



Impact of Proposal and Award Management Mechanisms

Final Report to the National Science Board

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Context

- A substantial decline in NSF's proposal funding rate between FY 2000 and FY 2004 raised concerns about the potential impacts on the nation's science and engineering capacity.
- Impact of Proposal and Award Management Mechanisms (IPAMM) working group created in March 2006
 - Charge: Identify best practices to achieve an appropriate balance between proposal success rates, award sizes and award duration, with the emphasis on individual, investigator-initiated grants.
- Today's presentation: IPAMM's Findings and Recommendations



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Outline of Presentation

- Overview of Report
- 2007 NSF Proposer Survey
- Major Findings of the Report
- Recommendations



Report Outline

- Introduction
- Issues in Context
- Impacts
- Causal Factors
- Assessment of NSF Efforts to Manage Proposal Submissions and Funding Rates
- Findings and Recommendations



2007 NSF Proposer Survey

- Web-based proposer survey developed with Booz Allen Hamilton addressing four major goals:
 - Identify drivers that increase submissions
 - Assess PI perceptions regarding funding rates and transformative research
 - Assess impacts of increasing proposal submission rates on the PI and reviewer community
 - Assess customer satisfaction



2007 NSF Proposer Survey

- Survey ran January 29 to February 16, 2007
 - 43,412 PIs that had submitted proposals in FY 2004-2006 were asked to participate
 - 24,378 completed the survey (56% response rate)
 - Three open text response questions generated thousands of responses



Survey Analyses

- Overall response to questions for all PIs
- Non-response analysis: Is respondent population representative of survey population? **Yes**
 - Directorate affiliation
 - Award status
 - Beginning investigator status
 - New PI status
 - Demographics



Issues in Context

- Research proposal funding rates decreased as NSF budget, average award size, and proposal submission rates increased
- PI success rates (percentage of PIs that are funded) decreased as the number of PIs submitting to NSF increased
- Number of proposals submitted per PI to gain one award increased
- Directorate level trends show significant variability in rate of change, degree of change, and starting and end points of change

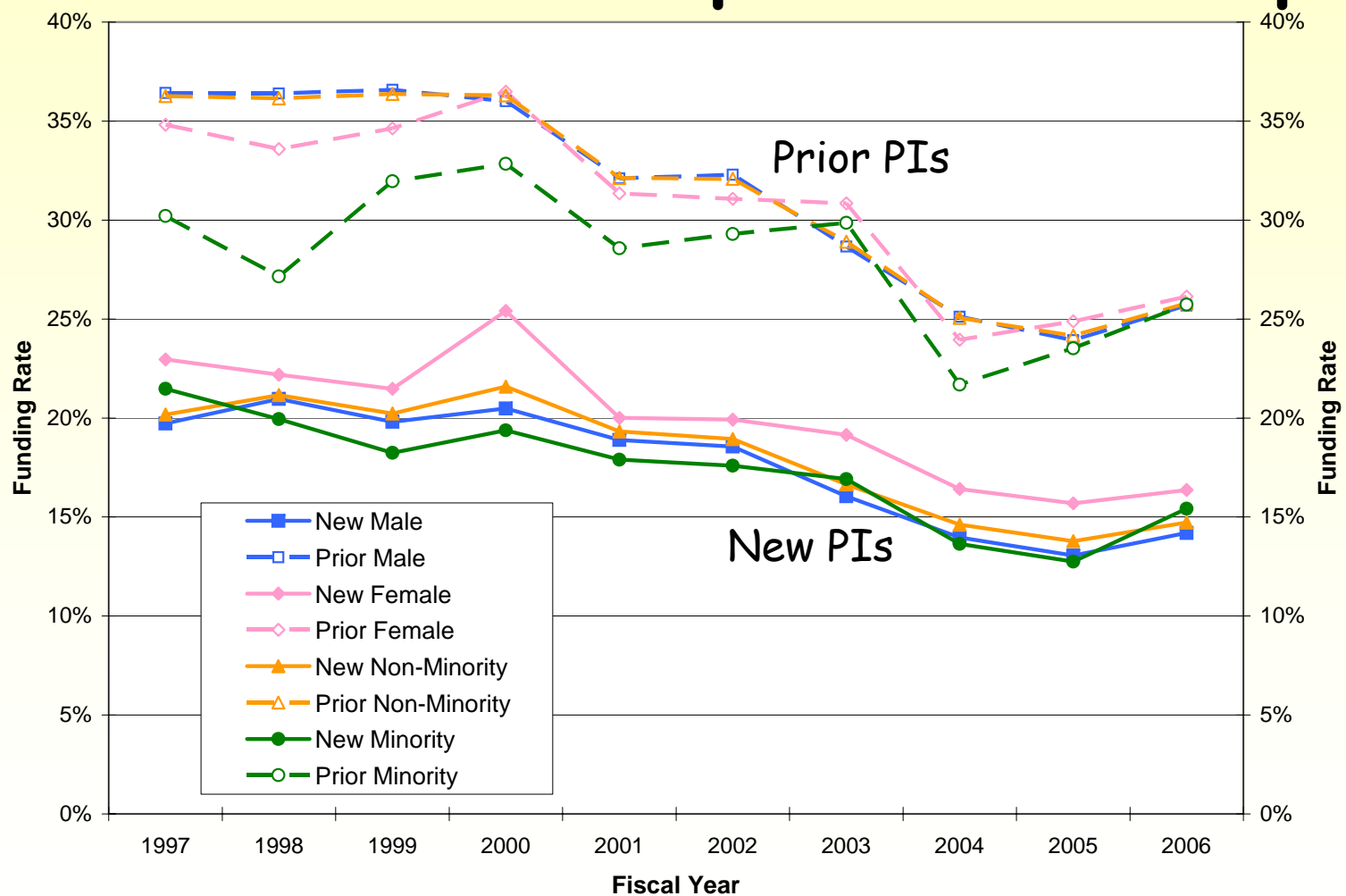


Major Findings: Impacts

- Proportion of highly-rated proposals has not declined, however, the funding rate of highly-rated proposals has decreased
- The decrease in funding rate has not had a disproportionate effect on women, minorities, beginning PIs, or PIs at particular types of institutions.



Funding Rate Trends for New and Prior PIs in Underrepresented Groups





Major Findings: Impacts

- NSF's peer review system is overstressed
 - Reviewer workloads have increased
 - Reviewer pool increased 15%, proposal load increased 50%
 - Increased use of panel-only review
 - Time spent on each review, as well as the thoroughness and quality of reviews, may be diminishing (based on survey data)
- Timeliness of proposal decisions did not decline, however PIs are increasingly dissatisfied with turnaround time



Major Findings: Causal Factors

- Increases in the overall NSF budget were absorbed by the growth in the average award size, leaving little flexibility to respond to growing proposal submissions.
- The increase in proposal submissions due to an **increased applicant pool** and to an **increased number of proposals per applicant**.
 - Increased size and capacity of the research community
 - Loss of funding from other sources
 - Increased use by NSF of targeted solicitations in new areas
 - External institutional pressures



Major Findings: Assessing NSF Efforts to Manage Proposal Submissions and Funding Rates

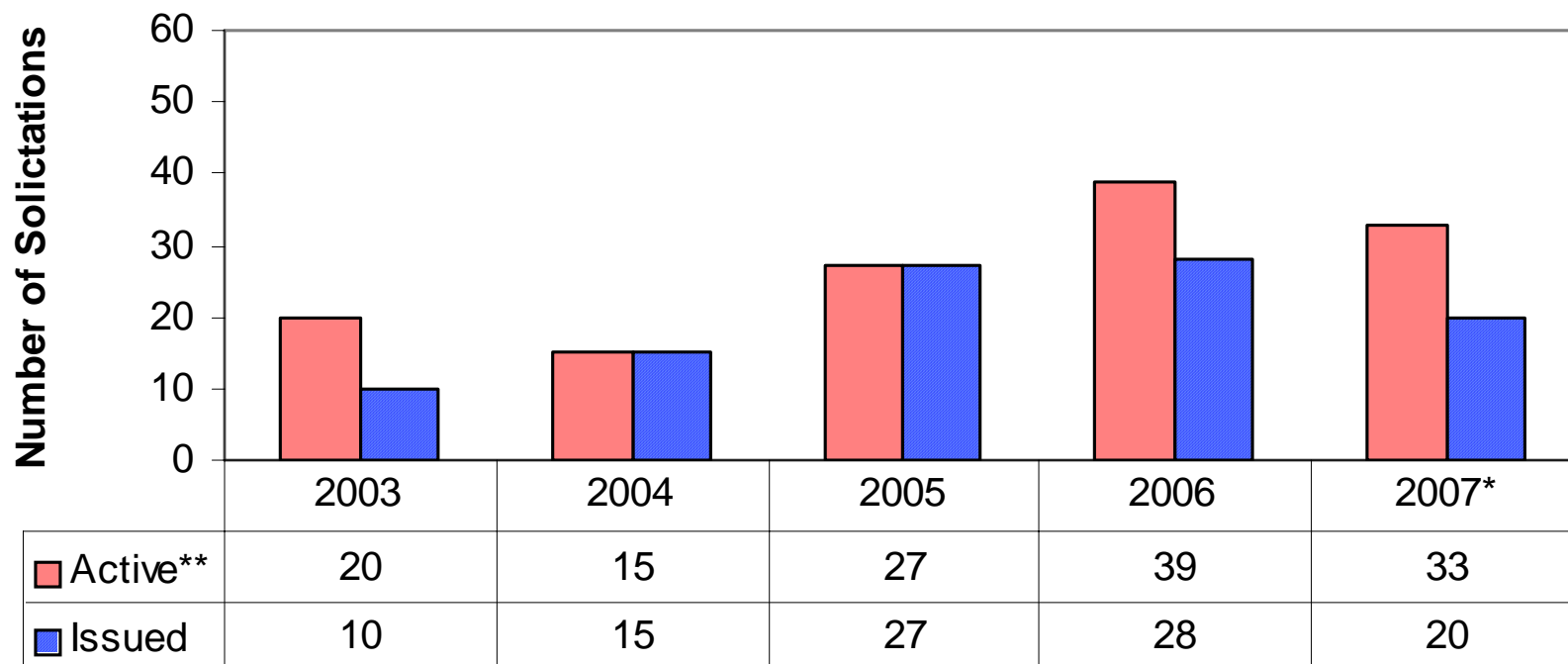
Limiting Proposal Submissions

- Most funding opportunities do not limit submissions
- Of those that do, three primary mechanisms are used:
 - Preliminary proposals
 - Limiting proposals submitted by an institution
 - Limiting proposals listing a particular individual as PI
- Institution limits primarily used for solicitations focused on infrastructure, centers/facilities, and education/training.
- If submission limits are used by research programs, primarily limit submissions by PI



Trends in Use of Submission Limitations

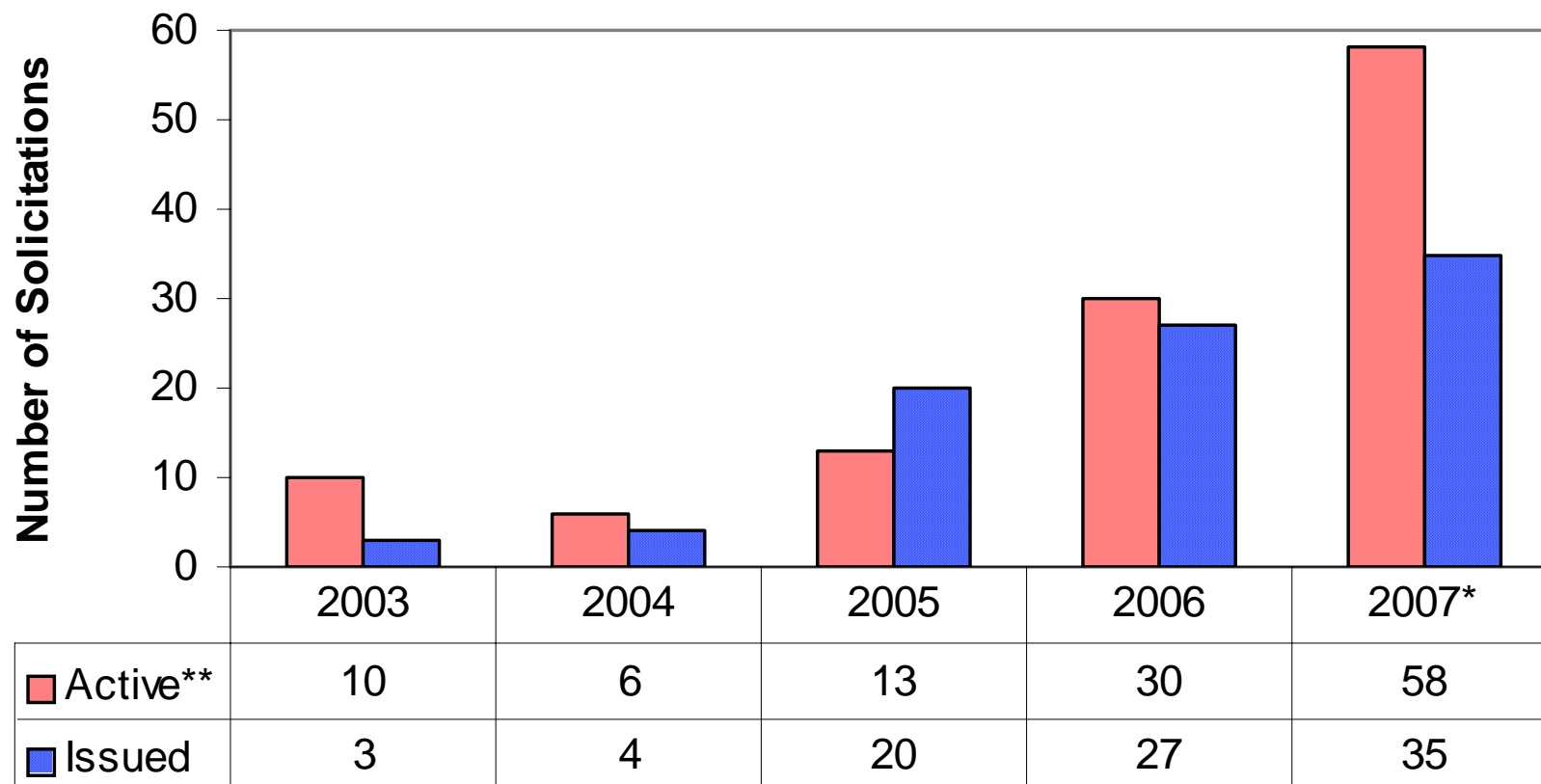
A. Trends in the Use of Submission Limitations by Institution





Trends in Use of Submission Limitations

B. Trends in the Use of Submission Limitations by PI





Major Findings: Assessing NSF Efforts to Manage Proposal Submissions and Funding Rates

Increasing Availability of Funds

- Two fiscal years of funds used for a single competition
- Adjustments made to the balance of standard and continuing grants
 - Provides some flexibility in responding to increased proposal submissions, but can only be employed for a limited time, and with discretion



Community Perceptions

Transformative research

- 56% believe to a great or moderate extent that NSF welcomes transformative research
- 42% believe to a great or moderate extent that NSF funds transformative research
- NSF is the predominant choice for submitting proposals with transformative research ideas
- Significant disconnect between proposer and reviewer perceptions



Community Perceptions

Funding rates

- More than 60% of respondents perceive that the level of competition at NSF is more intense than at other agencies
- Nearly 49% of respondents estimate funding rates at 10% or lower



Responding to the IPAMM Charge

- No single best approach and no single appropriate balance of funding rates, award size, and proposal load.
- Recommendations focus on the development of strategies that are appropriate within the context of each unit, and that balance long-term planning with the ability to respond to changing needs.



Recommendations

- Develop long-term overarching frameworks that account for and balance research-related activities.
- Long-term planning for accommodating the growth in communities and infrastructure that are a natural consequence of new funding opportunities needs to be incorporated when developing solicitations.
- The practice of limiting proposal submissions is appropriate in some situations, but should be considered in the context of trade-offs and impacts.



Recommendations

- Limited and responsible use of appropriate practices may help break the decline-revise-resubmit cycle
- Improve communications with internal and external communities
 - When implementing new management practices
 - About sources of accurate NSF data
- Update the IPAMM trends analyses annually, and periodically reassess the practices and policies of the directorates/research offices.