from Very High Research (VHR) institutions** as defined by the Carnegie classification. The difference in percentage in the "VHR with Medical School" category is due to the addition of programs in Veterinary Medicine into the Carnegie classification of Medical School following the 2012 survey (i.e., institutions with Veterinary Medicine as their primary medical program were characterized as without a medical school in 2012, but as having a medical school in 2018).

The percentage of **participants from institutions having greater the $800 million increased** by 12% from about one quarter of participants in 2012 to about one third in 2018. In 2006, 71% of respondents worked at public institutions and 67% were at institutions with over $200 million in federal funding (compared to 80% in 2012 and 82% in 2018).

Table 3. Comparison of Participant's Institution Characteristics across the 2012 and 2018 Surveys.

2018 Institutional Control	N	%	2012 Institutional Control	N	%
Public	7821	70%	Public	9703	72%
Private	3346	30%	Private	3750	28%

2018 Institution Carnegie Classification	N	%	2012 Institution Carnegie Classification	N	%
VHR w/ Medical School	8036	72%	VHR w/ Medical School	8524	63%
VHR w/o Medical School	1382	12%	VHR w/o Medical School	2509	19%
Medical School/Center	385	3%	Medical School/Center	825	6%
Independent Health Research	306	3%	Independent Research Inst.	377	3%
HR Doctoral	933	8%	HR Doctoral	1028	8%
MR Doctoral	52	<1%			
Non-Doctoral	73	<1%	Non-Doctoral	168	1%

2018 Institutional Federal Funding	N	%	2012 Institutional Federal Funding	N	%
Less than $100M	630	6%	Less than $100M	1078	8%
$100M-$200M	1004	9%	$100M-$200M	1356	10%
$201M-$300M	1384	12%	$201M-$300M	1351	10%
$301M-$500M	1589	14%	$301M-$500M	2423	18%
$501M-$800M	2329	21%	$501M-$800M	3921	29%
More than $800M	3866	35%	More than $800M	3036	23%
Not Available	365	3%	Not Available	288	2%

Note. N= Number of participants; VHR=Very High Research, HR=High Research, MR=Medium Research, M=million, w/= with, w/o=without.

Table 4 compares the number of institutions with participant representation across the three different surveys. **About half of the respondents in the 2018 survey came from one of 42 institutions that participated in all three surveys.** Responses from these regularly participating institutions made up about half of the data in 2018. An additional 33% of respondents came from one of 43 institutions that also participated in either the 2012 or 2006 survey, and the final 17% of respondents came from one of 27 institutions that participated for the first time in 2018.

Table 4. Participating Institutions across the Three Faculty Workload Surveys

Number of Surveys	Number of Institutions			Number of Participants			Percentage of Participants		
	2018	2012	2006	2018	2012	2006	2018	2012	2006
All 3	42	42	42	5655	7122	5013	51%	56%	80%
2 of 3	37	37		3212	4075	.	29%	32%	.
2 of 3	6	.	6	402	.	401	4%	.	6%
2 of 3	.	6	6	.	478	354	.	4%	6%
1 of 3	27	.	.	1853	.	.	17%	.	.
1 of 3	.	17	.	.	1113	.	.	9%	.
1 of 3	.	.	10	.	.	515	.	.	8%

Note. For inclusion in the count for any given year, institutions were required to have a minimum of 10 respondents.

Individual Characteristics

Professional characteristics of respondents were similar to previous surveys. **Just over half of the respondents (52%) were on 12-month appointments**, with 41% on 9-month appointments. A **large majority (77%) were tenured or on tenure track**, and **almost half (49%) were at the rank of full professor**. About 20% held an academic administrative role (e.g., chair, dean, etc.), and about 20% reported serving as a center or program director. Across the three survey time periods, the participant pool gradually progressed toward a slightly higher percentage of 12-month appointments and a lower percentage of appointments to tenure track positions, with minimal differences across surveys in the percentages of appointments at the full, associate, and assistant professor levels.

Estimates of the typical division of work time into different types of tasks yielded an **average of 49% of all work time devoted to research responsibilities**, 18% to general instruction, 10% to service directly related to research, and the remainder used for other forms of service, as well as administrative, clinical, and other responsibilities. **About 30% of respondents reported their primary field as the biological or biomedical sciences**, with between 10 and 15% in each of the following disciplinary groups: physical sciences and mathematics (15%), psychological and social sciences (14%), engineering and computer sciences (13%), clinical sciences and medicine (10%).

With respect to general demographic characteristics, the **modal respondent was a white male**. Nevertheless, the proportion of females was higher in the 2018 survey (38%) than in previous surveys (34% in 2012, 27% in 2006). There was also a slight increase in the proportion of non-white groups over time, from a low of 16% in 2006 up to 21% in 2018. Median age inched up

from 50 in 2006, to 51 in 2012, and to 52 in 2018. These **demographic differences across surveys are consistent with national demographic trends in postsecondary full-time faculty** (see, e.g., Ma, 2004; Miller & Topper, 2017).

On average, 70% of respondents' research time was funded by federal sources, with modal funding of one project (with a median of 2 projects) and between $100,000 and $299,999 in annual direct costs. This represented a slight tendency over time toward fewer projects with slightly higher funding amounts. **Almost half of all respondents reported funding from the National Institutes of Health (NIH), and about one third reported funding from the National Science Foundation (NSF)**. The Department of Defense (DOD) was the next most common federal funding source, with 11% reporting active DOD projects during the reporting period. These proportions were relatively stable across survey timepoints.

About 60% of respondents reported having at least one project which primarily **involved basic research**. This was a relatively sharp decrease from 2012 when 67% reported at least one basic research project. **About 50% reported at least one applied project**, and about 25% reported at least one project focused on service, training, curriculum development, or other unspecified topics. These latter two proportions were virtually unchanged from 2012.

Just over one third (36%) of respondents reported federally-funded projects with human subjects, 14% reported research with animal subjects, and 10% reported both. Thus, about 40% of respondents did not have any federally-funded research involving animal or human subjects. Over time, there was a steady increase in the number reporting the use of human subjects (from 27% to 36%), whereas animal subject research rates remained relatively stable.

Additional details regarding professional, general demographic, funding, and project characteristics of respondents can be found in the later chapter comparing respondent characteristics across surveys.

Time Lost from Federally-Funded Research

This section provides the primary results from the three *FDP Faculty Workload Surveys* investigating the views of principal investigators (PIs) on federally-funded grants and contracts active during the year immediately prior to administration of the survey. 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 the work time they spent on federally-funded research into the following categories (as described; with the exception that in 2006 survey combined both pre-award items into one and both post-award items into one):

- **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 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

Difference Across Surveys in Estimates of Time Lost

The primary measure of interest is the sum of the 4 pre-award and post-award items that represent time lost or taken away from active research (i.e., 100% of research time minus percent of active research time). Figure 1 below shows these average estimates of time lost from research compared across the three surveys**. In both 2006 and 2012, the estimate of time lost from research was 42.3%, whereas by 2018, this value had increased by 2% to 44.3%**.
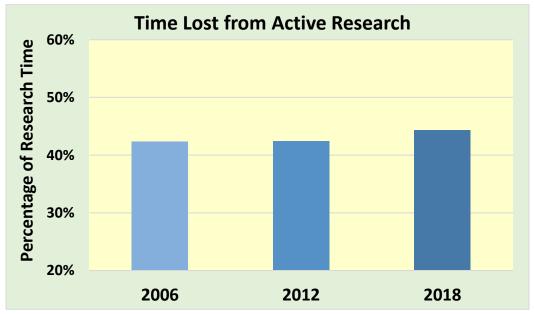

Figure 1. Average estimates of percentage of research time related to federally-funded research that was devoted to tasks other than active research across the three surveys.

In terms of hours, participants estimated an average 54.3 hour work week. This suggests that, on average, **participants spent about 12 of their 27 hours reserved for research on requirements, leaving only 15 hours for active research** (assuming the mean 49.3% research assignment). The 2% increase in time taken from research amounts to **an increase of about one half hour per week since 2012**.

An evaluation of variables that predicted **higher requirement-related workload** for the PI included the following:

- Research being conducted at
    - public universities (versus private universities or health research institutes),
    - universities outside the Very High Research (VHR) Carnegie classification,
    - universities with lower levels of annual research expenditures.
- Funding from
    - Department of Education,
    - Department of Health and Human Services (non-NIH),
    - National Endowment for the Humanities or National Endowment for the Arts,
    - Department of Transportation,
    - US Department of Agriculture/National Institute of Food and Agriculture,
    - more than one agency.
- Projects focused on
    - research fields other than physics and math,
    - applied research, or especially training, curriculum, or service projects
    - animal or human research.
- Funding with
    - multiple grants/contracts,
    - greater than $500,000 in annual direct costs.
- PI who
    - has administrative role,
    - has smaller research assignment,
    - is female,
    - is not White or Asian,
    - is not a full professor.

Additional details of these differences can be found in a supplementary chapter.

Check on Percent of Time Measure

As a check on the percent of time measure, 10% of participants in the 2018 survey were asked to verify their percent time estimates by reviewing the implied hours for each task given their own overall estimate of hours in their work week and the relevant percent of time for each activity. These participants were then given an opportunity to alter their percent time estimates to better correspond to estimated weekly hours (which would dynamically update on the screen when any changes in percent time were entered). **Only 2% of participants felt the need to update any of**

their percent time estimates, and only 1% updated their estimate of time spent on active research. Roughly half of the active research changes increased the estimated time spent on active research and the other half updated by decreasing active research time. Thus, **participants seemed widely satisfied that their percent time estimates accurately captured the average number of hours spent on activities**.

Effect Size of Difference in Time Lost Estimates

Although the observed 2% difference from 42.3 % to 44.3% time lost is highly significant in a standard null hypothesis test ($p < .0001$), the positive statistical test result is not especially instructive given that even the smallest differences are likely to be significant with such high numbers of respondents. The test suggests that a difference exists, but it is the size of the difference that is of interest.

To better characterize the impact of this 2% difference (44.3% research time lost in 2018 vs. 42.3% in both 2012 and 2006), estimates of effect size were computed at the level of comparisons across surveys, institutions, and respondents. These were assessed using Cohen's d (e.g., Cohen 1992) which characterizes effects in standardized units. In measures of human behavior, Cohen's norms are commonly adopted, considering effects of $d = 0.2$ to be small in size, $d = 0.5$ to be medium, and $d = 0.8$ to be large. The larger the effect size, the more likely it is to represent a meaningful difference. However, whether a difference is meaningful will also depend on the level of analysis.

Table 5 below shows the size of average differences needed for documenting effects of each of these sizes in the context of the Faculty Workload Survey findings of time taken from federally-funded research across the three surveys. Three different perspectives are represented. The two "Survey" columns in the table indicate effect sizes when viewing the overall survey as the observation of interest. Effect size depends on variations among observations, and this variation was estimated using two different methods: the "Surveys (Stat.)" method estimated survey standard deviation as the computed standard error of the mean based on the average standard deviation for institutions (which is more conservative value compared to respondents), and the "Surveys (Obs.)" method estimated the survey standard deviation by computing it directly from the sample of three surveys (with survey treated as observation). Based on either method, these estimates suggest that **the observed difference in overall survey averages of time taken from research between 2018 and the earlier surveys is exceedingly large, if not huge**. This means that a survey with roughly 10,000 respondents is expected to converge very closely onto the true average of a population for whom the respondents are representative. Thus, a difference as large as 2% is a highly noteworthy event, representing a large shift from the earlier surveys to 2018 given the expected stability of averages within very large datasets.

Table 5. Participating Institutions across the Three Faculty Workload Surveys

	Comparison of 44.3% - 42.3% Time Lost Difference			
Observation of Interest:	**Survey (Stat.)**	**Survey (Obs.)**	**Institution**	**Respondent**
Observed Cohen's *d* Effect Size:	3.9 Huge	1.8 Very Large	0.4 Modest	0.09 Very Small
Approximate Sample Size:	N/A	3	95	10000
Approx. Standard Deviation:	0.52%	1.13%	5.0%	22.3%

The "Institution" column considers the effect size with respect to differences in these averages across institutions participating in the survey. The standard deviation here represents the variation in institution average estimates of time taken from research and was computed as the average of the three institution-level standard deviations computed in each survey. This standard deviation suggests that it would be typical for any given institution to vary by about ±5.0% from the overall survey average of time lost, with roughly 70% of institution average time lost values expected to be within this range. In accord with this, roughly 70% of institution averages in the current 2018 survey would be expected to fall between 39.3% and 49.3% time lost (44.3% ±5.0%), and in fact, 80 of 112 or 71% of institution averages in the 2018 survey fall within these bounds. From this perspective, the observed 2% difference in the overall survey averages represents a small- to medium-sized effect. **At the level of the institution, a 2% difference in estimated time lost from research is generally noteworthy, and would typically be considered a modest difference**.

The "Respondents" column considers the effect size with respect to differences in these averages across respondents. The standard deviation here suggests that it would be typical for any given respondent to vary by ±22.3% from the overall survey average. Roughly 70% of respondent average time lost values would be expected to be within the range of 22.0% and 66.6%--a very wide range indeed. This demonstrates the very wide range across respondents in estimates of how much time is taken from research by requirements, which is not especially surprising given the many differences in circumstances from respondent to respondent (e.g., institution, professional, demographic, funding, and project characteristics). From this perspective, a 2% difference in the survey averages across individual respondents represents a very small effect.

The appropriate level of analysis will depend on the goal of the evaluation. For present purposes, evaluation from the institution and survey levels seems most applicable, suggesting that the observed differences in survey averages can be viewed at the least as modest, but perhaps more reasonably as quite large. In either event, **the trend is alarming as it shows that, even with efforts to limit time taken from research by requirements, estimates of time spent on these requirements is increasing with the implications that there is less time remaining for active research.**

Time Spent on Requirements Associated with Federally-Funded Research

Figure 2, displayed below, compares the research workload distribution data from the 2012 and 2018 Faculty Workload Surveys to see where the 2% increase in time taken from research is most obvious. **The increase in time lost was split relatively evenly across three of the four responsibilities: proposal preparation, pre-award administration, and report writing**. As was the case in 2012, proposal preparation continues to take up the vast majority of the time spent on pre-award activities, and pre-award administration is the least time consuming of the four requirements. Of the post-award requirements, post-award administration takes the most time and is the only requirement that was virtually unchanged across surveys. Post-award report writing increased somewhat across surveys, commensurate with increases seen in both pre-award responsibilities.

Additional **details broken out by respondent characteristics** can be found in the supplementary chapter on break outs of time away from research.

Figure 2. Average estimates of percentage of research time that was devoted to four requirements of federally-funded research. Prep=preparation; Admin=Administration.

Proposal Preparation and Report Writing

Taken together, proposal preparation and post-award report writing were estimated to take up roughly one quarter of the research time available for work on federally-funded projects. Two-thirds of the increase from 2012 to 2018 was observed in these areas. Nevertheless, these areas are often discounted in assessments of time taken away from active research.

It could be argued that portions of these tasks do not constitute activities associated with a strict definition of "administrative workload" and that some aspects of these activities may contribute to the scholarly endeavors of the researcher. Some argue that these portions should not be included as part of the estimate of time taken from active research as the scholarly portion contributes directly to active research. In order to get a sense of this, participants in 2018 were asked to estimate the percentage of their proposal preparation time that "contributed substantively to the development of your scholarship or your research program." **On average, participants estimated that 38.7% of proposal preparation time--or 6.2% of their overall research time (about 1 ½ hours per week)—contributes directly to their scholarship**. Although not measured in the survey, there may also be a scholarly contribution associated with parts of post-award report writing requirements.

Participants were also asked about the number of proposals they had written in the last three years and the disposition of those proposals. As shown in Figure 3 below, the results regarding number of submitted proposals were highly skewed. On average, respondents reported that 6 proposals were submitted over the previous three years (i.e., about 2 per year), with a median of 4. Using the median estimates, it was reported that medians of two proposals were rejected, one was accepted, and one was pending. Given that having at least one funded project (i.e., one accepted proposal) was a requirement for participating in the survey, these values substantially overestimate funding rates as all those with no proposals accepted are not represented here.
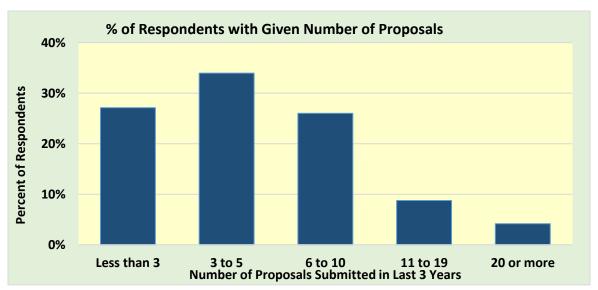

Figure 3. Percentage of 2018 survey respondents who reported a given number of proposals for federal funding over the previous three years.

Even so, these values highlight the fact that **well over 50% of proposals (probably closer to 80-90%) are not funded, and in this sense, the time spent on these proposals is largely a waste of research time as the work cannot be completed, regardless of its scholarly value.** Moreover, this is an especially burdensome requirement, as these efforts are not funded by federal agencies, and **the costs associated with proposal preparation are** thus **shouldered entirely by the institution.**

In future surveys, greater attention needs to be given to post-award report writing, as there was a noticeable increase in workload since 2012. To the extent that scholarly contribution may also exist within portions of required reports, these may be useful in preparing scholarly publications as well, which is generally not true for the content of proposals (at least until or unless the work can be completed). Additional items in the future may help clarify these impacts on research.

Returning to proposals, Figure 4 below provides an indication of the relationship of number of proposals submitted in the previous three years (bars) to the number of federal grants/contracts held in the previous year (line) and the amount of direct costs on those grants/contracts during that time (x-axis categories). As would be expected, a higher number of active federal awards is associated with a larger amount in annual direct costs, with a moderate correlation of $r = .36$ (using the center of the category range to represent annual direct cost and applying a square root transformation to the number of grants variable to reduce the impact of skew).
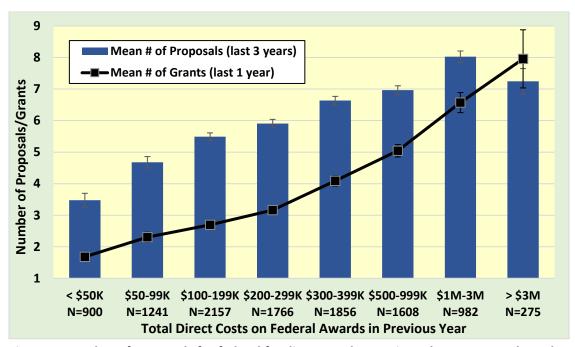

Figure 4. Number of proposals for federal funding over the previous three years and number of federal grants/contracts in the previous year graphed as a function of the amount of total direct costs on federal grants/contracts in the previous year.

Of more direct interest here, the number of proposals submitted over the last three years also relates to both of these variables as can be seen in the increase in the number of submitted

proposals as annual direct costs increase, which closely resembles the increase observed in number of grants as annual direct costs increase. There is a moderate correlation of $r = .32$ between the number of proposals submitted and the number of active grants/contracts (with square root transformations applied to both variables) and a smaller but still evident correlation of $r = .16$ between the number of proposals and annual direct costs. These associations suggest that there may be at least some value in submitting multiple proposals. Even though the absolute amount of time spent is much larger **when writing a larger number of proposals**--with much of the time wasted on non-funded projects--there is also an upside in that **the overall number of funded projects is likely to be higher (with perhaps more funds in aggregate) than for those who submit fewer proposals**.

A final question of interest with respect to number of submitted proposals concerns the relationship of proposal submissions to time away from active research. Figure 5 below provides a depiction of this relationship. For those who reported writing less than one proposal per year (less than 3 in 3 years), average time away from research drops by about 6% from the average of 44.3% to an average of 38.4%, whereas for those who write more than 6 proposals per year (or 20 or more in 3 years), average time away jumps up by more than 10% to 54.7%. **Those who prepare four or more proposals per year can expect to spend less than half of their time on active research.** This highlights the heavy toll that proposal preparation adds to the workload associated with obtaining federally-funded grants and contracts.

Interestingly, the relationship between estimated time away from active research and number of proposals ($r = .20$) is stronger than the corresponding relationship between time away and
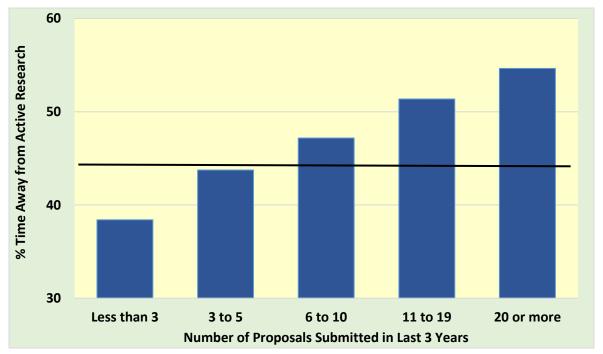

Figure 5. Average estimate of time taken away from active research in the previous year as a function of number of proposals submitted for federal funding over the previous three years. The black line represents the 44.3% average estimate of time taken away from research by requirements.

number of actual grants/contracts ($r = .07$) or between time away and amount of annual direct costs ($r = .10$). This suggests that **the pre-award workload of the proposal writing requirement is likely to be a stronger predictor of time away from active research than the post-award requirements associated with number of grants or amount of annual direct costs**. This is yet another indicator of the importance of attending to proposal writing when attempting to address the workload that limits investigators' ability to focus on active research.

Pre-award and Post-award Administration

Time taken from research by pre-award administration increased between 2012 and 2018, whereas investigators reported spending roughly equivalent amounts of time on post-award administration in 2012 and 2018. Together, these tasks consumed about one fifth or 20% of the amount of time PIs devote to research (just over 5 hours per week on average).

Table 6 on the next page lists three major areas of administrative requirements, comprising a total of 22 specific administrative responsibilities commonly associated with federally-funded research. These make up the primary responsibilities included in pre-award and post-award administration. To assess the *prevalence* of each responsibility, respondents were asked to indicate via a yes or no answer whether each responsibility and/or requirement applied to any of their federal grants or contracts during the previous academic year.

For each affirmative answer, respondents were asked follow up questions. The first follow-up question asked respondents to rate how much time was taken away from active research by the responsibility using a 5-point rating scale: not at all (1), a little bit (2), some (3), quite a bit (4), or very much (5). This was summarized in a *substantial workload* measure which was computed as the percentage who reported at least a 3 (some) out of those who experienced the responsibility. The second follow-up question asked respondents to report the priority that they would place on reducing the administrative burden for that responsibility. Respondents assigned the responsibility with a *high priority*, a medium priority, a low priority, or no change needed. Of the responsibilities that were assigned a high priority, respondents reported which responsibility they felt had the *highest priority for change*.

On average, respondents reported experiencing 9.16 of the 22 responsibilities on average (median=9), which was an increase from the 8.67 average of experienced responsibilities reported in 2012. This represents corroborating evidence of the increase in workload from 2012 to 2018. Moreover, researchers estimated that **additional administrative assistance could reduce their time spent on administrative responsibilities by an average of 29%** (from an average of 44% to approximately 31%). This was virtually unchanged from the 2012 survey.

In what follows, each of the three major areas will be reviewed in terms of the prevalence of responsibilities, the likelihood of substantial workload from the responsibilities, and reports of high priority needs for change in these responsibilities in order to reduce administrative burden.

Table 6. List of Administrative Requirements Associated with Federally-funded Research

GENERAL RESEARCH ADMINISTRATION
   Project Finances: Managing project budgets and grant/contract expenditures
   Project Personnel: Personnel administrative issues (including hiring, managing, visas, evaluation)
   Effort Reporting: Federal time and effort reporting, including training
   Data Management: Meeting federal requirements for resource and data storage and sharing
   Subcontracts: Responsibilities associated with managing subcontracts to other entities
   Intellectual Property: (including patent/copyright applications, licensing agreements, invention,
         disclosures, Materials Transfer Agreements, etc.)

COMPLIANCE
   IACUC: Meeting federal animal care and use requirements
   IRB: Meeting federal human subjects research requirements
   Clinical Trials: Responsibilities associated specifically with conducting clinical trials (excluding HIPAA-
         related requirements)
   HIPAA: Meeting Health Insurance Portability and Accountability Act (HIPAA) requirements
   COI: Meeting federal conflict of interest requirements
   RCR: Meeting Responsible Conduct of Research requirements for trainees on federally funded projects

SAFETY/SECURITY
   General Laboratory Safety/Security (including laboratory surveys)
   Biosafety (including biohazards and blood-borne pathogens)
   Chemical Safety (including chemical inventory management)
   Information or **Infrastructure Security**
   Laboratory Access Controls
   Radiation Safety (including high magnetic fields, lasers, & radioisotopes)
   Controlled Substances/Narcotics
   Recombinant DNA
   Select Agents/DURC (Dual Use Research of Concern)
   Export Controls

Within each major area, a subset of responsibilities was explored further to learn more about which particular functions or tasks were deemed most in need of change to reduce unnecessary burden. For each of the selected responsibilities, all those who reported the responsibility as high need for change were asked to also rate the need for change for a series of four to ten specific functions or tasks within that area. These drilldowns were included for seven responsibilities: IACUC/animal subjects, IRB/human subjects, project finances, subcontracts, data management, conflict of interest, and intellectual property. These seven responsibilities were selected for more in-depth exploration based largely on the results of the 2012 survey.

In addition, open-ended responses were analyzed as a function of each of these responsibilities. This analysis appears in a separate chapter.

General Research Administration Responsibilities

Figure 6 below displays the percentage of respondents who reported experiencing each of the 6 general research administration responsibilities. Responsibilities are ordered from the most prevalent on the top to the least prevalent on the bottom.
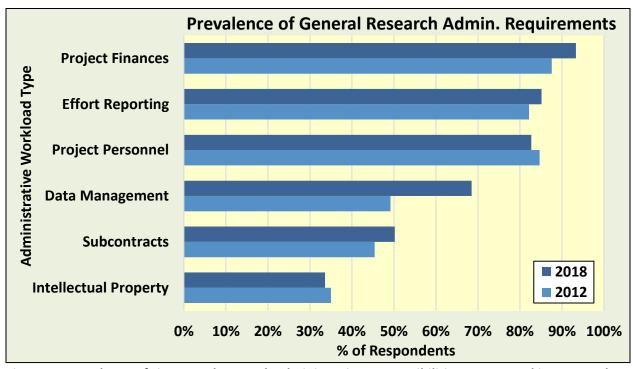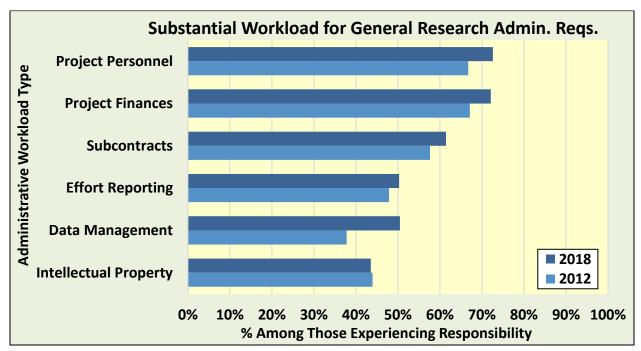

Figure 6. Prevalence of six general research administration responsibilities as reported in 2018 and 2012 surveys. Admin.=Administration.

The three most commonly experienced responsibilities among the overall set of 22 were project finances, effort reporting, and project personnel. Over 80% of respondents reported having to deal with these responsibilities in both 2012 and 2018. **There was a very large upsurge in reports of experiencing data management responsibilities, with an increase from 49% in 2012 to 68% in 2018.** The prevalence of experiencing subcontract responsibilities increased by about 5% to 50%, whereas the prevalence of intellectual property responsibilities remained relatively stable at about 35%.

Figure 7 below displays the likelihood of substantial workload for each of the 6 general research administration responsibilities. Likelihood of substantial workload is represented as the percentage of respondents who reported some (3) to very much (5) time taken away from active research out of those experiencing the given responsibility. Responsibilities are ordered from the most likely to be rated as substantial workload on the top to the least likely on the bottom.

Figure 7. Prevalence of six general research administration responsibilities as reported in 2018 and 2012 surveys. Admin. Reqs.=Administration Requirements.

In both surveys, among all 22 responsibilities, project personnel and project finances were among the top three (along with IACUC) in terms of likelihood to involve substantial workload. Nevertheless, this percentage was slightly higher in 2018 than it had been in 2012, increasing from about 67% to 73% reporting substantial workload from project personnel and project finances. Slight increases were also observed for subcontracts (58% to 61%) and for effort reporting (49% to 50%). **By far the largest increase across all 22 responsibilities in the percentage of affected respondents reporting substantial workload from 2012 to 2018 was for data management**, wherein the percent increased from 38% of those experiencing data management responsibilities in 2012 to 50% in 2018. Intellectual property was the only responsibility that did not see an uptick in percent reporting substantial workload, staying at roughly 44% of respondents who experienced the responsibility.

Finally, respondents reported whether each of the general research administration responsibilities were low, medium, or high priority for change to reduce administrative burden. Among the requirements within this group that were rated as high priority by a given respondent, the

respondent was then asked to isolate the single highest priority or most important responsibility in need of addressing to reduce administrative burden. Figure 8 below shows the percent who rated each requirement as a high priority for change and, within that, the percent who rated the particular requirement as the highest priority within the general research administration group.
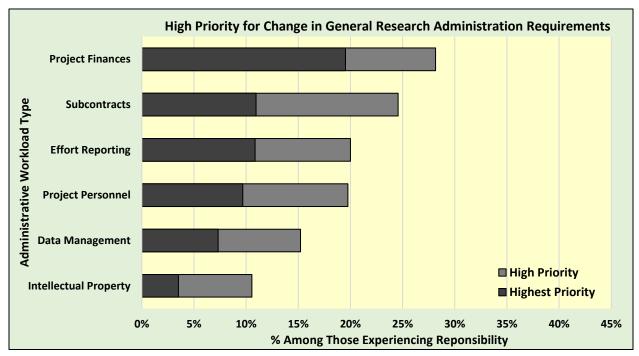

Figure 8. Percent rating each requirement as high and/or highest priority for change in order to reduce unnecessary administrative burden.

One of the most important observations is that the **percent reporting that any of the general administration requirements as high priority for change was nowhere more than 30%**. This suggests that the sense of urgency varies across researchers, though there is a sizable minority who perceive these needs as seriously disruptive and detrimental to time available for research.

Administration of project finances had the dubious distinction of being one of the most prevalent and most workload heavy areas that is also among the most common to be rated as a high priority for change. Almost 30% of all respondents who were dealing with project finance responsibilities considered them high priorities for change. This area was more likely than any of the other general administration requirements to be considered the single highest priority for change to reduce administrative burden. Given that this requirement is ubiquitous, any improvements (or, for that matter, added workload) would affect almost all federally-funded researchers.

Although less commonly experienced, of those who were dealing with subcontracts, 25% felt that this was the area most in need of change to reduce administrative workload, with just over 10% of those dealing with subcontracts considering them the most important of the general administration requirements for making changes to reduce burden on investigators. For both

effort reporting and project personnel, 20% of those experiencing the responsibility judged it to be a high priority for change, with about 10% felling it is the highest priority. Although data management was time consuming for many, only 15% rated it as a high priority for change, with 7% rating it the highest priority. Intellectual property had the lowest rate in this category for high priority with only 10% feeling that there was a high need for change, and less than 5% rating it as the highest priority for change to alleviate administrative burden.

Based on findings from the 2012 survey, a subset of responsibility areas were explored further to learn more about which particular functions or tasks were deemed most in need of change to reduce unnecessary burden. Among the general administrative responsibilities, breakdowns by specific subareas were conducted for project finances, subcontracts, data management, and intellectual property.

Components of Project Finances Responsibilities

Figure 9 below displays priority for change ratings for six components of project finance responsibilities. Responses for this subset of items were solicited from all of those respondents who reported a high need for change in project finances to reduce unnecessary administrative workload. Responsibilities are ordered from those of greatest concern on the top to those least likely to be seen as high priority for change on the bottom.
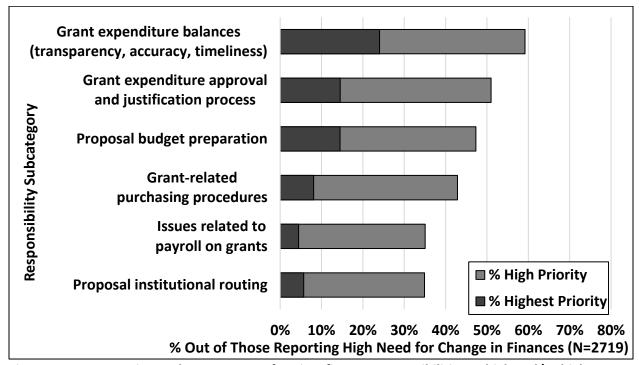

Figure 9. Percent rating each component of project finance responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

When asked about which of the finance subcomponents was **most in need of change**, the **availability of transparent, accurate, and timely reports of grant expenditure balances** was the most commonly reported item. Almost 60% agreed that this is an especially high priority for change. **Grant expenditure approvals and justifications were also identified at a high rate**, with half of respondents considering this an especially high priority. Just under 50% reported particular concerns with excessive workload associated with proposal budget preparation and with grant-related purchasing procedures. Roughly one third expressed concern over a high need to change issues related to payroll on grants or proposal institutional routing in order to reduce unnecessary workload.

<center>**Components of Subcontracts Responsibilities**</center>

Within the general administrative responsibilities, subcontracts was second to project finances in the proportion of affected researchers who perceived this area as a high need for change to reduce time taken away from research. Figure 10 below displays ratings by this subset of researchers concerning priority for change within the seven components that comprise subcontracts responsibilities. Responsibilities are ordered from those that were identified as greatest concern on the top to those least likely to be seen as high priority for change on the bottom.
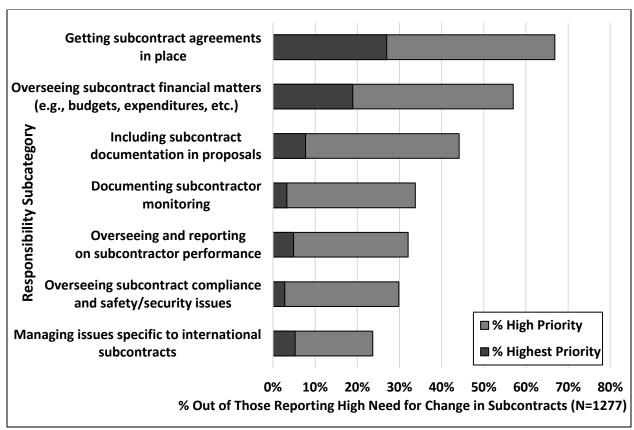

Figure 10. Percent rating each component of subcontracts responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

Almost 70% of researchers in this group reported that **getting subcontract agreements in place is in especially high need of change** to prevent subcontracts from interfering with research progress. Almost 60% reported that **overseeing subcontract financial matters** was of special importance in remedying subcontract-related burden, with 45% reporting that including subcontract documentation in proposals is a high priority area for changes that could substantially decrease unnecessary workload. Between 25% and 35% reported each of the remaining items, including documentation of subcontractor monitoring, oversight and reporting on subcontractor performance, oversight of subcontractor compliance and safety/security issues, and management of issues specific to international subcontracts.

Components of Data Management Responsibilities

Given the increase in the number of researchers reporting substantial workload from data management responsibilities, it seems particularly worthwhile to get a sense of which specific responsibilities are especially in need of change. Figure 11 below displays priority for change ratings for five data management subcomponents, which were completed by researchers who perceived this area as a high need for change to reduce unnecessary burden. As in the previous graphs, responsibilities are ordered from those that were identified as greatest concern on the top to those least likely to be seen as high priority for change on the bottom.
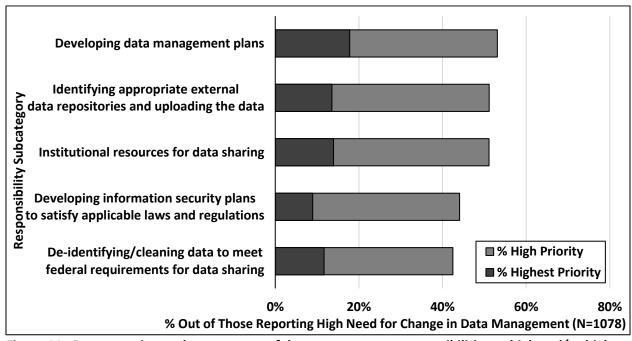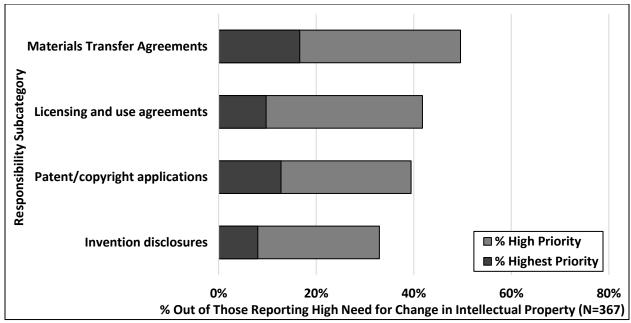

Figure 11. Percent rating each component of data management responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

Three different components of data management were identified by just over 50% of respondents as **especially high need for change to reduce burden**. These include: **(1) developing data management plans, (2) identifying appropriate external data repositories and uploading**

the data, and (3) availability and adequacy of institutional resources for data sharing.
Close to 45% reported a high priority need for change in the two remaining areas of developing
information security plans to satisfy applicable laws and regulations as well as de-identifying and
cleaning data to meet federal requirements for data sharing.

Components of Intellectual Property Responsibilities

Although fewer researchers reported intellectual property responsibilities, approximately 45% of
those researchers reported substantial workload. To our surprise, only about 10% of these
researchers reported that this workload seemed a high priority for change. This suggests that, in
general, these researchers may see much of the workload associated with intellectual property as
necessary, even if time consuming. Nevertheless, we asked the subset who judged this area to be
a high priority need for change to evaluate the subcomponents to identify those areas of
particular concern. The results are shown in Figure 12.

Figure 12. Percent rating each component of intellectual property responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

About half of the group who perceived excessive unnecessary workload associated with
intellectual property requirements reported that **Materials Transfer Agreements were a high
priority need for change** to reduce this workload. About 40% identified licensing and use
agreements or patent/copyright applications as high priority areas in need of change. About one
third felt invention disclosures were in particular need of attention to reduce unnecessary burden
on investigators.

Compliance Responsibilities

Figure 13 below displays the percentage of respondents who reported experiencing each of the 6 compliance responsibilities. Responsibilities are ordered from the most prevalent on the top to the least prevalent on the bottom.
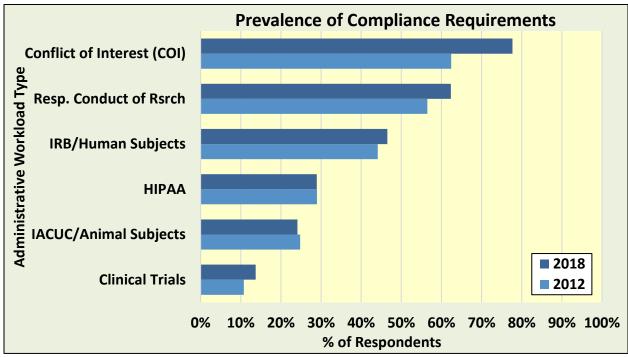

Figure 13. Prevalence of six compliance responsibilities as reported in 2018 and 2012 surveys. Resp.=Responsible, Rsrch=Research.

The most commonly experienced responsibility in the compliance group was conflict of interest (COI) with nearly 80% reporting these responsibilities. **COI's prevalence increased by more than 15% since 2012**, most likely due to the introduction by the Department of Health and Human Services in 2011 of Financial Conflict of Interest (FCOI) Regulations for public health service research. Responsible conduct of research rules were experienced by just over 60% of respondents, which was up more than 5% from 2012. The remaining compliance areas had similar prevalence rates across both surveys, with just under half of participants engaging in human subjects research and about one quarter engaging in animal subjects research. Almost 30% of respondents had to comply with HIPAA (Health Insurance Portability and Accountability Act) requirements for protecting health-related information, and about 15%, which was a small increase from 2012, were conducting clinical trials research.

Figure 14 below displays the likelihood of substantial workload (i.e., some to very much time taken from research) for each of the 6 compliance responsibilities. Responsibilities are ordered from the most likely to be rated as substantial workload on the top to the least likely on the bottom.
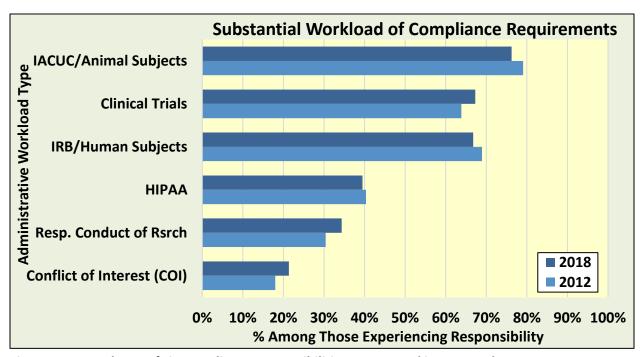

Figure 14. Prevalence of six compliance responsibilities as reported in 2018 and 2012 surveys.
Resp.=Responsible, Rsrch=Research.

Although only about 25% of respondents were engaged in animal subjects research, it surfaced both in 2012 and 2018 as the most likely to involve substantial workload, with over 75% of affected researchers reporting substantial time taken from research by IACUC/animal subjects compliance responsibilities. Nevertheless, there was a small decrease (3%) from 2012 to 2018 in the percentage in this group. **Both clinical trials and IRB/human subjects responsibilities were also high intensity responsibilities**, with just under 70% of affected researchers reporting substantial workload in these areas. If anything, substantial workload rates had increased slightly for clinical trials, but decreased slightly for IRB/human subjects. HIPAA requirements remained relatively stable with about 40% of those experiencing the responsibility reporting substantial workload. Both responsible conduct of research (RCR) and COI responsibilities were slightly more likely to be rated as substantial workload in 2018, with about 35% reporting substantial workload from RCR responsibilities and just over 20% reporting substantial workload from COI responsibilities.

Finally, respondents reported whether each of the compliance responsibilities were low, medium, or high priority for change to reduce administrative burden, and then selected the one highest priority among them. Figure 15 below shows the percent who rated each requirement as a high

priority for change and, within that, the percent who rated the particular requirement as the highest priority within the compliance group.
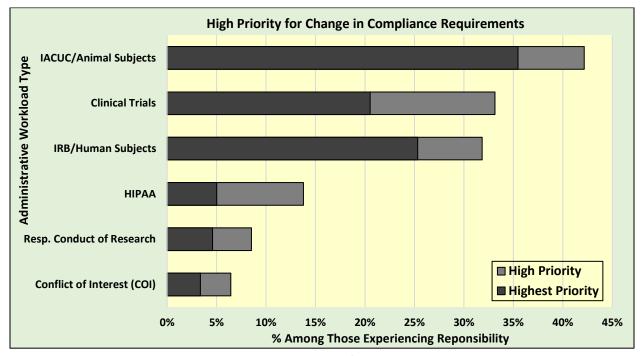

Figure 15. Percent rating each requirement as high and/or highest priority for change in order to reduce unnecessary administrative burden. Resp.=Responsible.

The responsibility that was by far the most likely out of all 22 responsibilities to be considered a high priority need for change to reduce unnecessary administrative burden was IACUC/animal subjects compliance. Almost 45% of those working with animal subjects reported this area as a high priority for change, and 36% felt that this was the single most important compliance area for reducing administrative burden. Clinical trials and IRB/human subjects responsibilities were virtually tied as the second (and third) most likely to be considered high priorities for change, with both identified by about one third of affected respondents as critical areas for burden reduction. Roughly one quarter of human subjects researchers felt that this area was the single most important and about 20% of those conducting clinical trials felt that the compliance responsibilities in this area were the most important for reducing burden. The remaining compliance areas had fewer than 15% of affected researchers identifying the area as high priority for change, and 5% or less selecting the area as the highest priority for reducing burden.

Based largely on findings from the 2012 survey, a subset of responsibility areas were explored further to learn more about which particular functions or tasks were deemed most in need of change to reduce unnecessary burden. Among the compliance responsibilities, breakdowns by specific subareas were conducted for IACUC/animal subjects, IRB/human subjects, and conflict of interest.

Components of IACUC/Animal Subjects Responsibilities

Although only about 25% of researchers experienced IACUC/animal subjects responsibilities, of those who did, roughly 75% reported substantial workload as a result. Almost half of these researchers reported high or highest priority need for change in requirements associated with IACUC/animal subjects. Figure 16 below displays priority for change ratings by this subset of researchers for ten subcomponents that make up IACUC/animal subjects responsibilities. Responsibilities are ordered from those of greatest concern on the top to those least likely to be seen as high priority for change on the bottom.

Figure 16. Percent rating each component of IACUC/animal subjects responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

Almost 75% of respondents reported that three-year re-writes of IACUC protocols was an especially high priority area in need of change, closely followed by rules regarding minor changes to IACUC protocols. Approximately 55% reported a high need to focus on excess unnecessary workload related to IACUC software and forms or to turn-around time of IACUC applications and revisions. About half raised a high level of concern over unnecessary workload from a lack of fit of IACUC processes to type of research and level of risk or from annual IACUC reviews. Almost 40% reported a high priority need to change associated with the quality

of IACUC reviewers, with about 25% raising particular concern over problems with the quality of veterinary and husbandry support or with training in animal care and use.

Components of IRB/Human Subjects Responsibilities

Among respondents working with human subjects, almost 70% reported substantial workload associated with IRB oversight. Figure 17 below displays priority for change ratings for nine components of IRB/human subjects responsibilities. Responses for this subset of items were solicited from all of those respondents who reported a high need for change in IRB/human subjects responsibilities to reduce unnecessary administrative workload. Responsibilities are ordered from those of greatest concern on the top to those least likely to be seen as high priority for change on the bottom.
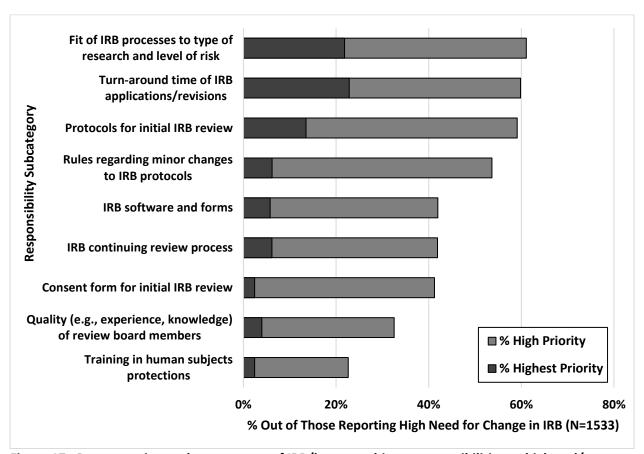
Figure 17. Percent rating each component of IRB/human subjects responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

Three components were all judged to be high priority areas for change by 60% of respondents. These included**: (1) the lack of fit between IRB processes to type of research and level of risk, (2) turn-around time of IRB applications and revisions, and (3) problems associated with protocols for initial IRB review**. Just over half also raised particular concerns over workload associated with rules regarding minor changes to IRB protocols. Just over 40% reported high priority need for changes in IRB software and forms, in the ITB continuing review

process, or in the consent form for initial IRB review. One third raised concerns over the quality of IRB reviews and almost 25% reported a high priority need for change regarding training in human subjects protections.

Components of Conflict of Interest Responsibilities

Conflict of interest (COI) is the most prevalent compliance requirement, but it is less likely to be perceived as especially burdensome. Nevertheless, Figure 18 below displays results from asking those who experience COI as a high need for change, which among four components seem of particularly high priority. Responsibilities are ordered from those of greatest concern on the top to those least likely to be seen as high priority for change on the bottom.
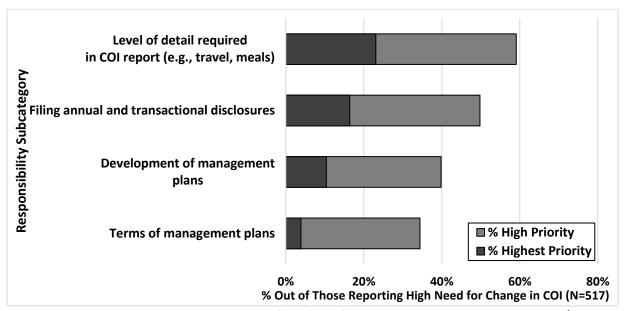

Figure 18. Percent rating each component of conflict of interest responsibilities as high and/or highest priority for change in order to reduce unnecessary administrative burden.

The most common item to be rated high priority for change was easily the level of detail required in COI reporting for items such as travel and meals. Approximately 60% of respondents reported this as especially burdensome. About 50% raised concern over workload associated with filing annual and transactional COI disclosures. Roughly 40% identified development of management plans as an area of high priority for change, and about 35% identified the terms of management plans as in need of a reduction in unnecessary workload.

Safety and Security Responsibilities

Figure 19 below displays the percentage of respondents who reported experiencing each of the 10 safety and security responsibilities. Responsibilities are again ordered from the most prevalent on the top to the least prevalent on the bottom.
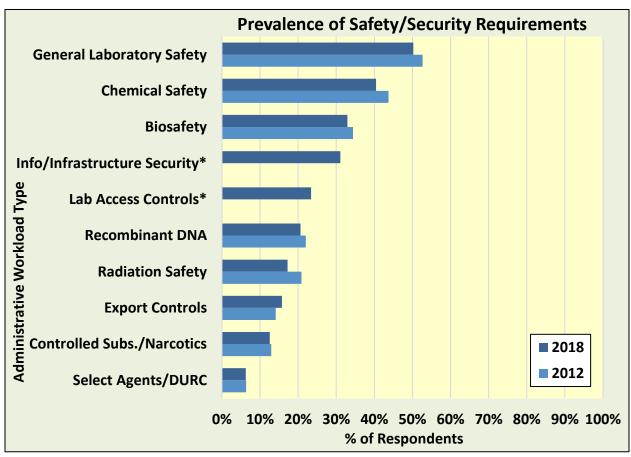

Figure 19. Prevalence of ten safety and security responsibilities as reported in 2018 and 2012 surveys. Info=Information, Subs.=Substances. *Items were not included in 2012 survey.

The most commonly experienced responsibility in the safety and security group was general laboratory safety with about 50% reporting this responsibility. Here and for the other safety and security responsibilities, prevalence was relatively stable across surveys or slightly lower in 2018. About 40% of respondents had chemical safety responsibilities, and about 30% had biosafety or information/infrastructure security responsibilities. About 20% of respondents reported having responsibilities associated with laboratory access controls, recombinant DNA, or radiation safety. Less than 20% reported responsibilities related to export controls, controlled substances/narcotics, or select agents/DURC (Dual Use Research of Concern).

Figure 20 below displays the likelihood of substantial workload (i.e., some to very much time taken from research) for each of the 10 safety and security responsibilities. Responsibilities are

ordered from the most likely to be rated as substantial workload on the top to the least likely on the bottom.
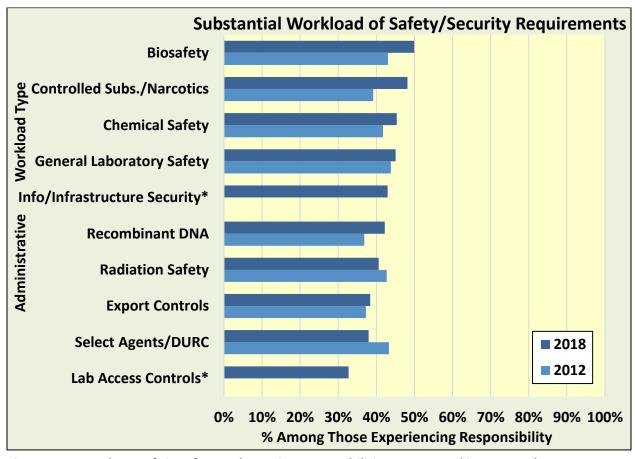

Figure 20. Prevalence of six safety and security responsibilities as reported in 2018 and 2012 surveys. Info=Information, Subs.=Substances. *Items were not included in 2012 survey.

Although never exceeding 50%, increases in the number reporting substantial workload were observed for several safety/security responsibilities. Biosafety responsibilities were the most likely among this group to involve substantial workload, with half of affected investigators reporting some to very much time taken to address biosafety concerns. This is a 7% increase from 2012. Similarly, a 9% increase in the percent of those reporting substantial workload (from 39% to 48%) was observed for controlled substances/narcotics responsibilities. Smaller increases were also observed for chemical safety, general laboratory safety, and recombinant DNA requirements. The only decreases across surveys were for select agents/DURC and possibly radiation safety. In all cases, between one third and half of the affected respondents experienced substantial time away from research in order to complete the given responsibility.

Finally, respondents reported whether each of the safety and security responsibilities were low, medium, or high priority for change to reduce administrative burden, and then selected the one highest priority among them. Figure 21 below shows the percent who rated each requirement as

a high priority for change and, within that, the percent who rated the particular requirement as the highest priority for the safety and security group.
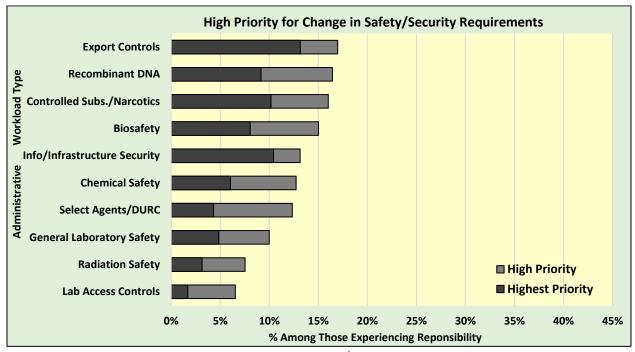

Figure 21. Percent rating each requirement as high and/or highest priority for change in order to reduce unnecessary administrative burden. Resp.=Responsible, Rsrch=Research.

Priority ratings were typically lower for the safety/security area than for compliance or general research administration. **Although one of the least commonly experienced responsibilities, export controls had the largest percentage among the safety/security group, with 17% reporting a high priority for change to reduce administrative burden.** Similar values were observed for recombinant DNA, controlled substances/narcotics, and biosafety. Values for the remaining areas were all lower than 15%, suggesting that a relatively small minority of affected researchers experience these responsibilities as key areas for needed change.

Summary

As in 2012, project finances and project personnel were two of the most commonly experienced responsibilities that also had high rates of substantial workload. The new high priority for change question on the 2018 survey revealed that, despite the similarity in workload, project finances requirements were much more likely than project personnel to be considered a high priority need for change to reduce administrative burden.

Although less commonly experienced, IACUC/ animal subjects compliance is clearly the highest priority of all of the requirements for changes to address unnecessary workload, closely followed by IRB/human subjects and clinical trials. Subcontracts also surface as an area of concern, followed by effort reporting and project personnel. All of the remaining responsibilities are considered high priority for change by 15% or fewer. Workloads for the various responsibilities were more likely than not to have increased over time (13 of 20, with 2 measured for the first

time in 2018), particularly for data management. Prevalence of data management responsibilities, as well as conflict of interest responsibilities, increased markedly from the 2012 to the 2018 survey.

A summary of particular components that were identified as especially in need of change by at least half of those who reported high levels of concern appears in Table 7 below.

Table 7. Responsibility Components Identified as High Priority by at Least 50% of Those Asked

Responsibility	High Priority Area of Concern
Project Finances	Grant expenditure balances (transparency, accuracy, timeliness)
	Grant expenditure approval and justification process
IRB/Human Subjects	*Fit of IRB processes to type of research and level of risk*
	Turn-around time of IRB applications/revisions
	Protocols for initial IRB review
	Rules regarding minor changes to IRB protocols
IACUC/Animal Subjects	*Three-year re-writes of IACUC protocols*
	Protocol for initial IACUC review
	Rules regarding minor changes to IACUC protocols
	IACUC software or forms
	Turn-around time of IACUC applications/revisions
	Fit of IACUC processes to type of research and level of risk
Subcontracts	*Getting subcontract agreements in place*
	Overseeing subcontract financial matters (e.g., budgets, expenditures, etc.)
Data Management	Developing data management plans
	Identifying appropriate external data repositories and uploading the data
	Institutional resources for data sharing
Conflict of Interest	Level of detail required in COI report (e.g., travel, meals)
	Filing annual and transactional disclosures
Intellectual Property	Materials Transfer Agreements

Note. Items in bolded italic were identified by at least 60% as high priority need for change.

Federal Agency Requirements for Grants and Contracts

In 2018, participants were asked to respond to items specific to pre-award and post-award requirements of individual agencies. Participants indicated which of their funding agencies had the most burdensome administrative requirements (if they reported more than 1 funding agency [n=3621]). Then, with respect to that agency (or their only funding agency [n=7519]), they were asked the priority for change to reduce unnecessary administrative workload associated with each requirement. Participants completed two sets of items: (1) of pre-award requirements typically associated with proposal preparation and submission and (2) post-award requirements associated with managing and reporting on the grant.

Proposal Preparation and Related Pre-Award Responsibilities

Figure 22 below shows the averaged researcher ratings of perceived need for change concerning agency-specific pre-award responsibilities. As was found among general compliance-related responsibilities, agency-required animal and human subjects responsibilities--above and beyond locally monitored IRB and IACUC requirements—were the pre-award responsibilities most commonly judged to be high priority for change to reduce unnecessary burden. Agency requirements concerning both animal care and use protections and human subjects protections were rated by over 25% of respondents as high or highest priority for a reduction in excess and unnecessary workload.
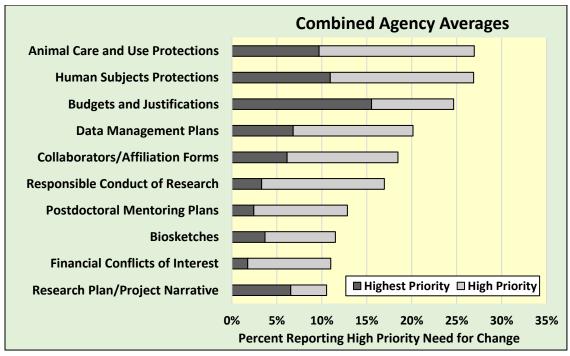
Figure 22. Averages for percent of respondents rating each pre-award agency requirement as high priority for change to reduce administrative burden.

Figure 22 also shows that, averaging across agencies, budgets and budget justifications were judged by roughly 25% of respondents to be an area of high priority to reduce unnecessary burden. This area was also most commonly rated as the single highest priority for reducing agency-level administrative workload. Consistent with what was found earlier for general ratings concerning project finances, agency requirements concerning proposal budgets and related justifications are among the most common areas of concern with respect to unnecessary workload.

Data management plans were considered a high priority area for change by 20% of respondents, closely followed by collaborator and affiliation forms. Between 10% and 15% of respondents reported a high need for change in agency requirements for postdoctoral mentoring plans, biosketches, financial conflict of interest, and research plans/project narratives.

Ratings for specific agencies of pre-award areas deemed high priorities for change can be found in the related supplementary chapter.

Report Preparation and Related Post-Award Responsibilities

Participants were also asked to evaluate post-award requirements made by the specific federal agency that they identified as there sole federal funding source or the source with the greatest administrative demands. Figure 23 below lists these responsibilities from those that were most to least likely to be rated as a high priority for change to reduce administrative workload.
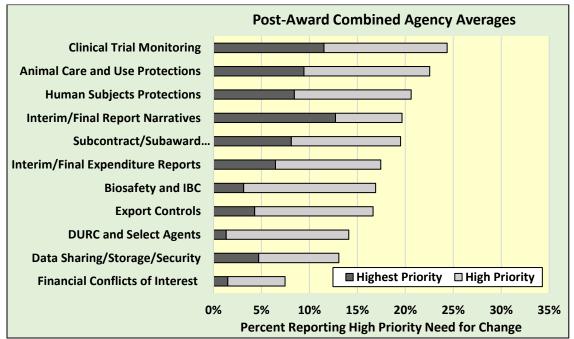

Figure 23. Averages for percent of respondents rating each post-award agency requirement as high priority for change to reduce administrative burden.

As found for pre-award agency requirements, post-award requirements associated with human and animal subjects were most likely to be deemed a high priority need for change by those experiencing the requirement. Clinical trial monitoring was the requirement that had the highest likelihood of being judged a high priority area in need of change, with roughly 25% of respondents who experienced this requirement placing it in this category. This was closely followed by agency requirements for animal care and use protections and human subjects protections (beyond institution-monitored IRB and IACUC requirements) with between 20% and 25% of respondents judging the areas as high priority to reduce unnecessary workload.

Interim and final reports, including both narratives and expenditure documentation, were also commonly identified as high priority areas for improvement, with 18% to 20% of ratings falling in this category. Similarly, subcontract and subaward monitoring were identified as high priority for change by roughly 20% of those dealing with subawards on their federally funded projects.

Greater than 15% reported problematic workload associated with agency biosafety and IBC requirements as well as export control requirements. Just under 15% reported a high priority need for change in DURC and select agent requirements, with a similar percent of respondents targeting agency requirements for data sharing, data storage, and/or data security. Finally, agency requirements associated with financial conflicts of interest were judged to be a high priority area for change by about 8% of affected respondents.

Ratings for specific agencies of post-award areas deemed high priorities for change can be found in the related supplementary chapter.

Perceptions of the Climate for Research

PIs were asked to respond to a series of 15 items designed to elicit their opinions of the general climate for research at their institution. Four categories of items were included, with the first two categories repeated from the *FDP 2012 Faculty Workload Survey.* Respondents were asked whether they agreed or disagreed with the statements using a 5-point Likert-type scale in which: 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree. Respondents also had the option to select "I don't know." Each bar in the graphs below corresponds to the percentage of respondents with an opinion (i.e., ratings 1-5) who agreed with each item (i.e., selected either 4 or 5).

A correlational analysis focused on average institution-level data was also conducted to see how an institution's research climate may be related to research workload. For each item, correlations were computed using as the unit of observation each of the 109 institutions with at least 10 respondents. The goal of these measures was to see how each of the research climate average ratings within the institution related to (1) the average number of hours allotted to PIs for research, and then, after controlling for these differences in research time, (2) the average amount of research time taken away by the need to complete requirements associated with federally-funded research. Correlations are significant (p<.05), unless otherwise indicated.

Institution Priority on Research

Below in Figure 24 are the percent of respondents who agreed with statements about the priority on research within their institution compared across 2018 and 2012. Differences across survey time periods were small. A large majority (85%) agreed that sponsored research activity is a priority when making promotion decisions within their institution, and about 70% agreed that research was prioritized over teaching in their department or program. If anything, these values might be slightly lower than in 2012, however, in both time periods, the perceived importance of research within the institution was generally high.
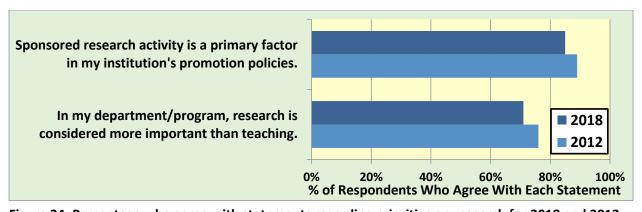

Figure 24. Percentage who agree with statements regarding priorities on research for 2018 and 2012.

Both of these items were highly predictive of available research time, with higher ratings of the priority on research associated with more research time (r=.50 and r=.47 respectively). However, neither was strongly predictive of reported time away from research due to requirements (r_p=-.14, *ns*, and r_p=.20).

Outlook on Research Career

Figure 25 below includes a cross-survey comparison of four items focused on how research-related administrative requirements influence the outlook of researchers, plus a fifth item that was added to the 2018 survey. About 75% of researchers felt that administrative requirements have been increasing, which is a slightly higher percentage than in 2012. This tendency was slightly more common within institutions with larger research assignments (r=.24), but did not significantly relate to average reported time away from research.

Just over 60% reported that administrative burden seriously compromises research productivity. This feeling was more common at institutions with larger research assignments (r=.37) and slightly more likely at institutions with higher average time away from research estimates (r_p=.24).
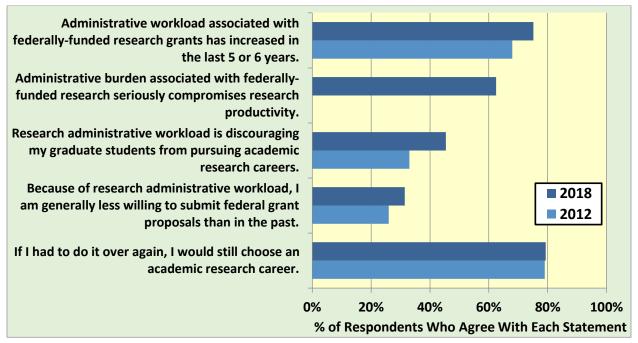

Figure 25. Percentage agreeing with statements regarding the impact of research-related administrative workload.

Almost half expressed concern that research-related administrative requirements are discouraging their graduate students from pursuing an academic research career. This percentage was up sharply from 2012. Interestingly, this sentiment was much more likely at institutions with larger research assignments (r=.53), but was not clearly associated with institution-level average estimates of researcher time away from research.

Almost one third of respondents reported that, due to excess workload, they were less willing to submit federal grant proposals than in the past. This was also slightly higher than the percentage

from 2012. As one might expect, this reluctance was slightly more likely at institutions with smaller research assignments (r=-.27), and at institutions with higher average researcher estimates of time taken from research by requirements (r_p=.25).

Despite these concerns, roughly 80% of the respondents reported that they would choose an academic research career if they had a second chance. This feeling was not correlated with either institution average research assignment or average reports of time away from research. Overall, this provides evidence of an increase in the perceived negative impacts of time-consuming requirements, although these impacts are not enough to lead most respondents to second guess their career choice.

Institution Effectiveness in Alleviating Administrative Workload

The four items in Figure 26 below focus on the institution's effectiveness in alleviating administrative workload associated with federally-funded research.
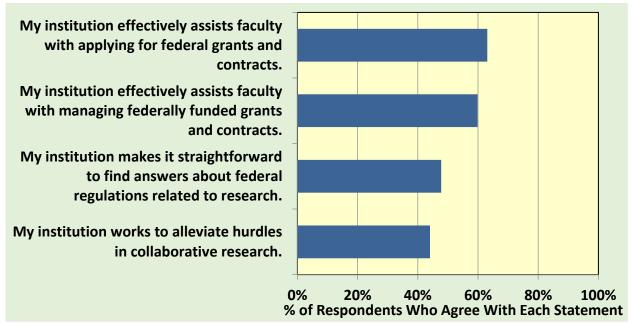

Figure 26. Percentage who agreed with statements regarding institution effectiveness in alleviating research-related administrative workload.

Approximately 60% of respondents felt that their institution was effective in assisting with applying and managing federally-funded grants and contracts. As might be expected, the tendency to agree was slightly higher at institutions with larger average research assignments (both r's=.29) and slightly lower for institutions with higher average reported time away from research due to requirements (r_p's=-.29 and -.31, respectively).

Respondents were equally split about ability to obtain information, with roughly half agreeing that their institution makes it straightforward to find answers to questions about federal

regulations. Although there was a slightly stronger tendency toward agreement at institutions with larger average research assignments (r=.22), there was a relatively strong negative correlation between agreement rating and time away from research (r_p=-.35). Thus, respondents at institutions with higher average reported time taken by requirements were more likely to report having trouble readily accessing needed information from their institution about federal regulations.

Only about 40% of respondents agreed that their institution tries to alleviate hurdles to collaborative research. Agreement was slightly more common at institutions with larger average research assignments (r=.29) and at institutions with lower average estimated time away from research (r_p=-.28).

Overall, ratings of institution's ability to alleviate administrative workload were mixed. Agreement that the institution was doing well tended to increase at those institutions with larger average research assignments. Correspondingly, agreement tended to be higher at institutions with lower average estimates of researcher time taken from research in order to fulfill requirements. Perceptions of high researcher administrative workload were especially likely when researchers were frustrated in their efforts to get questions answered, and when they experienced difficulties in managing existing projects.

Institution Research Culture

PIs were also asked to respond to four items assessing their views of the research culture within their institution. These ratings appear in Figure 27 below.
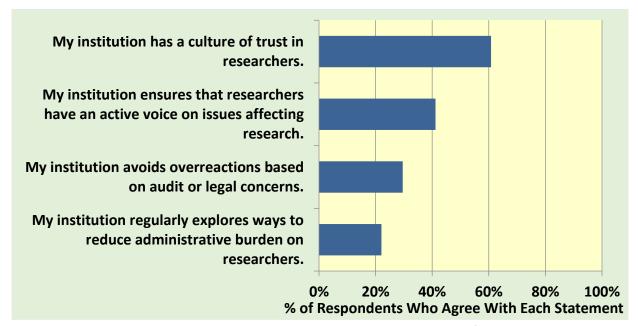

Figure 27. Percentage who agreed with statements regarding the institution's research culture.

Approximately 60% agreed that their institution has a culture of trust in researchers. Those who disagreed were more likely to come from institutions with smaller average research assignments

(r=.33) and from institutions with higher average reported time taken from research by requirements (r_p=-.39).

Fewer than half (41%) felt that researchers had an active voice at their institution on issues affecting research. Again, a sense of lacking input was somewhat more likely at institutions with smaller average research assignments (r=.27) and at institutions with higher average reported time taken from research by requirements (r_p=-.26).

Less than one third felt that their institution avoided over-reacting to audit or legal concerns, and less than 25% felt that their institution was actively working to reduce administrative burden on researchers. Surprisingly, these views were not systematically related to average research assignment or to average institution estimates of time taken from research by requirements.

These findings suggest that there is substantial room for improvement in perceived research culture at many institutions. There was a particularly strong negative relationship between the perceived culture of trust and the average report of time spent on administrative and other requirements. A stronger culture of trust is associated with lower reports of time away from research. To a lesser extent, this is also true for perceptions of having an active voice in research-related issues at their institution.

Conclusions

As in 2012 and 2006, we again observed high levels of time taken from federally-funded research to fulfill requirements. In fact, the average amount of time seems to be increasing so that almost half (44.3%) of a researcher's allocated time for their research projects is spent on requirements rather than on active research.

Across all three surveys, **the most time-consuming responsibilities were associated with proposal preparation, projects finances, and protections for animal and human subjects**. In our most recent survey, we documented that this workload is due not only to responsibilities reflected in requirements monitored by the institution, but also **compounded by agency-specific requirements that are added on top of the institutions' requirements**. For instance, agency-specific prerequisites for the use of animal or human subjects are added on to the institution-run IACUC and IRB requirements. This is likely to result in redundancies and delays that do not contribute to subject protections and that could be avoided through streamlining. Indeed, the 2018 survey documented that these areas are not only time-consuming but also those that were **most likely to be rated high priority areas in need of change to reduce unnecessary workload**.

These results highlight the **importance of evaluating workload at all levels** and the **essential collaborative efforts that include both institutions and agencies**. Both larger scale collaborations and more focused interventions within the institution will be needed to strike a healthier balance between administrative workload and research productivity. The collaborative nature of the **FDP**, with its **ability to elicit input from and encourage interaction among researchers, administrators, federal agency representatives, and other interested parties**, is well-positioned to play a critical role in moving in the direction to promote a more efficient and effective research enterprise.   This will better enable researchers to maintain their focus on discovery and innovation without compromising accountability.

As in 2012, the most recent survey accentuates the importance of weighing the costs and benefits of introducing new research policies. Even when well-intended, policies may have unintended consequences that create complications for compliance, and lead to much greater workload than what would ideally be necessary to accomplish the policy's goals. At other times, redundancies in the system lead to wholly unnecessary repetition, often with the need to complete multiple different forms or to follow several different procedures. Avoiding these complications and redundancies could save enormous amounts of work, not only for researchers, but also for the administrative and agency personnel who process the paperwork. This would also have the benefit of better utilizing taxpayer dollars.

Perhaps one of the most alarming findings in the current survey is the increase in concern for the research pipeline. Almost half of the respondents acknowledged the **discouraging effects that workload is having on graduate students**, making it less likely that they will pursue academic careers focused on scientific research. This represents a large uptick since 2012, when about one

third expressed this concern. Without a **strong pipeline of future researchers**, the United States will be at risk of losing its competitive edge in the areas of discovery and innovation. This secondary impact of excess workload (particularly with respect to the proportion of unfunded proposals) constitutes a threat to the future of the research enterprise and is vital to take into account. Future interventions to streamline research may benefit from including this as an area in need of focused attention. The FDP 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.

The FDP can continue to be a source of information by continuing to collect data to monitor progress. In addition to the FDP Faculty Workload Survey, it would be especially valuable to also gain comparable information about the workload associated with efforts to obtain and manage federally-funded projects among administrative staff at institutions and at federal agencies. This would provide a more complete picture of the cost of current requirements and allow better estimates of the value obtained from efforts to streamline processes. Future iterations of the Workload Survey might be revised to include data regarding research administration within member institutions and agencies to facilitate comprehensive efforts to reduce inefficiencies and to eliminate unnecessary requirement-related workload.

Future iterations of the survey might also include methods for validating respondent estimates of workload. The current survey provided a step in the right direction by demonstrating that the estimates of percent time generally matched comparable hourly estimates. It also showed high internal consistency which is supportive though not conclusive of the meaningfulness of the data. Nevertheless, more specific corroborating data would be valuable, such as the inclusion of smaller, more intensive studies of time taken by responsibilities using prospective, more objective metrics (e.g., ecological momentary assessment methods [Stone et al. 2005]). These complementary forms of data would also provide a more exacting basis for assessing the costs associated with additional administrative requirements.

Working to assist researchers to optimize the available time for research will continue to be a critical goal for achieving the best use of federal funds for research. Input from this survey and future FDP projects provide unique resources to assist institutions, agencies, and researchers. Interaction among members of all of these groups, and related parties, is essential to the work and progress of the FDP, as these sustained collaborations provide otherwise inaccessible windows into effective methods for streamlining the research enterprise.

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