

**A PROFILE OF FEDERAL-GRANT ADMINISTRATIVE BURDEN
AMONG FEDERAL DEMONSTRATION PARTNERSHIP FACULTY**

**A Report of the Faculty Standing Committee
of the Federal Demonstration Partnership**

**Robert S. Decker, Ph.D., Principal Investigator
Leslie Wimsatt, Ph.D.
Andrea G. Trice, Ph.D.
Joseph A. Konstan, Ph.D.**

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FOREWORD

This report is based on a survey undertaken by the Faculty Standing Committee of the Federal Demonstration Partnership (FDP). The study was coordinated by Robert S. Decker, Ph.D., Principal Investigator, Northwestern University; Jerry Stuck, Ph.D., Past Executive Director of the FDP; and David Wright, the present FDP Executive Director.

The FDP first surveyed faculty about 15 years ago in order to assess the effectiveness of the newly implemented “expanded authorities” that had been negotiated between FDP member institutions, federal granting agencies, and the Office of Management and Budget. In particular, that survey aimed to determine whether changes in the regulations affecting prior approvals, pre-award costs, no-cost extensions, and the carryover of unexpended funds had saved faculty time, and whether such saved time had been reinvested in research activities.

The current study originated with Marv Paule, whose work as chair of the FDP Faculty Standing Committee led to the development of the FDP-funded 2005 Faculty Workload Survey – designed to assess the extent to which faculty conducting federal grant research over the past 15 years have experienced undue administrative burden as a result of new federal regulations and changes in cost-accounting standards.

This report is designed to give readers a complete and accurate synopsis of the 2005 Faculty Workload Study and its findings, which will be used to help reduce administrative burden among faculty. The goal is to develop new strategies for making federally funded research more efficient and productive without sacrificing accountability and compliance with federal regulations.

For more information, please contact:

Robert Decker – Principal Investigator
Northwestern University

Joseph Konstan – Vice Chair of the FDP Executive Committee and Elected Faculty
Representative
University of Minnesota

David Wright – Executive Director
Federal Demonstration Partnership

ACKNOWLEDGMENTS

The input of many individuals ensured the richness and relevance of this study, and we would like to express our appreciation to the many people who made valuable contributions.

In particular, we acknowledge the guidance provided by Jerry Stuck and David Wright, the past and present executive directors of the FDP during the study period. In addition, we thank Merrilea Mayo of the Government-University-Industry Research Roundtable at the National Academy of Sciences, Geoffrey Grant at the National Science Foundation, and Peter Dunn of Purdue University for their steadfast support of the process and their participation in the report's review. FDP Chair Nancy Wray, of Dartmouth College, was unflagging in her support of this survey; Scott Crawford and his colleagues at the Survey Sciences Group LLS (in Ann Arbor, Michigan) administered the survey and provided technical notes for the report; and many others contributed valuable ideas, critiques, and general encouragement.

Finally, we extend our gratitude to the thousands of faculty who participated in the study, and we thank those institutional officials, research administrators, and faculty members without whose cooperation the study could not have been completed.

EXECUTIVE SUMMARY

Faculty members at U.S. universities and research institutions perform research upon which the nation's technological and economic health depends. A good many of these researchers are supported by federal funding, a source of considerable magnitude that produces numerous benefits. But these benefits could be expanded yet further. In particular, by learning how much the administrative tasks linked to federal-grant management are limiting researchers' available time to conduct the very research being funded, we may identify ways to restore some of that time and thereby increase the research performed by federally-funded faculty.

During the fall of 2005, the Faculty Standing Committee of the Federal Demonstration Partnership (FDP) teamed with FDP member institutions to administer the Faculty Workload Survey, an online questionnaire to collect evidence from faculty regarding the source and extent of administrative burden associated with the management of federal research grants. This study, one of the first of its kind, was directed to faculty employed at the nation's top research institutions, where the lion's share of federal research has traditionally taken place. The FDP provided funding to collect this baseline data, the results of which will be used to inform its recommendations for maximizing the time spent by faculty on active research¹ without having to compromise research accountability and compliance with federal regulations. This report outlines the findings from the survey, discusses the potential implications, and enumerates some steps that might be taken by research institutions and federal agencies.

The Nature of Faculty Research

Faculty-led and –conducted research comprises a variety of related activities, including planning and performing studies and experiments, analyzing data, developing new models and theories, advising and supervising students at all academic levels as they conduct research, collaborating with research colleagues, and disseminating research results to the public by writing journal articles and conference papers, by presenting research at conferences and technical meetings, and by giving seminars and talks at diverse venues. In addition to these "direct" research activities, faculty researchers also undertake activities that enable and support their research projects, including managing personnel, purchasing equipment and laboratory supplies, and complying with institutional rules and State and Federal laws that govern research (e.g., rules governing research on human subjects, research using and care of animal subjects, restricted access of foreign nationals to certain technologies, and safe handling of hazardous materials). Furthermore, faculty collectively commit substantial effort to research-related service activities such as organizing professional meetings, peer-review of research articles and grant proposals, and service on compliance committees and panels.

When research is supported by Federal funds, faculty researchers commit to additional tasks intended to guarantee effective use and stewardship of those funds, such as writing periodic scientific progress reports, providing financial reports, and certifying the effort of research participants.

¹ In this study, "active research" includes pursuits such as reviewing literature, designing studies, running experiments, collecting/analyzing data, writing up findings, and publishing or presenting research.

The "indirect" research activities – those that support and enable research and those that ensure compliance with applicable rules, regulations, and policies – are essential for the safety and welfare of research participants, sponsors, and the public. However, they constitute a set of burdens on researchers that, if not handled efficiently, can diminish the time available for the research itself. This report seeks to estimate the time spent by faculty researchers on a subset of these burdens – the burdens associated with carrying out federally-funded research projects – and to estimate the amount of additional time that would be spent by faculty on research if these burdens could be reduced. The data presented here is intended to help identify best practices and to suggest alternative work processes that can maintain adherence to rules, regulations, policies, and laws while maximizing the faculty time available for research and thereby maximizing the nation's return on its research investment.

Response Patterns

Responses from 6,081 faculty researchers working at FDP member research institutions are included in this report. Senior faculty with backgrounds in the hard sciences (e.g., biological/life sciences, health sciences, physical sciences, and engineering), employed at institutions with more than \$200 million in federal-grant funding, made up the majority of this respondent group. Most were male faculty² working at institutions affiliated with medical schools. The race/ethnicity of over three-quarters of the respondents was White, Non-Hispanic. Almost half of those surveyed received research grants from the National Institutes of Health, and approximately one-third from the National Science Foundation. Ninety percent of the respondents served as principal investigators (PIs) on federal research grants during the 2004-2005 academic year. Many respondents (44 percent) reported multiple roles, functioning both as PIs and co-PIs. Some 10 percent served exclusively as co-PIs during this time period. (See full report, pages 3-4.)

Key Findings

The survey's results suggested that multiple discrete activities linked to federal research-grant management create a cumulative burden that reduces the amount of time available for faculty to engage in active research. And the most striking aspect of the results was the general uniformity of responses about such administrative burden and the need for research-project assistance that could provide some relief.

- Of the time that faculty committed to federal research, 42 percent was devoted to pre- and post-award administrative activities – not to active research.
- The overall top burdens reported by faculty included grant progress-report submissions, personnel hiring, project-revenue management, equipment and supply purchases, IRB protocols and training, training personnel and students, and personnel evaluations.³

² Sixty-eight percent of the faculty respondents indicated that they were male, 25 percent female, and 7 percent did not indicate their gender.

³ The list of burdens in the Faculty Workload Survey featured tasks that must typically be carried out as part of federally funded grant research time. The survey gathered a limited amount of information about pre-award tasks.

- A second set of burdens experienced only by a subset of faculty, but rated as particularly burdensome, included IRB compliance issues, HIPAA compliance issues, and IACUC protocols, training and compliance issues.
- Ninety-five percent of respondents believed that they could devote additional time to active research if they had more assistance with research-related administrative tasks.
- Seventy-six percent of respondents were willing to reallocate direct costs to provide for research-required administrative support.
- Survey respondents suggested in their written comments (see full report, pages 25-26, and Appendix B) that:
 - The time required to complete administrative tasks is a result of both federal agency and local institutional policies, procedures, and systems.
 - The management of some administrative duties would require the help of highly knowledgeable assistants.
 - Many tasks should be streamlined or made uniform across institutions and federal funding agencies in order to lower the time required for completion.

Most of the remainder of this Executive Summary highlights key findings from each section of the report.

Grants Awarded/Grant Funding

Faculty reported the number of current grants on which they worked as a PI or co-PI, as well as the total direct-cost funding received as PIs during the 2004-05 academic year. Several findings are highlighted below (see full report, page 5).

- FDP respondents, on average, received funding as the PI on 1.7 federal research grants and as the co-PI on 1.0 federal research grants.
- Full professors were awarded significantly more federal research grants as the PI than were associate and assistant professors.
- Underrepresented minorities in the respondent group were awarded significantly more federal research grants as co-PIs than were the Asian faculty and the White, Non-Hispanic faculty; there was no significant difference between these groups on grants awarded as PI.
- Respondents' average total direct-cost funding was \$434,753. The median was \$213,000.
- Full professors reported more than twice as much total direct-cost funding as assistant professors did.

Time and Effort Expended on Research and Research Administration

While faculty respondents reported spending 58 percent of their average work week conducting research, 65 percent of that time (i.e., 38 percent of the average work week) was specifically dedicated to federal research grant projects (see full report, page 7).

- FDP researchers spent an average of 42 percent of their time for federal research projects (i.e., 16 percent of their average workweek) on research-related administrative tasks, about equally divided between pre- and post-award activities.⁴
- Collectively, survey respondents spent a substantial amount of time on administrative tasks directly linked to their federal research projects. Based on a conservative estimate of the average salaries/benefits of the 6,081 faculty survey respondents, this represents an investment of over \$85 million in administrative task management.⁵

Administrative Burden

While no single burden stands out as the greatest problem (or suggests a single potential solution), the findings indicate there are many burdens that affect large numbers of faculty and others that affect smaller numbers, but often affect them deeply (see Figure 1). Despite differences both in institutional and individual work environments, FDP faculty respondents reported a similar set of top administrative burdens⁶ associated with the management of their federal research grants.

Listed below in descending order are the top research-related burdens as reported by the majority of faculty surveyed:

1. Grant progress-report submissions
2. Personnel hiring
3. Project-revenue management
4. Equipment and supply purchases
5. IRB protocols and training
6. Training personnel and students
7. Personnel evaluations

⁴ Pre-award activities primarily included writing/submitting proposals and budgets, applying for approvals, developing protocols, and drafting safety/security plans. Post-award activities included purchasing supplies/equipment, supervising budgets, managing personnel, complying with regulations, monitoring safety/security plans, and writing reports.

⁵ This estimate is based on respondents' average salary rates by academic rank x 1.25 (benefits) x 16 percent (percent of average work week spent on administrative research tasks). The estimate represents the joint costs to federal agencies funding research projects (for time chargeable to grants) and to institutions (for time not chargeable to grants).

⁶ Top burdens represent administrative tasks assigned the highest mean ratings (i.e., 2.5 and above) by faculty based on a 5-point scale ranging from 1=None to 5=A great deal of burden.

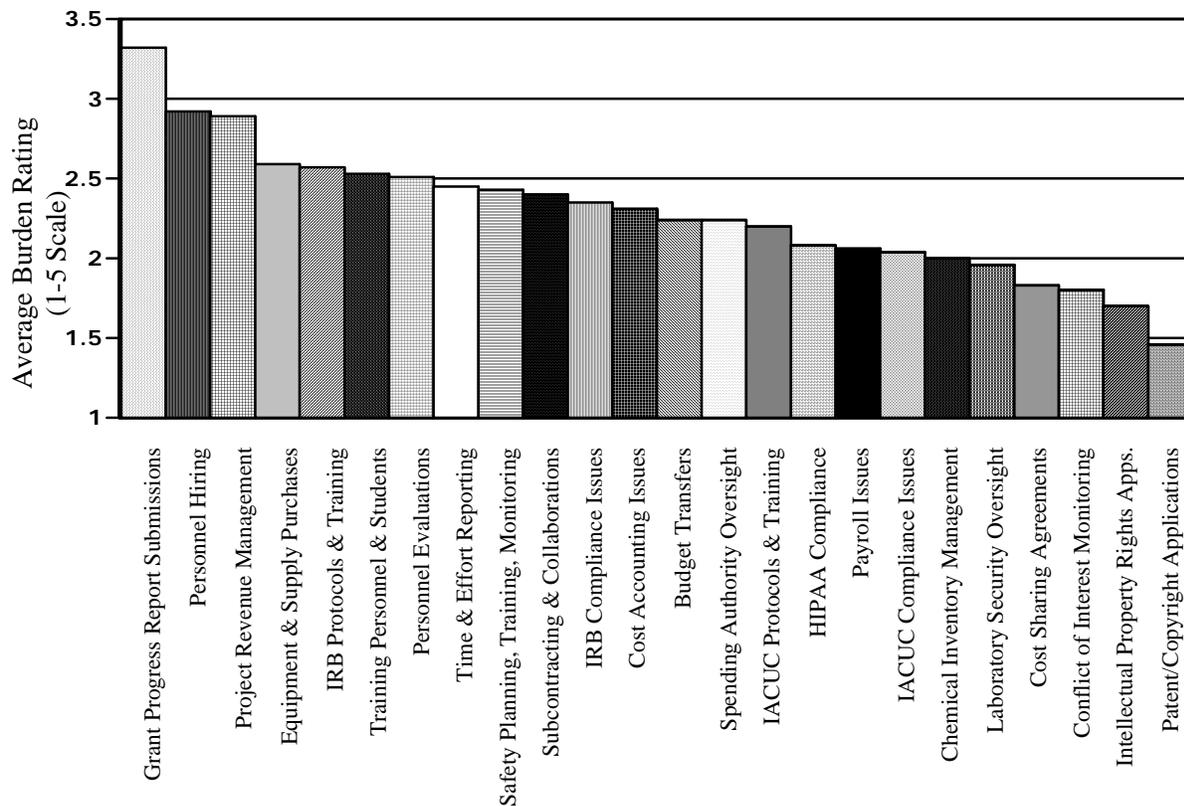


Figure 1. Average Burden Level (1=no burden; 3=some; 5=a great deal of burden)

Some variation did exist in the types of tasks rated as most burdensome across funding agencies (i.e., USDA, DOC, DOD, DOE, DOI, ED, HHS, EPA, NASA, NIH, NSF),⁷ although part of this variation no doubt related to differences across research disciplines (see full report, pages 11-12). Considering differences across funding agencies:

- With minor exceptions, faculty respondents rated grant progress-report submissions, personnel hiring, and project-revenue management as the three most burdensome tasks across funding agencies.⁸ Other than the top burden (grant progress reports), the order of the remaining two burdens varied by funding agency.

⁷ Departments of Agriculture (USDA), Commerce (DOC), Defense (DOD), Energy (DOE), Interior (DOI), Education (ED), and Health and Human Services (HHS), as well as the Environmental Protection Agency (EPA), National Aeronautical Space Administration (NASA), National Institutes of Health (NIH), and National Science Foundation (NSF).

⁸ Exceptions were HHS-funded faculty, who listed their top three burdens as grant reports, IRB protocols/training, and equipment/supply purchases; and DOC-funded faculty, who reported grant reports, equipment/supply purchases, and IACUC protocols/training as most burdensome.

- Respondents funded by six federal agencies (DOD, DOE, DOI, EPA, NASA, USDA) associated some of their highest levels of burden with equipment and supply purchases.
- Those funded by four of the agencies (DOC, DOI, ED, EPA) reported that subcontracting and collaborations created some of their highest levels of burden.

Variation by Subgroup

The survey's responses were generally uniform across faculty subgroup populations. Slight variations did exist, however (see report, pages 13-14).⁹

- Public versus private institutions: Faculty at public institutions reported significantly greater burden related to financial responsibilities than did faculty at private institutions. The latter group reported greater burden linked to conflict of interest, laboratory safety and inventory, and use of animal and human subjects (IACUC, IRB, HIPAA).
- Carnegie classification: Faculty at medical schools generally reported higher levels of burden and a broader cross-section of burdens than did faculty employed by other types of institutions.
- Federal-funding level: In most cases, level of burden did not significantly differ by funding level. However, faculty working at institutions with less than \$10M in annual federal funding reported significantly more burden related to payroll issues and HIPAA regulations, and faculty at institutions with \$150M to \$200M in federal funding reported significantly more burden related to cost-sharing agreements.
- Administrative duties: Faculty with administrative duties¹⁰ reported greater burden across the majority of tasks than did faculty without such responsibilities.
- Academic rank: Level of burden varied by academic rank, with assistant and associate professors rating five tasks – safety planning, training, and monitoring; equipment/supply purchases; training personnel/students; IRB protocols and training; and IRB compliance issues – more burdensome than did full professors. Of these tasks, the IRB and HIPAA activities took the greatest amount of research time away from associate professors. Both full and associate professors rated personnel evaluations, budget transfers, cost-sharing agreements, spending-authority oversight, and subcontracting and collaborations as particularly burdensome; full professors reported spending more time on conflict-of-interest monitoring.
- Race/ethnicity: Burden among underrepresented minority and Asian/Pacific Islander faculty exceeded burden experienced by White, Non-Hispanic faculty across more than two-thirds of the measures.

⁹ All comparisons reported have a difference that is statistically significant ($p < 0.001$). Statistically significant yet less substantial subgroup differences ($p < 0.01$, $p < 0.05$) are not included in this report.

¹⁰ Of this group, one-third served as center directors, 15 percent as department chairs, and 47 percent as administrators with a wide range of other responsibilities (see footnote in Appendix A, Table 1).

- Gender: Women reported significantly higher levels of burden than did men on more than half of the administrative tasks.

Assistance with Administrative Tasks

Faculty reported very low levels of institutional support across most administrative tasks, with only financial tasks receiving average scores of "some assistance" or above (see full report, pages 17-18). In addition to significant variation by disciplinary context, differences were reported within the following faculty subgroups:

- Respondents at institutions without a medical school received less assistance than did faculty at institutions with a medical-school affiliation (14 out of 24 tasks)
- Instructional faculty received less assistance than did clinical or research faculty (13 out of 24 tasks)

Reallocating Time and Grant Money for Research Assistance¹¹

- Ninety-eight percent of respondents reported that at least some of the time they spent managing federal grants could be conducted by administrative personnel.
- On average, faculty anticipated that having research-project assistance would save 28 percent of the time they typically invested in grant management.
- Sixty-five percent of the respondents believed that they could devote at least two additional hours each week to active research if they had more assistance with administrative tasks.
- Seventy-six percent of respondents would choose to reallocate some direct costs for research administrative support.

Perceptions of the Climate for Research

A four-point scale ranging from "agree strongly" to "disagree strongly" was used to determine the degree of faculty concurrence with several statements regarding their perceptions of the climate for academic research. Highlights of the findings are shown in Figure 2. (For complete results, see pages 22-23 of the full report.)

¹¹ For additional results, see pages 19-20 of the full report.

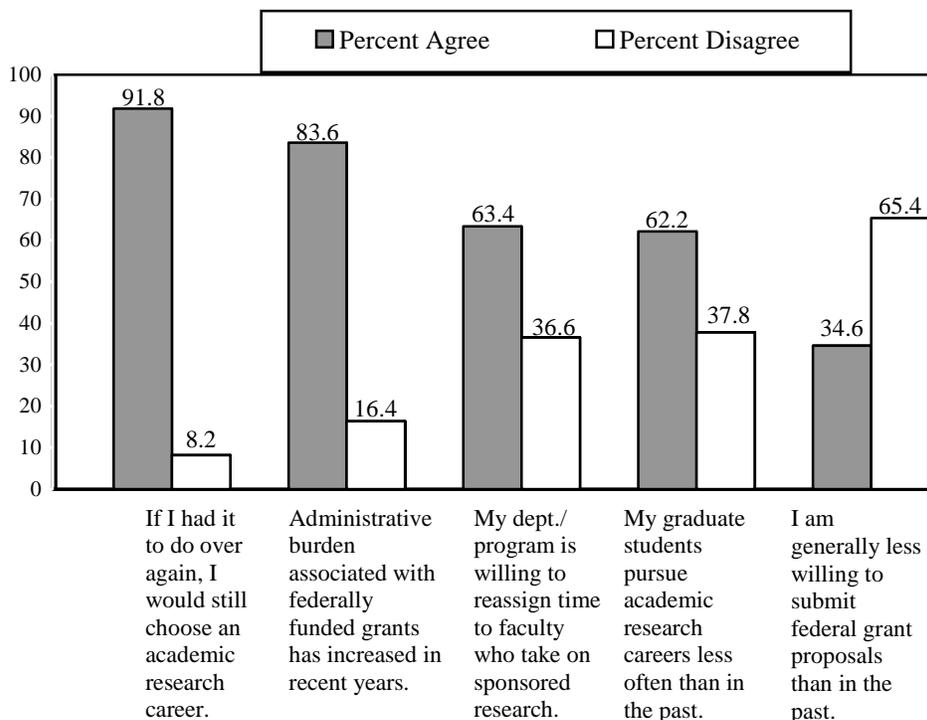


Figure 2. Faculty Perceptions of the Climate for Academic Research

Conclusions

The most striking aspect of the survey’s results was the general uniformity of responses that pointed to a high level of administrative burden and low level of research-project assistance. Multiple discrete activities linked to federal research-grant management appear to create a cumulative burden that in turn reduces the amount of time available to faculty for actively engaging in research. While no single burden stands out as the greatest problem (or suggests a single potential solution), the findings indicate that there are many burdens that affect large numbers of faculty and others that affect smaller numbers, but affect them deeply. For example, 6 of the 24 administrative tasks related to federal-grant management took away “a moderate amount” or “a great deal” of research time, according to many FDP faculty respondents. Most faculty surveyed said they received minimal assistance with all 24 tasks.

The data clearly show that the level of administrative burden is high enough to routinely take our nation’s most qualified scientists away from their research for significant amounts of time. And the problem may be even more severe. FDP faculty members report that the burden has increased in recent years, given new regulations related to homeland security and new mechanisms for financial accountability. In addition, a commonly expressed concern is that American graduate students in many disciplines are choosing to avoid the academic career path, once they gain their degrees, because they perceive that the quality of academic work life and the opportunity to make a scientific difference have decayed relative to industrial research opportunities.

There is hope, however. The FDP has demonstrated administrative simplification in the past that met the interests both of federal agencies and research institutions, and our current study suggests similar potential, particularly for the identification of best practices that can be adopted more broadly. For example, we found moderate variation in the level of burden related to IRB and HIPAA protocols across several institutions with medical schools. This shows that some institutions have been more successful than others in meeting federal-agency requirements while reducing the time that faculty must take from active research in order to address administrative tasks.

Potential Solutions

We suggest three main sets of actions to help moderate the cumulatively high level of faculty administrative burden in conducting federally funded research.

1. Demonstrations that can be conducted by the FDP.
 - Demonstrate the general effects of allowing faculty to extend use of direct costs to pay for research project management assistance.¹²
 - Demonstrate the effects of specific solutions (e.g., research project management support staff specifically for IACUC protocols or standardizing IRB applications) that address targeted high-burden cases.
 - Demonstrate streamlined and standardized project-reporting for deliverables such as agency progress reports and IRB/IACUC reports.
 - Demonstrate the effects of greater use of just-in-time components for grant proposals.
2. Solutions requiring federal action outside of the FDP.
 - Re-evaluation of the cap on indirect-cost recovery in order to allow greater university support for research project management costs. This could involve a simple cap change or a change in the formula so that the “A” part of the F&A expenses would be subdivided into separate categories with separate caps.
 - Modify A-21 language to explicitly allow direct-cost allocation for research project management assistance.
 - Create a new classification of “allowable” assistance within the A-21 guidelines (e.g., develop a “compliance coordinator” function).
3. Other activities that can be pursued by the FDP.
 - Develop a clearinghouse of best practices for reducing administrative burden among research institutions, as well as among agencies. The data collected in this report’s survey can be a start toward identifying such best practices.
 - Repeat this faculty administrative-burden survey periodically (say, every 5-8 years) to measure trends, assess improvements, and identify new challenges.

¹² We note that direct charging of project coordinators and other research project management personnel “may already be appropriate where the nature of the work performed under a particular project requires an extensive amount of administrative or clerical support which is significantly greater than the routine level of such services provided by academic departments” [February 1994 Talesnik interpretation from OMB Office of Grants Management]. Nonetheless, many institutions have expressed concern about whether auditors will allow such expenses for smaller projects even if they have significant project management requirements.

I. INTRODUCTION

In 1988, a number of research universities and federal funding agencies established a partnership – now known as the Federal Demonstration Partnership (FDP) – to monitor research administration requirements and tools in an effort to boost faculty research productivity and research institution productivity more generally. The FDP has since evolved into a consortium of some 99 research universities and institutions and 13 federal agencies that fund research. In 1991, the FDP implemented a series of fundamental changes in the administration of federally funded research grants to universities. These changes included prior spending authority, pre-award costs/transition funding, no-cost extensions, and the carry-over of unexpended funds. The implementation of these administrative changes not only gave universities and their faculty considerable flexibility in managing federal grant dollars but also enhanced research efficiency. Nevertheless, over the ensuing decade, new administrative responsibilities for faculty and research administrators have been promulgated that, at least anecdotally, appear to have eroded research productivity. The actual effects of these new administrative tasks are only now being systematically measured.

During the fall of 2005, the FDP Faculty Standing Committee teamed with member institutions to administer the Faculty Workload Survey, an online questionnaire aimed at quantifying the time spent by faculty in the management and execution of their federal research grants. This report outlines the survey's findings, discusses their potential implications, and explores alternatives aimed at freeing up faculty research time without reducing research accountability and compliance or increasing the overall cost of the research enterprise.

The FDP was especially interested in considering how federal requirements (e.g., granting-agency rules and OMB regulations) and institutional responses to these requirements influenced the time faculty members spent on active research, as opposed to research administration, on projects funded by federal agencies.¹³ Survey recipients – faculty working in 69 FDP member institutions – were therefore asked to report on their research activity and on the impact of various federally required administrative tasks on that activity.

The report begins with a profile of the survey's respondents, followed by descriptive analyses of its results. Faculty research burden and productivity are examined in aggregate and also in relation to traditional measures such as academic rank, disciplinary affiliation, tenure status, administrative duty, funding agency, Carnegie classification, and level of institutional funding for federal research grants.

¹³ In this study, “active research” includes pursuits such as reviewing literature, designing studies, running experiments, collecting/analyzing data, writing up findings, and publishing or presenting research.

II. CHARACTERISTICS OF FDP FACULTY RESPONDENTS

Ninety percent of respondents to the 2005 Faculty Workload Survey served as principal investigator (PI) on at least one federal research grant during the 2004-2005 academic year, and 10 percent served only as co-principal investigator (co-PI). Many respondents (44 percent) reported having multiple roles, functioning both as PIs and co-PIs during this time period.

A large majority of survey respondents (71 percent) worked at institutions that offer a comprehensive array of doctoral programs and that also support a medical school (Appendix A, Table 1). Correspondingly, most of the respondents (67 percent) worked at institutions receiving over \$200 million in federal grant funding each year. Seventy-one percent of the respondents were employed at public institutions and 28 percent at private institutions.

Faculty members in the hard sciences constituted a majority of the respondents. Almost half of the entire group indicated their principal field of research as the Biological or Life Sciences (33 percent) or Health Sciences (15 percent). Physical Sciences and Engineering faculty members represented 12 percent and 10 percent of the respondents, respectively. Approximately one-quarter of the respondents came from the fields of Agriculture, Computer Sciences, Education, Mathematics, Psychology, and Social Sciences.

Over a third of the respondents (36 percent) served in administrative roles during the 2004-05 academic year. Of this group, one-third served as center directors, 15 percent as department chairs, and 47 percent as administrators with a wide range of other responsibilities (see footnote, Appendix A, Table 1). The survey also asked faculty to describe their principal activity; they answered research (71 percent), instruction (18 percent), patient care (3 percent) and “other” (8 percent).

With regard to rank and tenure status, 54 percent of the respondents were professors, 24 percent were associate professors, and 22 percent were assistant professors (see Appendix A, Table 2). Sixty-seven percent of the respondents were tenured, 22 percent were on a tenure track but not tenured, 10 percent were not on a tenure track, and 1 percent said there was no tenure system at their institution.

Sixty-eight percent of the survey respondents indicated that they were male, 25 percent indicated female, and 7 percent did not indicate their gender. Individuals who identified as White, Non-Hispanic represented 77 percent of the respondents; Asian/Pacific Islanders were 9 percent; Hispanics 2 percent; Black, Non-Hispanics 1 percent, and American Indian/Alaskan Natives 1 percent. Four percent indicated “Other” for race/ethnicity and 6 percent did not respond to this survey item. Given the small number of respondents in several categories, American Indian/Alaskan Native; Black, Non-Hispanic; and Hispanic respondents are combined into one subgroup labeled “underrepresented minorities” for several of the analyses included in this report. (See Appendix A, Tables 1 and 2, for further details).

The agencies that funded the highest percentage of respondents (counting individuals, not grants or dollars) were the National Institutes of Health (49 percent) and the National Science Foundation (32 percent). In addition, a substantial number of faculty members were funded by

the Departments of Agriculture (USDA), Commerce (DOC), Defense (DOD), Energy (DOE), Interior (DOI), Education (ED), Health and Human Services (HHS), as well as the Environmental Protection Agency (EPA) and National Aeronautical and Space Administration (NASA). Fewer than 2 percent of the respondents received funding from other federal departments and agencies.¹⁴ See Appendix A (Table 3) for additional information regarding the characteristics of faculty respondents by federal funding agency.

¹⁴ Departments of Homeland Security, Housing and Urban Development, Justice, State, Transportation, and Veterans' Affairs as well as the Institute of Museum and Library Services, National Endowment for the Arts, and National Endowment for the Humanities.

III. WORK ACTIVITIES OF FDP FACULTY RESPONDENTS

Federal Research Grants Awarded

On average, FDP respondents received funding as PIs on 1.7 federal research grants and as co-PIs on 1.0 federal research grants during the 2004-05 academic year. In addition, faculty members employed at institutions receiving between \$150 and \$200 million in grants each year served as PIs on significantly more federal research grants (an average of 2.0 per year) than did faculty working at institutions receiving either more than \$200 million or less than \$150 million in annual grant funding. Not surprisingly, research faculty received more federal grants as PIs (1.8) than did instructional faculty (1.5) or clinical faculty (1.0). (See Appendix A, Tables 4-5, for further detail.)

Variation by disciplinary affiliation was evident as well. Engineering and physical sciences faculty served as PIs on the greatest number of research grants (2.1 and 2.0, respectively).

The survey results also indicated that:

- Full professors were awarded significantly more federal research grants as PIs than were associate and assistant professors.
- Full and associate professors were awarded significantly more federal research grants as co-PIs than were assistant professors.
- Underrepresented minorities were awarded significantly more federal research grants as co-PIs than Asian faculty and White, Non-Hispanic faculty (there was not a statistically significant difference in the number of grants as PI).

Respondents' average total direct-cost funding was just under \$435,000. The median funding level was \$213,000 (Appendix A, Tables 6-7). Average grant funding did not significantly differ when examined by most measures of institutional and individual work context (i.e., public versus private, Carnegie classification, federal-grant funding level, race/ethnicity, gender). However, faculty with administrative roles and full professors reported approximately twice as much average total direct-cost funding compared to other faculty in the study.

Allocation of Time

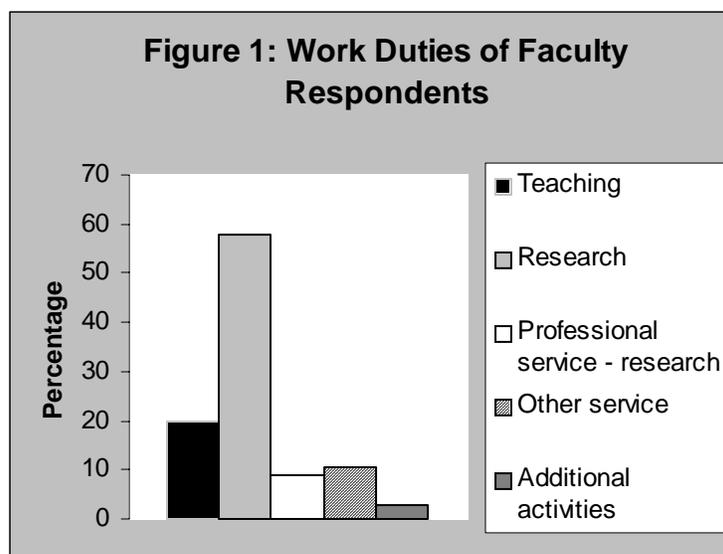
FDP faculty respondents reported that the majority (58 percent) of their average work week was spent on research activities.¹⁵ Teaching¹⁶ comprised the second-largest fraction (20 percent) of their time. Remaining work hours were devoted to research-related professional service¹⁷ (9 percent), other service activities¹⁸ (11 percent), and additional activities¹⁹ (3 percent). Figure 1 illustrates these findings.

¹⁵ Research activities mainly included conducting research, preparing articles/presentations, seeking federal and non-federal outside funding, and managing grants, as well as mentoring student researchers and postdoctoral fellows.

¹⁶ Teaching activities ("classroom teaching") included tasks such as preparing for class, teaching, grading, advising/mentoring students, and developing new curricula.

¹⁷ Research-related professional service included work with professional associations/societies, peer review of grants or manuscripts, participation in special research panels, as well as service on research regulatory committees such as IRB, IACUC, and research safety.

¹⁸ Other service included clinical, departmental, university, and community projects.



When viewed by subgroups, the time allocations of FDP faculty varied (see Appendix A, Tables 8-9). At public institutions, respondents reported that about 56 percent of their time was spent on research activities during the 2004-05 academic year; at private institutions, that figure was 63 percent.

When viewed by Carnegie classification, faculty working at doctoral-focused institutions spent less time on research (52 percent) than did faculty working at comprehensive universities with medical schools (59 percent) or at health centers (66 percent). In addition, faculty working in the areas of health sciences, psychology, and biological or life sciences spent a considerably larger fraction of their time on research activities (60, 62, and 65 percent, respectively) than did faculty working in other disciplinary contexts. These differences appear to largely reflect variation in the research missions across institutions and disciplinary work contexts.

In terms of seniority, assistant professors spent more time on research activities (63 percent) than did associate or full professors (58 and 56 percent, respectively). Variation was also evident by race/ethnicity, with average research time ranging from 56 percent among underrepresented minority faculty to 61 percent among faculty of Asian/Pacific Island descent. Women spent more time engaged in research than did men (59 versus 57 percent).

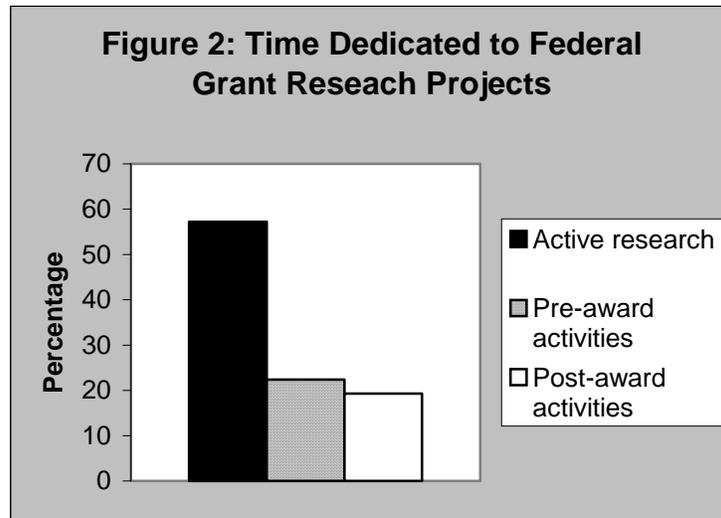
Time and Effort Expended on Research

On average, faculty devoted 65 percent of their available research time (i.e., 38 percent of their total work week) to federally funded research activities. FDP researchers typically spent 42 percent of this time (i.e., 16 percent of the work week) on research-related administrative tasks, which were divided almost equally between pre-award (22.4 percent of the time spent on federally funded research activities) and post-award (19.3 percent) activities.²⁰ Time spent on

¹⁹ Additional activities (“other”) included work not subsumed by any of the aforementioned time-allocation categories.

²⁰ Pre-award activities primarily included writing/submitting proposals and budgets, applying for approvals, developing protocols, and drafting safety/security plans. Post-award activities included purchasing supplies/equipment, supervising budgets, managing personnel, complying with regulations, monitoring safety/security plans, and writing reports.

active research on these federally-funded projects amounted to 22 percent of the total work week (57 percent of the 65 percent of research time (which itself averages 58 percent of the total work week) that is devoted to federally-funded projects). (See Appendix A, Tables 10-11, for more detail.)



When examined across institutional contexts, the most substantial difference in the percentage of research time spent on federal research was between faculty working at public institutions and those employed by private institutions. Public-institution faculty spent an average of 63 percent of their research time on federal-grant research while private-institution faculty devoted 70 percent. Faculty employed at doctoral institutions without medical schools spent 61 percent of their research time on federal research. In contrast, those working at medically focused institutions invested 67 percent.

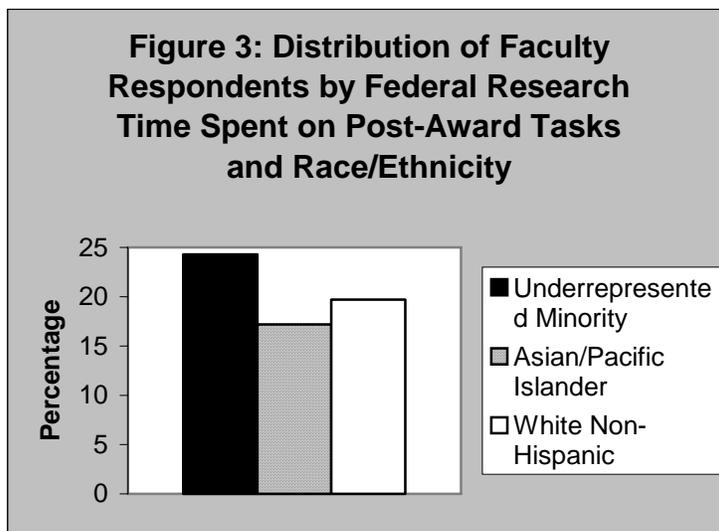
Disciplinary affiliation and principal activity accounted for some substantial differences in percentage of research time spent on federal-grant work. Physical sciences, computer sciences, and biological/life sciences faculty spent the most research time engaged in federal-grant research while agriculture, education, and social sciences faculty devoted the least. Faculty who reported research as their principal activity spent significantly more of their research time (69 percent) on federal research than did faculty with primarily clinical duties (38 percent). When examined by individual work characteristics, faculty on the tenure track but not tenured and underrepresented-minority faculty spent the least amount of their total research time on federal grant work (63 and 58 percent, respectively).

Differences in percentage of federal research time spent on pre- and post-award tasks were minimal, with virtually no substantial variation in time spent on pre-award tasks when examined by Carnegie classification, public/private affiliation, or federal funding level. Faculty at private institutions reported spending less of their federal research time on post-award activities, and accordingly more time on active research.

Mathematics faculty dedicated a substantially greater percentage of their federal time to active research than did other faculty members, and correspondingly less time on both pre-award and

post-award grant management. Agriculture faculty reported the highest total time devoted to pre-award and post-award grant management (49 percent), and therefore the least amount of time to active research. Engineering faculty reported the highest pre-award grant management time (26 percent), and Education faculty reported the greatest percentage of time (29 percent) on post-award activities.

Underrepresented minority faculty spent less of their research time on active federally funded research (52 percent) than did faculty of Asian/Pacific Island descent (59 percent). Time spent on pre-award tasks varied by only 2-3 percent when examined by academic rank and tenure status, with assistant professors and faculty on the tenure track (but not tenured) devoting the most time to these tasks. However, Asian/Pacific Islanders reported spending less of their federal research time on post-award activities (17 percent) compared to underrepresented minority faculty (24 percent). [See Figure 3.]



IV. ADMINISTRATIVE BURDEN AND SUPPORT

Administrative Burden

Respondents were asked to assess the amount of burden they experienced from 24 common tasks related to managing grants. Respondents scored each burden by estimating the time taken away from active research on a 5-point scale ranging from 1=None to 5=A great deal of burden.²¹ We examine the burdens in two ways. Figure 4 shows the average response of all respondents for the level of burden for each task. This average shows the cumulative severity of the burden –

²¹ Note: All of the survey questions related to administrative burden included a “not applicable” response option, with burden coded as 1=None, 2=A little, 3=Some, 4=Moderate amount, 5=A great deal.

i.e., the combination of the severity and the number of people who experience it. By this measure, the top burdens identified were:

1. Grant progress report submissions
2. Personnel hiring
3. Project revenue management
4. Equipment and supply purchases
5. IRB protocols and training
6. Training personnel and students
7. Personnel evaluations

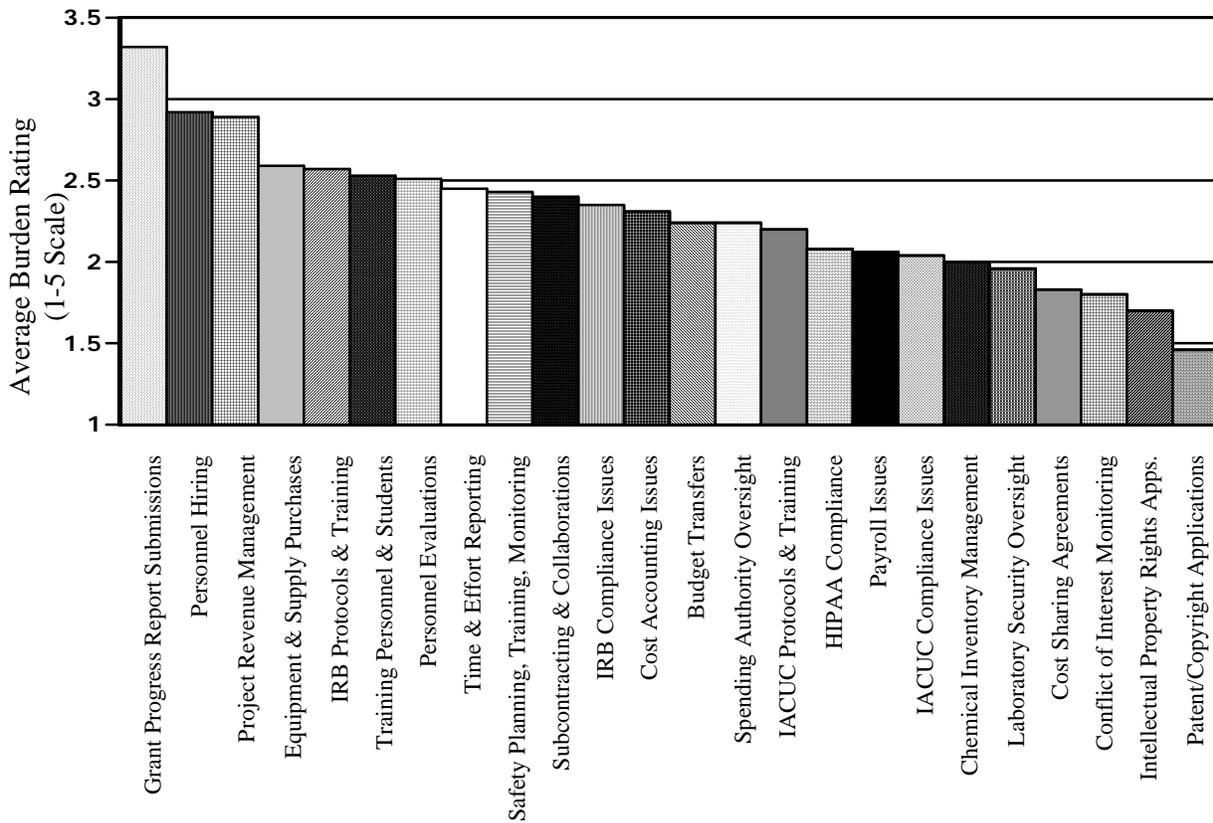


Figure 4. Average Burden Level

Despite the diverse institutional and work contexts of individual FDP faculty respondents, they reported similar sets of top administrative burdens²² associated with federal research grants. (See Appendix A, Table 12.)

²² Top burdens represent administrative tasks assigned the highest mean ratings (i.e., 2.5 and above) by faculty based on a 5-point scale ranging from 1=None to 5=A great deal of burden. The list of burdens in the Faculty Workload Survey featured tasks that

Figure 5 (see also Appendix A Table 13) looks only at the severity of each burden for those faculty who experience that particular burden; i.e., the figure does not include faculty who reported no time taken away from active research for that burden. While the prior analysis measures the possible cumulative benefit from relieving a benefit, this one examines the burdens that cause the greatest disruption to faculty, even if only to a smaller number of faculty (such as those performing human subjects or animal research). As the figure shows, the top burdens change substantially here, with IRB, IACUC, and HIPAA regulations appearing prominently among the top burdens.

Listed below, in descending order, are the burdens that received the highest average ratings as reported by this subset of faculty:

1. IRB protocols and training
2. IACUC protocols and training
3. Training personnel and students
4. Grant report submissions
5. IRB compliance issues
6. IACUC compliance issues
7. Personnel hiring
8. Project revenue management
9. HIPAA compliance
10. Subcontracting and collaborations
11. Safety planning and monitoring
12. Equipment and supply purchases

Figure 5 presents a complete listing of burdens ranked by faculty who reported that those specific tasks took at least some time away from their active research (see also, Appendix A Table 13).

must typically be carried out as part of federally funded grant research time. The survey gathered a limited amount of information about proposal preparation and other pre-award tasks.

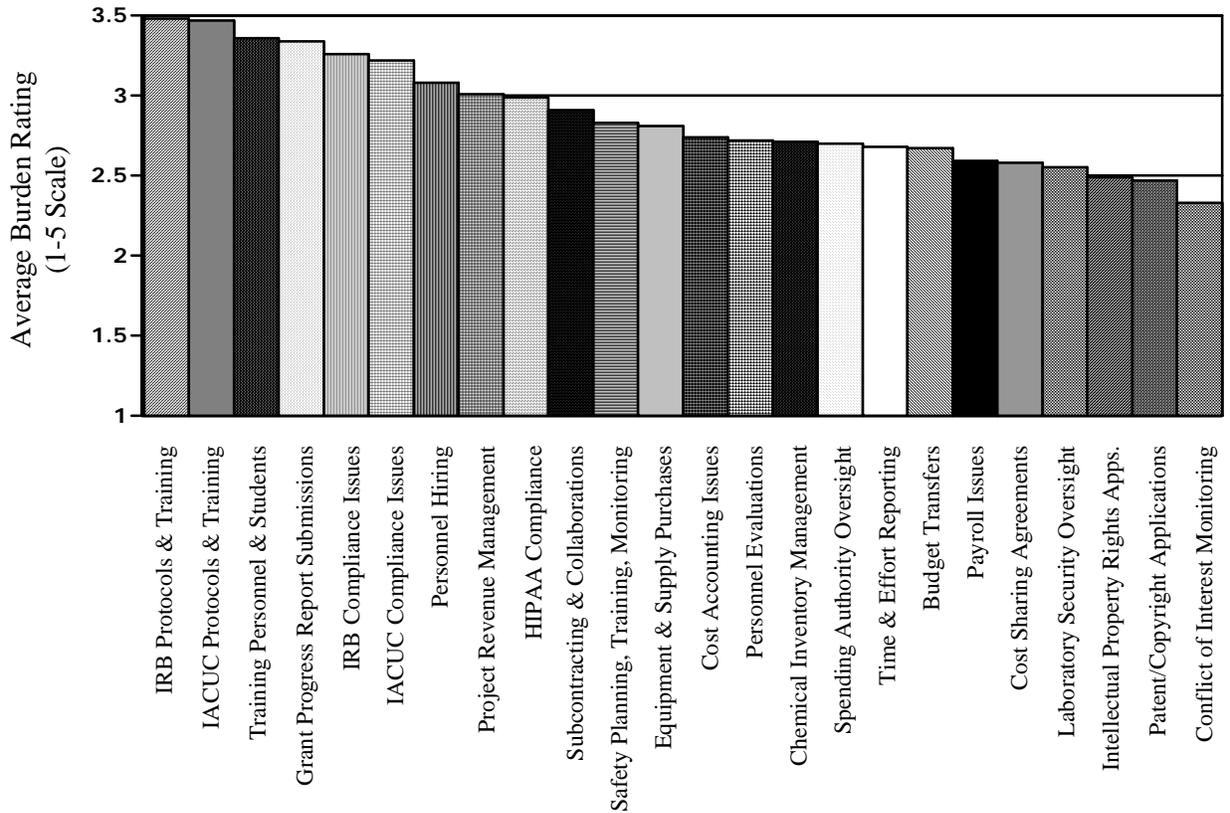


Figure 5. Variations in Burden Level Among Faculty Reporting More than “None”

Variations in Top Burdens across Federal Funding Agencies

Variation existed in the types of tasks rated as most burdensome across funding agencies (i.e., USDA, DOC, DOD, DOE, DOI, ED, HHS, EPA, NASA, NIH, NSF),²³ although some of this variation no doubt related to differences across research disciplines (see following text; Table 1; and Appendix A, Table 14). Regarding differences across funding agencies:

- With minor exceptions, faculty respondents rated grant progress-report submissions, personnel hiring, and project-revenue management as the three most burdensome tasks across funding agencies.²⁴ Other than the top burden (grant progress reports), the order of the remaining two burdens varied by funding agency.

²³ Departments of Agriculture (USDA), Commerce (DOC), Defense (DOD), Energy (DOE), Interior (DOI), Education (ED), and Health and Human Services (HHS), as well as the Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), National Institutes of Health (NIH), and National Science Foundation (NSF).

²⁴ Exceptions were HHS-funded faculty, who listed their top three burdens as grant reports, IRB protocols/training, and equipment/supply purchases, respectively; and DOC-funded faculty, who reported grant reports, equipment/supply purchases, and IACUC protocols/training as most burdensome.

- Faculty funded by DOI found equipment and supply purchases, subcontracting and collaborations, and cost accounting issues particularly burdensome.
- Respondents funded by EPA reported a high level of burden stemming from equipment and supply purchases, and subcontracting and collaborations.
- Faculty who received funding from USDA reported considerable burden related to equipment and supply purchases, and time and effort reporting.
- DOC-funded faculty reported high levels of burden caused by subcontracting and collaborations as well as by IACUC protocols and training.
- NIH-funded faculty rated both IACUC protocols/training and the training of personnel and students as particularly burdensome tasks, along with IRB protocols/training and IRB compliance issues.
- Equipment and supply purchases were also rated highly by faculty funded by DOD, DOE, and NASA.
- Faculty funded by HHS and ED reported that IRB protocols and training were high-level burdens along with IRB and HIPAA compliance issues.
- Subcontracting and collaborations were particularly burdensome for faculty who received funding from ED.

Table 1. Variations in Extent of Burden Across Federal Funding Agencies

Federal Agencies for which Average Level of Burden Reported was 2.7 or above	Administrative Burden
DOC, DOD, DOE, DOI, ED, EPA, HHS, NASA, NIH, NSF, USDA	<ul style="list-style-type: none"> • Grant progress report submissions • Personnel hiring • Project revenue management (all except the Department of Commerce)
DOD, DOE, DOI, EPA, NASA, USDA	<ul style="list-style-type: none"> • Equipment and supply purchases
DOC, DOI, ED, and EPA	<ul style="list-style-type: none"> • Subcontracting and collaborations
ED, HHS, and NIH	<ul style="list-style-type: none"> • IRB protocol and training
DOC and NIH	<ul style="list-style-type: none"> • IACUC protocols and training
HHS and NIH	<ul style="list-style-type: none"> • IRB compliance issues
DOI	<ul style="list-style-type: none"> • Cost accounting issues
HHS	<ul style="list-style-type: none"> • HIPAA compliance
NIH	<ul style="list-style-type: none"> • Training personnel and students
USDA	<ul style="list-style-type: none"> • Time and effort reporting

In their open-ended responses, faculty members offered a number of compliments and suggestions regarding specific federal agencies. For additional findings, see Appendix B.

Variations in Burden Across Subgroups

The most striking aspect of the survey results is a general uniformity of responses – across faculty subgroup populations – regarding administrative burden and research project assistance. Nevertheless, slight variations existed (See also Appendix A, Tables 15 to 26):^{25,26}

- Public versus private institutions: Faculty at public institutions reported significantly greater burden related to financial responsibilities than did faculty at private institutions. The latter group reported greater burden linked to conflict of interest, laboratory safety and inventory, and use of animal and human subjects (IACUC, IRB, HIPAA).
- Carnegie classification: Faculty at medical schools generally reported higher levels of burden and a broader cross-section of burdens than did faculty employed by other types of institutions.
- Federal funding level: In most cases, level of burden did not significantly differ by institutional funding level. However, faculty working at institutions with less than \$10M in annual federal funding reported significantly more burden related to payroll issues and compliance with HIPAA regulations, and faculty at institutions with \$150M to \$200M in federal funding reported significantly more burden related to cost-sharing agreements.
- Administrative roles: Faculty with administrative roles²⁷ reported greater burden than faculty without such responsibilities across the majority of tasks.
- Academic rank: Level of burden varied by academic rank, with assistant and associate professors rating five tasks – safety planning, training, and monitoring; equipment/supply purchases; training personnel/students; IRB protocols and training; and IRB compliance issues – more burdensome than did full professors. Of these tasks, the IRB and HIPAA activities took the greatest amount research time away from associate professors. Both full and associate professors rated personnel evaluations, budget transfers, cost-sharing agreements, spending-authority oversight, and subcontracting and collaborations as particularly burdensome; full professors alone reported spending more time on conflict-of-interest monitoring.
- Race/ethnicity: Burden among underrepresented minority and Asian/Pacific Islander faculty exceeded burden experienced by White, Non-Hispanic faculty across more than two-thirds of the measures.
- Gender: Women reported significantly higher levels of burden than did men on more than half of the administrative tasks.

²⁵ All subgroup differences discussed in the remainder of the report were calculated based on aggregated data collected from *all* faculty respondents.

²⁶ All comparisons reported have a difference that is statistically significant ($p < 0.001$). Statistically significant yet less substantial subgroup differences ($p < 0.01$, $p < 0.05$) are not included in this report.

²⁷ Of this group, 33 percent served as center directors, 15 percent as department chairs, and 47 percent as administrators with a wide range of other responsibilities (see footnote in Appendix A, Table 1).

Highest Levels of Burden Across Subgroups

Variation existed in the types of faculty experiencing the highest levels of burden. When examined by institutional characteristic (i.e., public/private, Carnegie classification, institution funding level, disciplinary affiliation, administrative roles, or principal activity), the following faculty respondents reported the highest levels of burden:

- Faculty researchers in all disciplines *except* engineering and mathematics reported high levels of burden related to project-revenue management.
- Personnel hiring was particularly burdensome for faculty affiliated with the following disciplines: agriculture, biological/life sciences, education, health sciences, physical sciences, and psychology.
- High levels of burden related to equipment and supply purchases were reported by faculty at doctoral-focused institutions and institutions with funding of \$100M-\$150M. In addition, agriculture and biological/life sciences faculty reported particularly high levels of burden in this area.
- IRB protocols and training created the greatest burden for faculty working at private institutions and medical schools as well as those employed in the social sciences. Faculty members with administrative roles were also highly burdened with these tasks.
- IRB compliance issues created comparatively high levels of burden for faculty working at medical institutions or in a clinical appointment, as well as for those in the health sciences and psychology.
- Personnel evaluations were highly burdensome for agriculture and engineering faculty as well as those with administrative roles.
- HIPAA compliance created the greatest burden for clinical faculty, health science faculty, and those working at medical schools.

Table 2 provides more detail on subgroup variation among faculty experiencing the highest levels of reported burden.

Table 2. Variations in Highest Level of Burden by Subgroup

Subgroups Reporting Average Level of Burden as 2.7 or Above	Administrative Burden
Private colleges/universities	IRB protocols and training
Medical institutions	IACUC protocols and training IRB protocols and training IRB compliance issues HIPAA compliance
Doctoral-focused institutions	Equipment and supply purchases
Institutional funding of \$100M-\$150M	Equipment and supply purchases
All disciplinary subgroups except engineering and mathematics	Project-revenue management
All disciplinary subgroups except computer sciences, engineering, mathematics, and social sciences	Personnel hiring
Agriculture	Equipment and supply purchases Time and effort reporting Personnel evaluations
Biological/life sciences	Safety planning, training, and monitoring Equipment and supply purchases IACUC protocols and training IACUC compliance issues Training personnel and students
Engineering	Patent/copyright applications Time and effort reporting Personnel evaluations Subcontracting and collaborations
Education	Subcontracting and collaborations
Health sciences	IRB compliance issues HIPAA compliance
Physical sciences	Equipment and supply purchases
Psychology	IRB compliance issues
Social sciences	IRB protocols and training
Faculty with administrative roles	Personnel evaluations IRB protocols and training
Clinical faculty	IRB compliance issues HIPAA compliance

When burdens are examined by individual faculty characteristics, the results indicate that:

- IRB protocols and training appear to be particularly burdensome for female faculty, lower ranking faculty, non-tenured faculty, and underrepresented minority faculty.
- IRB compliance issues appear particularly burdensome for female faculty and those either not on the tenure track or with no tenure system at their institution.
- Equipment and supply purchases create comparatively higher levels of burden for lower ranking faculty, faculty on the tenure track but not tenured, and non-white faculty.
- The training of personnel and students is a particularly burdensome task for assistant professors, faculty on the tenure track but not tenured, and non-white faculty.

Variations in Burden Across Institutions

A review of data from institutions with more than 100 survey respondents indicates fairly uniform levels of burden across the majority of administrative tasks. Some differences were reported, however, regarding burden stemming from IRB protocols and training, IRB compliance issues, and HIPAA compliance (see Figures 6-8). Differences in institutional contexts (e.g., public vs. private, Carnegie classification, and federal funding level), as well as variation in response rates across institutions, likely play at least some role in shaping reported faculty burden levels.

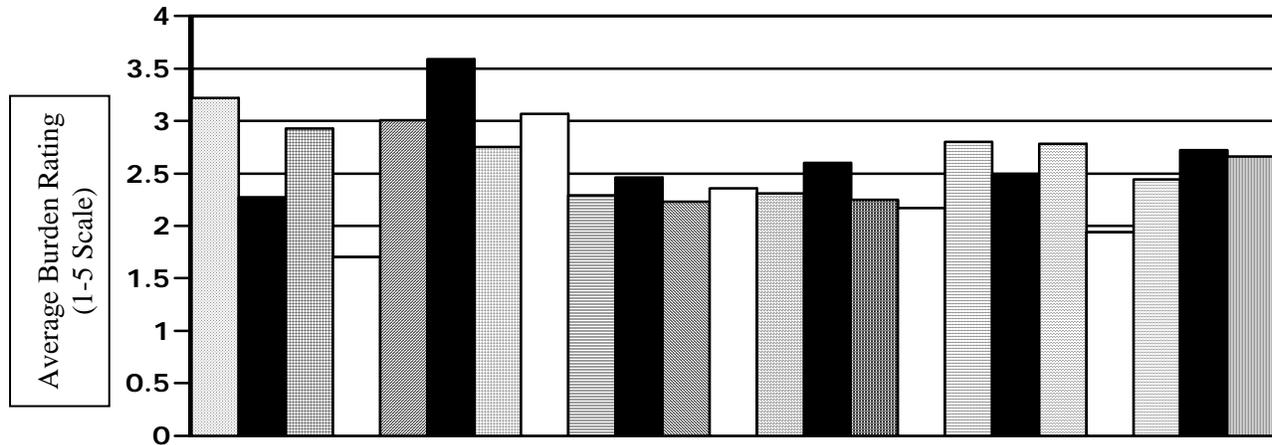


Figure 6. Example of Variation in Burden: IRB Protocols and Training across Institutions with More than 100 Respondents

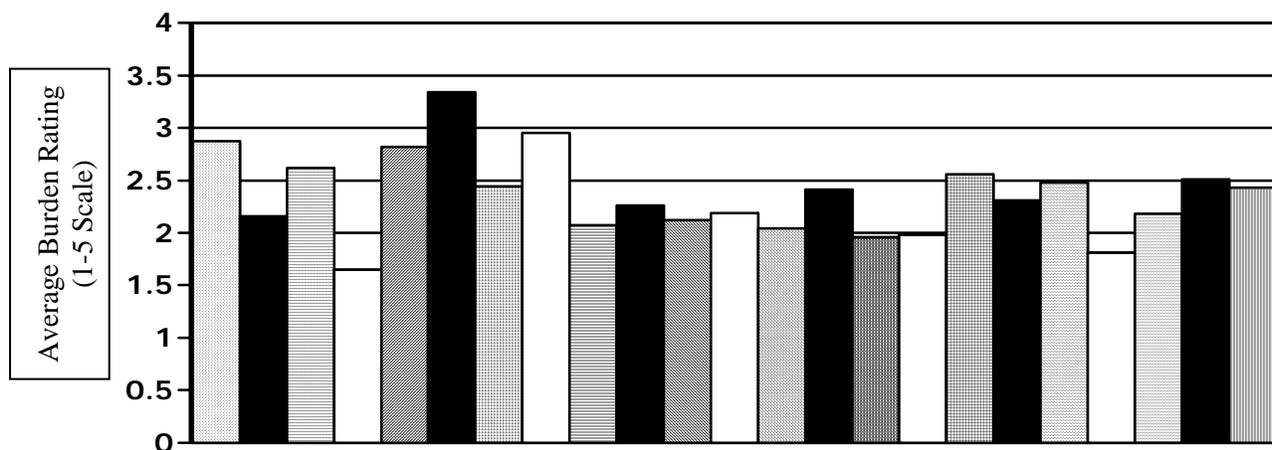


Figure 7. Example of Variation in Burden: IRB Compliance Issues across Institutions with More than 100 Respondents

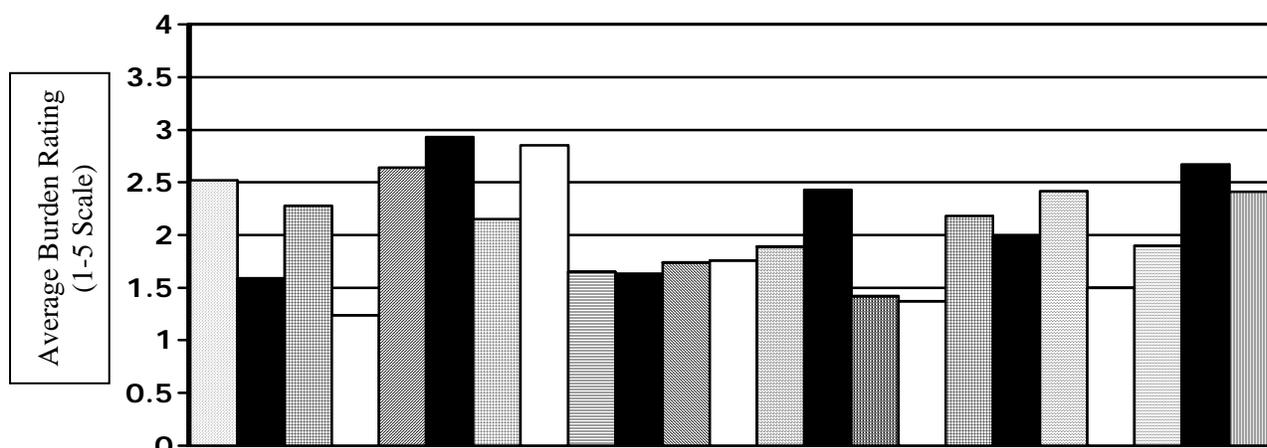


Figure 8. Example of Variation in Burden: HIPAA Compliance across Institutions with More than 100 Respondents

Assistance with Administrative Tasks

Faculty were asked how much administrative assistance they received with each of the 24 tasks for which burden was measured, and responded on a scale from 1=none through 5=a great deal of assistance. Faculty reported low levels of institutional support across most administrative tasks. Only for seven of the 24 burdens (payroll issues (3.72), budget transfers (3.63), cost accounting issues (3.56), cost-sharing agreements (3.38), project revenue management (3.18), spending authority oversight (3.09), and subcontracting and collaborations (3.01)) did respondents report an average level of assistance of at least 3 (3=some assistance). The overall top burden of grant progress report submissions scored 2.09 (2=very little assistance). We should note that these are not independent measures, as respondents may perceive the highest burden as a result of the lack of assistance and vice versa.

A summary of statistically significant differences²⁸ in level of assistance provided to faculty is given in Appendix A, Tables 27-38. In addition to significant variation by disciplinary context, differences were reported within the following faculty subgroups:

- Respondents at institutions without a medical school received less assistance than did faculty at institutions with a medical-school affiliation (statistically significant differences on 14 out of 24 tasks)
- Instructional faculty received less assistance than did clinical or research faculty (13 out of 24 tasks)

The following faculty also reported receiving significantly lower levels of assistance, though the differences across these subgroups were smaller than those noted above:

- Assistant and associate professors received comparatively lower levels of support than did full professors (13 out of 24 tasks)

²⁸ Note: All reported differences in this report are statistically significant (p<0.001).

- Faculty with no administrative roles received lower levels of support than those who did have administrative responsibilities (12 out of 24 tasks)
- Faculty on the tenure track, but not tenured, compared to those who were not on the tenure track or those who were working at institutions without a tenure system (6 out of 24 tasks)

In addition, faculty employed by private institutions received somewhat less help than did those working at public institutions on 5 of the 24 tasks (i.e., grant progress report submissions, safety planning/training/monitoring, personnel evaluations, cost-sharing agreements, and HIPAA compliance). Respondents employed by institutions with less than \$10M in federal funding also received a bit less help with three of the tasks: payroll issues, budget transfers, and project revenue management. Women received slightly less assistance than did men regarding three administrative activities: patent/copyright applications, personnel hiring, and time and effort reporting.

Overall, the institutional work contexts of faculty researchers (public/private designation, Carnegie classification, funding level, disciplinary affiliation, administrative roles, and principal activity) played a greater role than did individual faculty characteristics (academic rank, tenure status, race/ethnicity, and gender) in determining level of assistance with administrative tasks.

V. REALLOCATION OF TIME AND GRANT MONEY FOR ASSISTANCE

Ninety-seven percent of respondents reported that at least some of the time they spend managing grants could be conducted by administrative personnel. More than one-third of the respondents (36 percent) believed that 21-50 percent of the time they spent managing federal grants could be so delegated. Another 16 percent of the respondents reported that they could transfer 51 percent or more of their grants management to others. On average, faculty thought that approximately 28 percent of their time spent on grants management could be handled by administrative personnel. Ninety-five percent of respondents believed they could devote more time to active research if they had more assistance with administrative tasks. Sixty-five percent said that they could thus secure at least three additional hours each week to active research.

Seventy-six percent of respondents reported that they would choose to reallocate direct costs to administrative support if they were afforded this option. Within this group, some 13 percent of faculty would so reallocate less than 2 percent of their federal-grants funding, 39 percent would reallocate 2-7 percent, and slightly more than 24 percent would choose to devote 8 percent or more.

In your opinion, what percentage of the time you spend managing federal grants could be conducted by administrative personnel in your department, program, and/or research center?							
0%	Less than 10%	11-20%	21-30%	31-40%	41-50%	51-60%	More than 60%
2.5%	23.4%	22.7%	17.4%	8.8%	9.6%	6.3%	9.3%
How much additional time could you devote to active research if you had more assistance with administrative tasks linked to federal grant management?							
None	0-2 hrs/wk	3-4 hrs/wk	5-6 hrs/wk	7-8 hrs/wk	9-10 hrs/wk	More than 10 hrs/wk	
5.1%	29.6%	28.2%	17.4%	8.8%	5.2%	5.8%	
If you could reallocate direct costs to administrative support, what percent of your federal grant funding would you like to assign for this purpose?							
None	Less than 2%	2% - 4%	5% - 7%	8% - 10%	More than 10%		
23.7%	12.6%	19.0%	20.2%	15.5%	9.0%		

Variation across Faculty Subgroups

Faculty in the health sciences reported the greatest percentage of time spent on management of federal grants that could otherwise be conducted by administrative personnel; this faculty group also reported the highest number of additional hours per week that such delegation could free for active research (see Appendix A, Tables 39-40). In addition, education faculty would reallocate the highest percentage of direct costs to administrative support, with health sciences faculty

second highest. Finally, education and psychology faculty reported the greatest potential increase in time available for active research if they had additional support for grant management.

Faculty with administrative roles reported that, with more support from administrative personnel, they could devote more additional hours to active research each week than faculty without such duties could. Such faculty were also willing to allocate a significantly greater percentage of direct costs to administrative support than those who did not have administrative roles would allocate. A possible explanation for this difference is that faculty with administrative roles may have greater experience using such administrative personnel.

Finally, gender differences in response to these survey items were noteworthy. Women reported that more administrative support would allow them a significantly higher number of additional hours per week for active research than men reported. Women would also allocate a significantly greater percentage of direct costs to administrative support compared to men. These gender differences are significant after controlling for rank.

As described in the previous section, women responding to the survey reported less administrative assistance than did men on a number of different tasks. Gender differences with regard to institutional support have been documented in several studies (Hopkins, 1999). Allowing direct funding to cover administrative support may therefore have important implications for women faculty members in particular as they seek ways to more effectively manage their research programs.

Faculty Comments

In their written comments, some faculty expressed concerns about the use of direct costs to enhance administrative support. First, some were concerned that their universities would cut their existing institutional support, arguing that PIs should be able to cover most of it out of direct costs from their federal grants.

"If direct costs were to be permitted for administrative help, it is almost a certainty that the University would further cut back on the little administrative help already provided (faculty would be told to use their own direct costs to cover all administrative needs). ... One potential solution, given the restraints in funding, is to designate a portion of the indirect costs specifically for support of the administrative needs of individual investigators and to require institutions to document that those funds are going to support individual investigators (as opposed to getting swallowed up by general university 'overhead,' which is so far over the heads of faculty that it is of no direct benefit)."

Other respondents believed that the limited qualifications and training of existing support staff caused researchers to spend excessive amounts of time on administrative tasks. When this is the case, allowing direct-cost reallocation for additional administrative support may not solve the real problem.

“It seems that the assumption is that my institution or department will provide quality administrative support. I believe that my institution and department provide much of the services that I need to administer grants – the problem is that the quality is not that good. . . . [I]f I could allocate direct costs to administrative services, I don’t for a minute believe that service would improve. ... A real ‘market economy’ move would be to allow principal investigators to withhold a significant fraction of indirect costs when the institutions don’t deliver.”

“Most of the time that I lose to grant administration is due to poor training of staff within the university making it difficult to process awards, execute subcontracts, and access funds (pay vendors).”

A related concern centered on whether PIs would retain enough control over direct costs to realize significant help from increased support.

“It may be best to give the PI the flexibility to hire administrative help. They can help with grant management, preparation of progress-report manuscripts, ordering, and hiring. More money to departments may not do the job and the funded PIs will have no control over that money.”

VI. PERCEPTIONS OF THE CLIMATE FOR RESEARCH

In concluding the survey, a four-point scale ranging from “disagree strongly” to “agree strongly” was used to determine the degree of faculty concurrence with nine statements regarding their perceptions of the climate for academic research (see Table 3).

Table 3. Average Distribution of Faculty Respondents by Perceptions of Research Climate¹

Item	Number	Mean	Percent Agree
If I had it to do over again, I would still choose an academic research career.	5652	3.63	91.8
Sponsored research activity is a primary factor in this department's promotion and tenure policies.	5640	3.62	91.8
In my department, research is rewarded more than teaching.	5639	3.55	91.1
Administrative burden associated with federally funded grants has increased in recent years.	5351	3.22	83.6
If direct-cost grant dollars were available to support federal grant administration in my department/program, I would be able to spend more time on active research.	5484	2.97	75.6
My department/program is willing to reassign time to faculty who take on sponsored research.	4971	2.73	63.4
My graduate students pursue academic research careers less often than in the past.	4444	2.76	62.2
In my department/program, I have the option of buying out of teaching assignments.	4619	2.48	52.6
I am generally less willing to submit federal grant proposals than in the past.	5598	2.04	34.6

¹ Coded: 1=Disagree strongly, 2=Disagree somewhat, 3=Agree somewhat, 4=Agree strongly.

A large majority of faculty (91 percent) agreed that research is rewarded more than teaching in their department and that sponsored research activity is a primary factor in departmental promotion and tenure policies (92 percent). However, far fewer reported that they have the option of buying out of teaching assignments (53 percent agreed) or that their department is willing to reassign time to faculty who take on sponsored research (63 percent agreed).

While 84 percent agreed that the administrative burden associated with federally funded grants has increased in recent years, only 35 percent were now less willing to submit federal grant proposals. Over 75 percent of respondents also believed that they would be able to spend more time on active research if direct-cost grant dollars were available to support grant administration.

Finally, 92 percent of respondents agreed that if they had it to do over again, they would still choose an academic research career. Nevertheless, they expressed concern about the future strength of the American academy, with 62 percent reporting that their graduate students pursue academic research careers less often than in the past.

Variation across Faculty Subgroups

Faculty members who did not have administrative roles were less likely than those with administrative roles to have the option of buying out of teaching assignments. They were also less likely to feel that they could spend more time on research if direct-cost dollars were available, and less likely to choose an academic research career again if given the chance.

Faculty working in three areas expressed higher than average concern regarding the climate for academic research:

- Agriculture faculty were less likely than average to report that they have the option of buying out of teaching assignments. Their units were also less willing to reassign time to faculty who take on sponsored research. These faculty were less willing than in the past to submit grant proposals and more likely to report that their graduate students pursue academic research careers less often.
- Biomedical and life sciences faculty were less likely than average to report that they have the option of buying out of teaching assignments, and they indicated less willingness to submit grant proposals than in the past. They were also more likely to report that their graduate students pursue academic research careers less often.
- Health sciences faculty were the most likely to report that administrative burden associated with federally funded grants has increased in recent years. They were also more likely than average to say that their graduate students pursue academic research careers less often.

Faculty Concerns

Appendix B provides representative open-ended responses – i.e., comments that were voluntary and not in answer to any particular survey questions – regarding faculty members’ perceptions of the research climate. The topics they addressed can be grouped into four categories: 1) the effect of the current research climate on science; 2) the effect of the current research climate on faculty personally; 3) the extent of the research management burden; and 4) the future of the academy.

The following four comments capture many of the ideas that were expressed about these topics.

“A major problem with administrative/compliance burdens is not simply the time but also the erosion of creativity and individual initiative. This is hard to address by a survey, but is the most important factor in driving the best students away from scientific careers.”

“Universities reward and encourage obtaining lots of research funding. The emphasis is clearly on dollar amounts, not on quality of science. The federal government is a willing partner in this graveyard spiral, where more and more money is thrown into the system but the quality of science is going down. The emphasis on quantity rather than quality is everywhere: number of research dollars, number of papers, number of graduate students, etc. Salaries are directly tied to these numbers. Where is the encouragement for tackling high-risk, high-quality fundamental research? If that research does not take place in

universities, then where? Universities have turned into research contractors. Advancing knowledge and understanding, and higher education, are not the goals anymore. The goal is to have the largest amount of research spending.”

“I discourage grad students from entering the research stream – it is an awful quality of life with many, many evenings and weekend hours spent away from family to do the work that the university should be doing for us. As the federal demands have gone up, the university has not provided any help; but it has to come from somewhere. We are picking up the slack – on our own time, as there is not enough time in a 40-hour week to come close to meeting all of our commitments. So the 100 percent time is in reality about 150 percent and that is not just for me but for anyone who is successful. I would never have gone into this field if I had known what it would be like, and we talked our kids out of research completely. At this rate, we will lose our edge in the next decade or so.”

“If I were just beginning my career, I would not go into an area of research that involves laboratory animals, nor one that requires such an enormous burden of grant-writing. Many of our doctoral students are making that decision and are turning to other professional opportunities. The scientific manpower problem in this country is going to become a major crisis in coming years as students, seeing the struggles that their mentors go through trying to keep their research funded, elect not to take the same career path. This certainly cannot be news to those who are concerned about these issues, but perhaps this survey will add more weight to the information available to policymakers and the Congress about this very serious matter.”

VII. THEMES FROM OPEN-ENDED RESPONSES

As noted above, at the end of the survey respondents were asked to “Please take a moment to provide us with additional comments.” A tally of all the concerns and recommendations expressed, taken from more than 250 pages of open-ended faculty responses, is provided in Table 4.

Table 4. Tallies of Recommendations and Concerns Expressed in Open-Ended Responses

Recommendations regarding:	Number of Comments
1. The idea of direct-cost redirection	25
2. Specific funding agencies	7
Concerns regarding:	Number of Comments
1. Grant proposal/award process	213
2. Use of direct-cost funds for administrative support, primarily that a) indirect-cost funds should cover this, or b) the university might misuse direct-cost funds just as they often misuse indirect-cost funds	89
3. Extent of IRB burden	75
4. Extent of administrative burden that faculty experience, primarily that a) institutions provide very little administrative support, or b) federal burden is too great	66
5. Future of the academy	46
6. Extent of IACUC burden	41
7. Effect of the current research climate on faculty motivation and productivity	29
8. Administrative burden of university regulations	26
9. Extent of HIPAA burden	24
10. Effect of the current research climate on science	16
11. Reporting	12
12. Gender issues	9
13. Accounting/finance	8
14. Non-tenure-track faculty issues	6
15. International research/students	3
16. Technology	2

The most common concern expressed in the open-ended responses was about the grant proposal and award process. Faculty reported spending a tremendous amount of time writing long proposals that they believed had little likelihood of being funded. And even if they were funded, the low funding level and short duration of most grants still required that faculty members continue to write additional proposals.

The second most common area of concern – given the sum of comments involving Items 3, 5, and 6 above – was IRB, IACUC, and HIPAA regulations. Many respondents reported that these regulations are crippling research and that the current system is not designed to handle multi-site studies efficiently.

The third most common concern was the potential for negative outcomes that could result if direct-cost funds were available to cover administrative support:

- Institutions might cut the minimal administrative support that is available now, arguing that PIs should cover this expense out of their direct cost funds.
- Administrative support staff members are often unqualified and poorly trained. Even with the reallocation of direct-cost funds, PIs still might not have the authority to hire and adequately oversee staff members.
- Grant money would be diverted from research at the same time that total available federal research dollars continue to decline.
- A significant amount of the administrative burden (e.g., grant proposal writing and IRB/IACUC/HIPAA requirements) could not be managed by a staff person. The PI or another researcher must do these tasks.
- Faculty members might lose more control over their funding. Many do not trust institutional administrators to support them or to look out for their interests if direct-cost funds for administrative support were not managed directly by the PI.

Appendix B includes several representative quotes involving these three areas of concern, as well as respondents' recommendations for change. This appendix also includes faculty comments regarding reporting requirements, accounting issues, technology support, and special needs related to international research and international students.

VIII. LIMITATIONS

While this study is one of the largest studies of faculty workload, and to our knowledge the largest study of research management burden ever conducted, and while it has substantial statistical power, we want to clearly identify some of the key limitations of the study.

- The population studied is not representative of faculty overall and suffers from both sampling and self-selection bias. Faculty were drawn only from among participating FDP institutions (which are disproportionately larger research institutions) and from lists of funded faculty generated by those institutions. Faculty who have already stopped receiving funding, or never gained funding, are not included. Also, faculty who, whether due to overload or other reasons, refused to answer the survey may represent a different viewpoint.
- The survey instrument was limited in the questions it posed. We include a sample of free-text comments because respondents felt strongly enough to address issues we did not present to them and to elaborate on items where they felt multiple-choice responses were inadequate.
- The survey does not attempt to assess the value of the activities that create grant management burdens. Accordingly, we can only identify tasks that consume time, not specifically tasks that waste time. We leave it for future work to assess whether the goals behind those tasks are themselves worthwhile, and if so, whether there is a more efficient way to achieve them.

IX. CONCLUSIONS

The results of this study suggest that faculty spend on research management a substantial percentage of the time they could devote to active research. Unfortunately, there is no single overwhelming burden that could be alleviated to reverse the trend. Rather, the burdens are an accumulation of many different factors which originate from three primary sources:

(1) Federal policies and procedures. Federal requirements, some of which apply even to unfunded research, and some of which are specific to individual agencies, together comprise a substantial grant management burden for faculty. For example, grant progress reporting elicited comments from many faculty. Some questioned whether the effort expended was worthwhile (“I spend too much time filling out progress reports that are read by 2 people [as opposed to real papers that are available to everybody ... hopefully read by more than 2!]”) and others simply pleaded for standardization (“The inconsistency across federal agencies in the amount of detail and frequency of progress reports is horrific – truly – since we see them from multiple agencies.”). Similar comments about the burdens associated with IRB compliance, IACUC, HIPAA, and various other requirements point to a substantial cumulative burden.

Though the survey focused primarily on post-award research management tasks (i.e., ones that could be appropriately allocated to sponsored project), respondents repeatedly commented on the amount of time spent writing proposals. Researchers say they spend a great deal of time writing long proposals for short-term, low-level funding that they feel has little chance of being awarded. Add to this the questions over why material submitted elsewhere (or not needed unless an award is issued) is often required in the proposal, in a different format, and the respondents have identified an area with substantial potential for burden reduction.

Finally, and most dramatically, the cumulative burden affects the willingness of experienced researchers to remain in academic research careers. “The total impact of the regulatory burden – e.g., IRB, HIPAA, and conflict of interest – are several orders of magnitude greater than when I began clinical research in 1981,” wrote a respondent. “These changes, which have reduced by about 50 percent the amount of research that gets done, are a major factor in my decision to discontinue clinical research next year.”

(2) Institutional policies and procedures. Many respondents pointed to examples where institutional policies or procedures increased the burdens associated with managing research. As one respondent observed: “Our institution places a great deal of regulatory burden on investigators that is NOT required by the federal government (the modular budget for NIH grants, for example, is an excellent policy but doesn’t help us here because our University requires detailed budgets). In addition, the regulatory burden with respect to IACUC regulations at this institution far exceed federal guidelines (NIH and USDA), and border on abusive to investigators. There is a lot of federally funded faculty time going into meeting these burdens that takes away from research.”

Similar comments questioned the quality of institutional support. As a respondent wrote: “Having observed the research administration scene for many years at three universities both as

investigator and dean, I am struck by the failure of administration to recognize their duty to facilitate – not impede – faculty research.”

(3) The systemic lack of support for research management. Respondents divided the blame for this lack of support between institutions and federal requirements – particularly the implementation of OMB Circular A-21. As one respondent observed: “In many cases agencies disallow certain expenditures claiming it is part of indirect costs. But yet it may not be and it appears there’s no way to rectify that. A catch-22 situation for many PIs.”

The shared responsibility for lack of support may be most evident when considering that three-quarters of faculty indicated a willingness to reallocate direct cost funds to pay for administrative support, yet the second-most frequent written comment was an expression of concern over whether that support would really help the faculty member and not simply be lost to the institution.

While no single burden stands out as the greatest problem, our findings indicate that there are many problems, the sum of which creates a burden that affects large numbers of faculty.

The data clearly show that the level of administrative burden is high enough to routinely take our nation’s most qualified scientists away from their research. On average, faculty spent 42 percent of their time ensuring compliance with federal or institutional administrative requirements. Many of the associated processes do not fall within the faculty members’ main areas of expertise, yet they are expected to be experts at managing issues related to affirmative action, accounting, keyboarding, and a myriad of other tasks. Meanwhile, given that multiple administrative tasks are spread out over each day, faculty find it difficult to carve out the blocks of time needed to perform and write about their research.

The problem is potentially becoming even more severe. FDP faculty have observed that the burden has increased in recent years – which is not surprising, given new regulations related to homeland security as well as new attention to, and mechanisms for, financial accountability. In addition, a commonly expressed concern is that American graduate students in many disciplines are choosing to avoid the academic career path, once they complete their degrees, because they perceive that the quality of academic life and the opportunity to make a scientific difference have decayed relative to industrial research opportunities. Furthermore, underrepresented minority faculty, who are already difficult to recruit and retain (Moreno et al., 2006) experienced greater burden from most administrative tasks, and women faculty experienced both greater burden and lower levels of administrative support. Many faculty clearly feel that the burdens of administering federally-funded research are threatening the health of our national research enterprise.

There is hope, however. The FDP has demonstrated administrative simplifications in the past that met the legitimate interests of federal agencies as well as research institutions. And now, by having identified top burdens as well as which faculty are most burdened, the FDP – as a partnership of research institutions and government agencies – can set about prioritizing ways to reduce burden and improve productivity among academic researchers. Such institutional/agency

interaction creates the potential for identification of best practices that could be adopted more broadly.

Meanwhile, a number of institutions are themselves working toward the development of best practices. When survey responses were compared across institutions with medical schools that had more than 100 respondents, the levels of burden related, for example, to IRB and HIPAA protocols did vary, showing that some institutions seem to be successfully addressing these problems.

X. RECOMMENDATIONS

Given the results of our survey, we offer three main sets of recommended actions to help address the high level of faculty administrative burden in conducting federally funded research.

1. *Demonstrations that can be conducted by the FDP.*

- Demonstrate the general effects of allowing faculty to use some of their direct costs to pay for research project management assistance.
- Demonstrate the effects of specific solutions that address targeted high-burden cases (e.g., research project management support staff specifically for IACUC protocols or standardizing IRB applications).
- Demonstrate streamlined and standardized project-reporting for deliverables such as agency progress reports and IRB/IACUC reports.
- Demonstrate the effects of greater use of just-in-time components for grant proposals.

Demonstration projects could potentially focus on faculty researchers within a single discipline, at institutions with similar organizational structures or funding levels, and where substantial burden has been reported. At some point, the FDP may also want to consider how disciplinary differences in faculty burden affect research productivity.

Although allowing faculty to use some of their direct costs to obtain research project management assistance offers one potential solution, it is likely that other approaches will also be needed; making such determinations will require the involvement both of institutional and federal-agency representatives. Such a committee could outline a plan that tackles each of the highly ranked burdens identified in this report. It could also conceptualize remedies that separately address federal and institutional burden as well as burden that intersects both entities. Another suggestion is to gather feedback from partners in industry to explore how the presence or absence of caps on administrative costs can affect research productivity.

2. *Solutions requiring federal action outside of the FDP.*

- Remove or adjust the cap on indirect-cost recovery so as to allow greater university support for research project management costs. This could involve a simple cap change or a change in the formula so as to subdivide the “A” part of F&A expenses into separate categories with separate caps.
- Modify A-21 language to explicitly allow direct-cost allocation for research project management assistance.
- Create a new classification of “allowable” assistance within the A-21 guidelines (e.g., develop a “compliance officer” function).

The concerns of faculty should be taken into consideration whenever any changes in regulatory language are up for consideration. For example, the results of this study indicate that many faculty members have concerns about allowing direct-cost dollars to cover administrative support. They argue that report writing, IRB, personnel hiring, and training are not tasks that administrative assistants can easily manage. Faculty are also concerned that because money available for actual research is already too limited, allowing direct-cost dollars to be allocated to

administrative support may further diminish such support that institutions currently provide to faculty members through indirect-cost recovery. Given these considerations, it becomes apparent that any adjustments made to the A-21 guidelines should try to minimize unintended consequences, perhaps by incorporating clear specifications and establishing enforcement mechanisms. In any case, institutional officials charged with monitoring federal regulations and compliance issues will need to be included in this process.

3. *Other activities that can be pursued by the FDP.*

- Develop a clearinghouse of best practices for reducing administrative burden among research institutions, as well as among agencies. The data collected in this report's survey can be a start toward identifying such best practices.
- Repeat this faculty administrative burden survey periodically (e.g., every 5-8 years) to measure trends, assess improvements, and identify new challenges.

The FDP may want to encourage those institutions that manage burden well to model their best practices. It will be important to keep in mind, however, that there are many reasons why variation exists in the support available to academic researchers across institutions. Each one has its own sponsored programs history, level of competence in departments, and expectations at the central office level. Faculty members who primarily teach often have less experience with federal grants management and little or no clerical support, which means they need much more support. Often the level of support available boils down to how much any given administration is willing to commit in the way of human resources, at what level, and within what type of organizational structure. Similarly, the manner in which institutions implement regulations can present varying pictures to faculty on different campuses.

This preliminary study was conceptualized and implemented by a small committee of FDP faculty with limited financial resources. While it provides valuable information on which to base refinements in grant-administration regulations and procedures, additional research is needed to further explore the issues and themes identified.

For example, this report's findings can be used to inform study of faculty research burden and assistance at emerging research institutions (ERIs), which were not well represented in the study. Given that faculty working at ERIs are likely to have less access to administrative support than faculty employed by more research-intensive institutions, an investigation of this sort would offer a logical extension of the project. Another example of further study would be a more thorough understanding of faculty with administrative roles; given the levels of burden reported here, such understanding is greatly needed.

Follow-on studies could also be designed to target faculty members conducting research in a select group of disciplinary areas; or to extend our knowledge of academic researchers off the tenure track (e.g., part-timers, instructors, lecturers, adjunct faculty), as well as those with non-faculty appointments (such as research scientists), who are interested in furthering their research careers. And given concerns regarding the retention of women and underrepresented minorities in science and engineering, it could prove useful to consider additional measures aimed at reducing the grant-administration burdens that directly affect these groups of researchers.

Finally, it is important to note that, regardless of which alternatives are explored, university and agency cooperation will be essential to improving the environment for federally funded research.

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