

Executive Summary

The National Science Foundation (NSF) supports basic research in most fields of science and engineering and made awards to 1,900 colleges, universities, and other institutions in FY 2021 (NSF 2021). Proposals submitted to NSF undergo a rigorous peer review process that imposes burden on reviewers, NSF staff members, and principal investigators (PIs). In FY 2021, NSF evaluated more than 43,000 proposals and funded 26 percent of them (a number that has ranged from 22 to 28 percent over the past 10 years) (NSB 2021; NSF 2021). Over 33,000 members of the scientific community participated in the review process as panelists and proposal reviewers and conducted over 211,000 proposal reviews (NSF 2021). Given the demands of the review process, NSF has long explored strategies for improving the efficiency of the funding process for its grants programs while maintaining its commitment to research excellence, quality, and fairness. One approach theorized for improving efficiency is eliminating deadlines for proposal submissions. This approach was piloted by a small program in 2012 and has organically spread to several programs and directorates since then.

This report explores the theory underlying the elimination of deadlines and investigates the potential benefits and drawbacks of the elimination of deadlines as an approach for NSF's funding programs. It draws from a review of NSF documents; a review of theoretical literature and empirical research on deadlines; interviews with NSF staff, NSF PIs and reviewers, and staff at other organizations; and a review of the websites of organizations that have adopted a no-deadlines approach to grant solicitations.

Key findings indicate that:

- Programs across five NSF directorates and in at least 173 other organizations—including foundations, biotechnology and pharmaceutical companies, universities, and government—use a no-deadlines approach in proposal solicitation. Organizations implement no-deadlines approaches in various ways in terms of the frequency of application review and the timing of proposal decisions. Common challenges include structuring the review process, managing budgets, and managing the constant flow of information.
- Commonly cited motivators for using a no-deadlines approach at NSF and at other organizations include smoothing staff workload and decreasing proposal pressure, expediting decision making and funding, and increasing funding rates. The flexibility that not having deadlines provides to staff and PIs to submit, review, and fund is a driving force. By removing the pressure to submit under a deadline, programs sought to receive more fully-developed proposals that were easier to review and more likely to be funded.
- The most common outcome of no-deadlines approaches reported in NSF's tracking of related outcomes is a reduction in proposal volume. The reduction did not appear to be concentrated among specific types of institutions or investigators, but NSF staff voiced interest in further examining outcomes related to the diversity of the portfolio.
- The theoretical literature suggests that deadlines may produce benefits for task prioritization and task completion. However, predictions about the quality of work produced are not straightforward. On one hand, people are more likely to focus on tasks with deadlines, focus more on the concrete details of the task at hand, and work harder to complete it. Groups may find it easier to coordinate their activities when constrained by a shared external deadline. On the other hand, stress associated with deadlines can undermine performance on complex tasks.

- The empirical literature on no-deadlines approaches to grant solicitations is limited. Existing studies address NSF's implementation of no-deadlines approaches and compare outcomes before and after adopting such approaches.
- Studies of how deadlines impact task volume in other contexts such as work, school, and home, generally report results that are consistent with the decrease in proposal submissions observed by NSF. Several rigorous studies demonstrated that task completion was lower in the absence of deadlines, but for tasks that are much simpler than writing a grant proposal.
- There are fewer studies of how deadlines impact task quality, and they produce mixed or weak evidence that deadlines impact quality. The studies we identified mostly used correlational designs with obvious potential confounds.