FY 2013 Merit Review Report

MPS Advisory Committee - 4/4/2014

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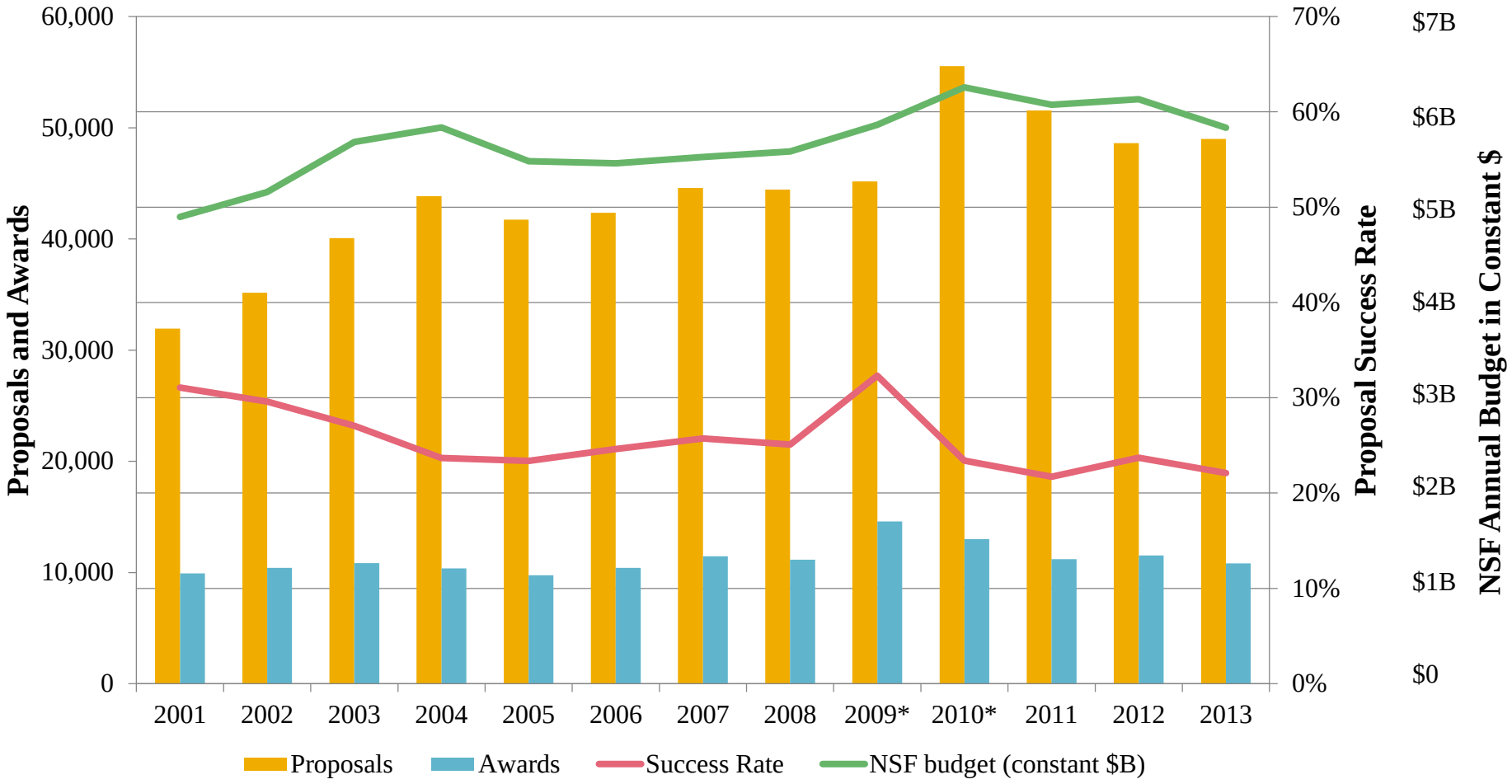
- Pressures on the Merit Review System
- Demographics
- Merit Review Pilots

NSF Proposals, Awards and Funding Rates



NSF budget = NSF's regular appropriation only. The ARRA appropriation is not shown. Budget numbers are in constant (FY 2005) dollars. Preliminary proposals not included.

Proposal & Award Trends FY 2001 - 13

NSF Resources c.f. demand

Proposals:	up 53%
NSF budget (current $):	up 55%
NSF budget (constant $):	up 19%
NSF staff:	up 29%

Research Proposals 11-13 cf. 01-03

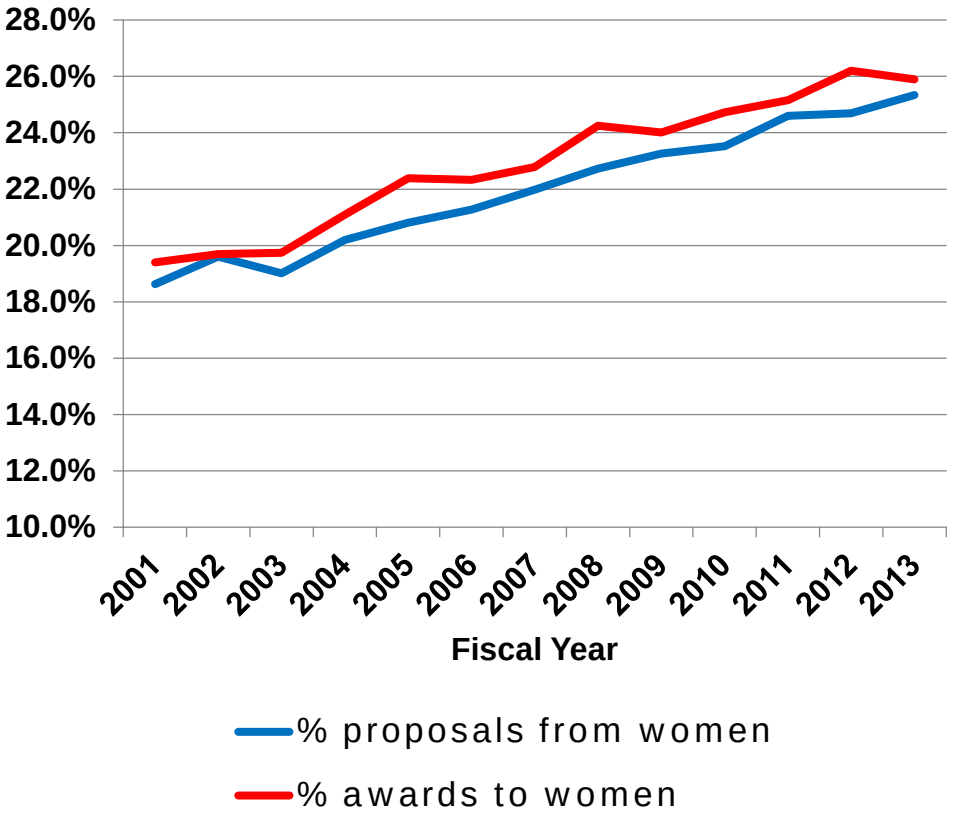
PIs applying:	up 41%
PIs awarded:	up 17%
PIs not funded:	up 57%
PIs not funded in FY 2011-13:	65.5%

Competing factors

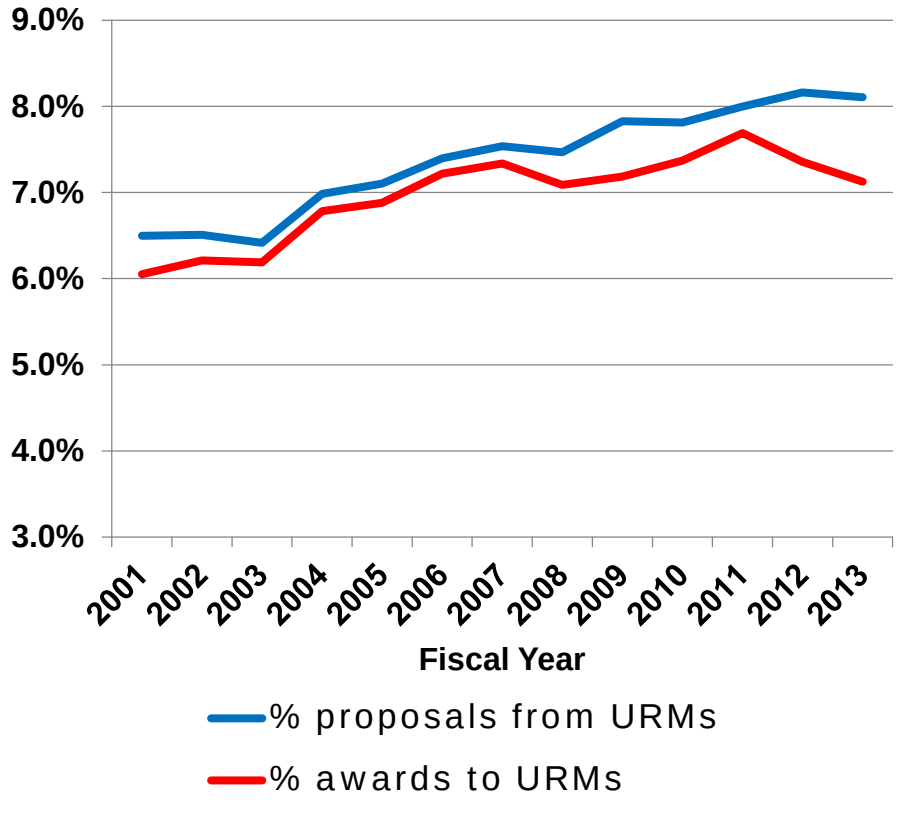
Research Proposals:	up 70%
NSF R&RA a/c (constant $):	up 27%
Mean rsch awd (constant $):	up 16%
Research Awards:	up 23%
Res'rch Award success rate:	down 28%

Proposal & Award Trends FY 2001 - 13

Percentage of Proposals from and Awards to Women

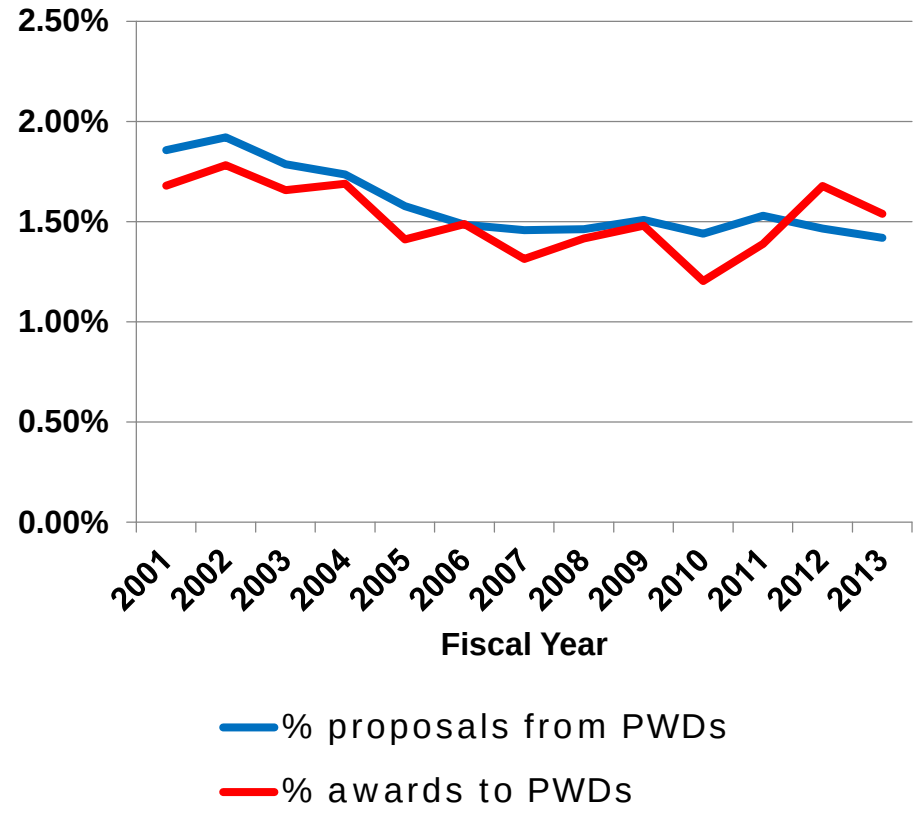


Percentage of Proposals from and Awards to Researchers from Under-represented Racial or Ethnic Groups

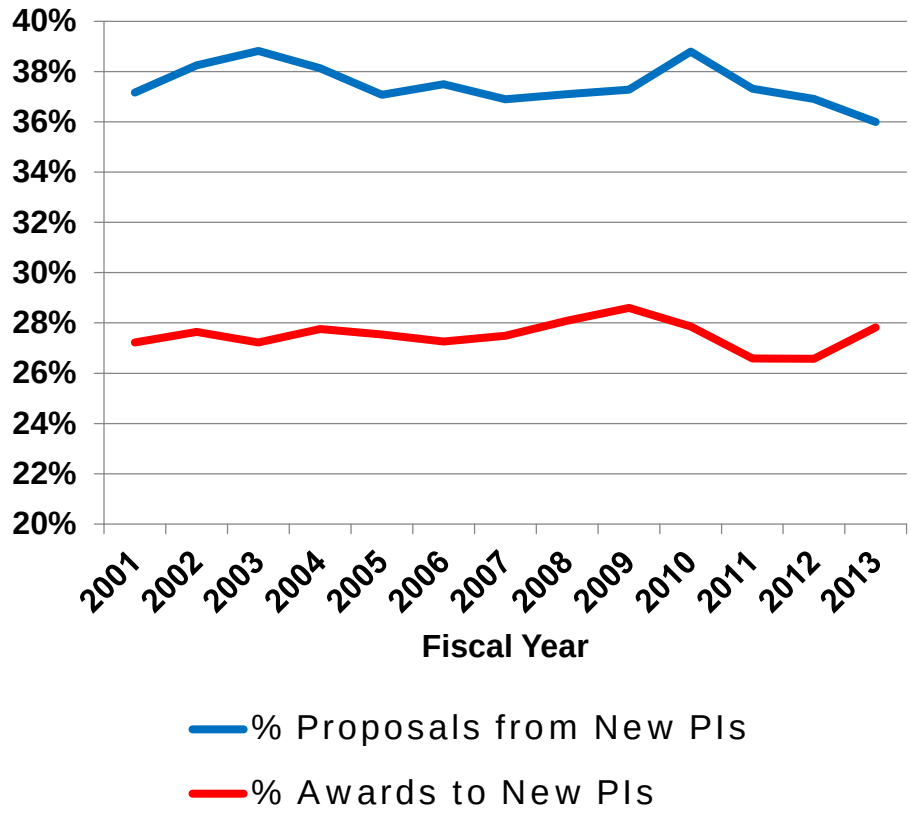


Proposal & Award Trends FY 2001 - 13

Percentage of Proposals from and Awards to PIs with a Disability

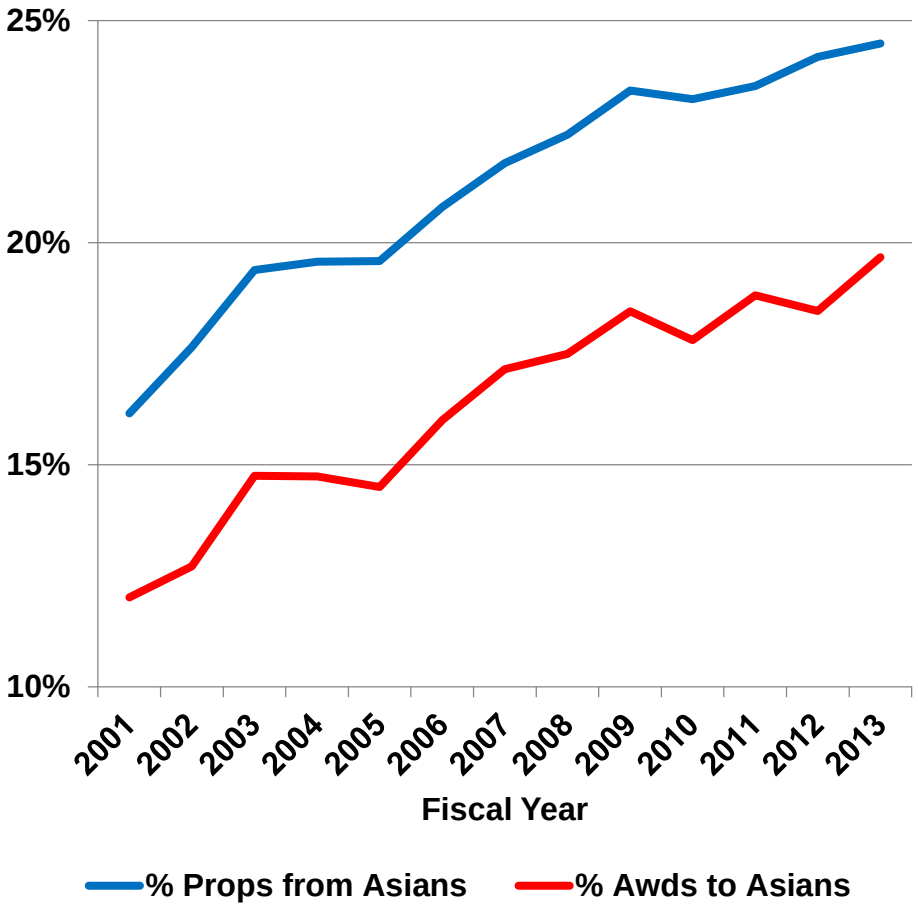


Percentage of Proposals from and Awards to New PIs

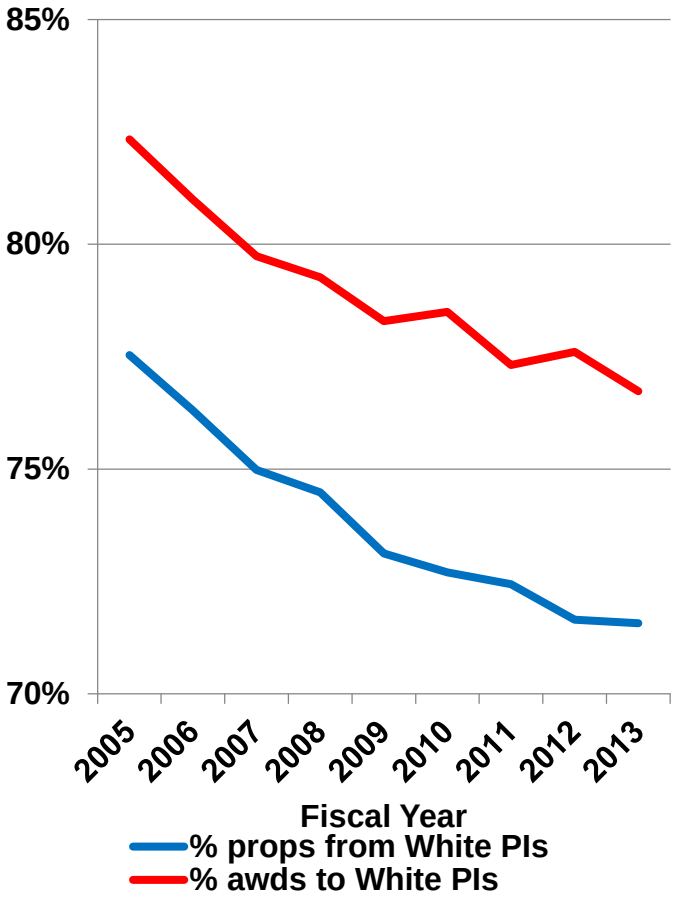


Proposal & Award Trends FY 2001 - 13

Percentage of Proposals from and Awards to Asian PIs



Percentage of Proposals from and Awards to White PIs



Proposal & Award Trends FY 2001 - 13

Proposals from Women
Proposals: up 91%
Awards: up 35%
Success rate: down 29%

Proposals from URMs
Proposals: up 91%
Awards: up 28%
Success rate: down 33%

Proposals from PWDs
Proposals: up 19%
Awards: up 6%
Success rate: down 11%

Competitive Proposals
Proposals: up 53%
Awards: up 9%
Success rate: down 29%

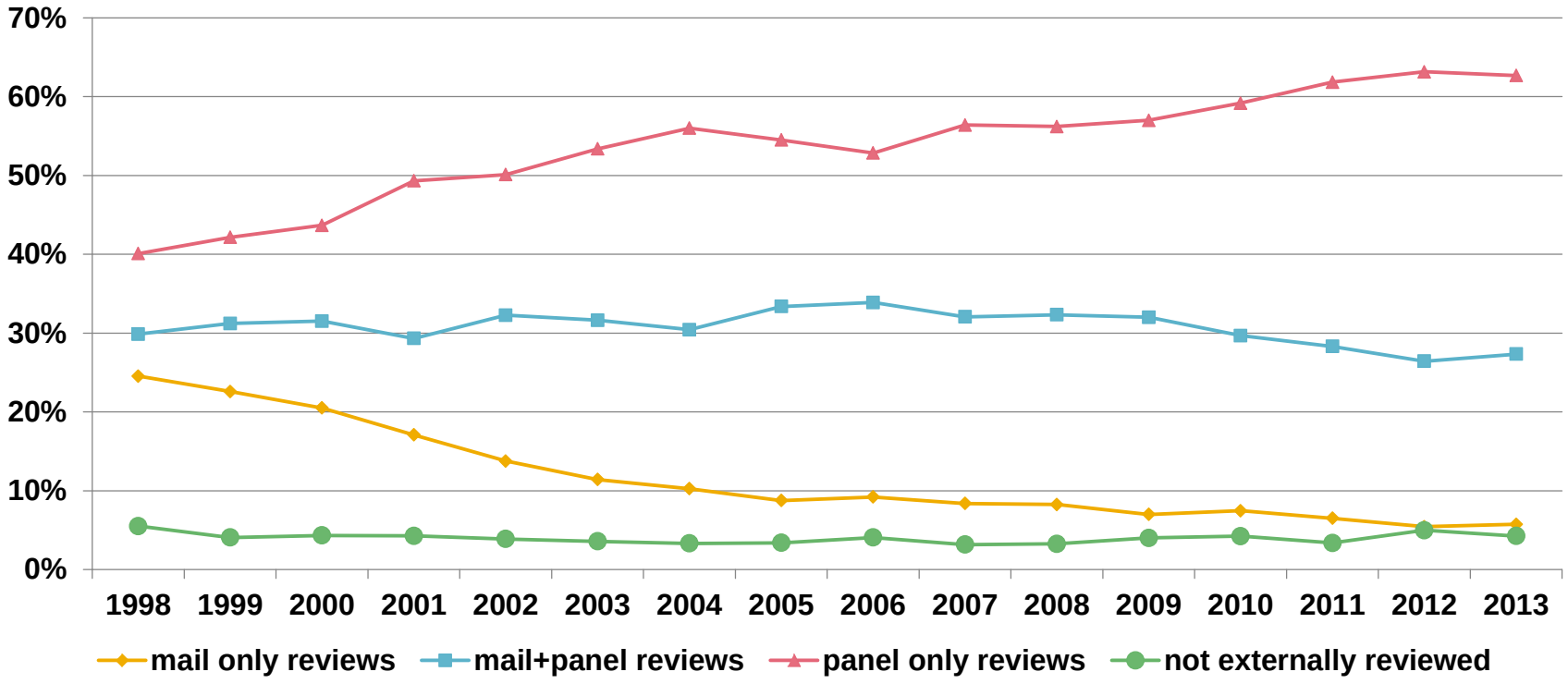
Proposals from New PIs
Proposals: up 48.5%
Awards: up 11.5%
Success rate: down 25%

Proposals from Asian PIs
Proposals: up 129%
Awards: up 75%
Success rate: down 24%

Proposals: White PIs
Proposals: up 29%
Awards: down 6%
Success rate: down 27%

Review Methods

Review Methods: Mail-only, Mail+panel, Panel-only



Reviewers

CHANGES IN NUMBERS OF REVIEWERS: FY 2013 c.f. FY 2001

	Total Reviewers	Mail Reviewers	Panelists	Not a previous reviewer	Proposals
FY2001	50,683	44,726	10,052	~9,000	30,829
FY2013	36,475	25,936	13,544	6,825	46,918

Types of Panels

FY 2013 Panels: Virtual, Mixed and In-Person

	Virtual	Mixed	In-Person	TOTAL
Panels	506	502	821	1,829
Proposals*	7,327	17,013	26,189	50,529
% of Total Panels	27.7%	27.4%	44.9%	100%
% of Total Proposals	14.5%	33.7%	51.8%	100%
Proposals/Panel	14.5	33.9	31.9	27.6
Panelists	2,982	5,006	7,471	15,459
Panelists/Panel	5.9	10.0	9.1	8.5
Proposals/Panelist	2.5	3.4	3.5	3.3

Merit Review Pilots

Pilot	Nature of pilot	Units participating
Virtual Panels	The expanded use of review panels in which all panelists participate electronically from distributed locations such as their offices or homes.	NSF-wide
Preliminary Proposals for Core Programs	Core programs move from semi-annual deadlines for full proposals to an annual deadline for preliminary proposals.	BIO/DEB, BIO/IOS
One-Plus	Investigators with promising but unfunded proposals may revise and resubmit their ideas for possible funding in the second half of the annual funding cycle, but only if invited to do so.	SBE/BCS's Geography and Spatial Sciences
Asynchronous Reviewer Discussions	The use of an access-controlled, program director-moderated message board, open to reviewers over a specified period, to enable the sharing of comments and discussion of a set of proposals.	CISE/CNS, MPS/PHY
Mechanism Design	A review mechanism in which techniques from game theory are used to allow investigators who submit proposals also to take part in the review process.	ENG/CMMI's Sensors and Sensing Systems
Umbrella-Amendment Solicitation	A proposal-generating mechanism that is designed to implement a community-developed infrastructure. A flexible solicitation mechanism that accommodates both overarching, long-term goals and the ability to be responsive to changing community requirements.	GEO's & CISE/ACI's EarthCube program
Elimination of Program Deadline	A core program that has traditionally had two proposal deadlines per year switched to accepting proposals at any time to see if proposal pressure would be affected.	GEO/EAR's Instrumentation and Facilities Program

Discussion

Thank you for the opportunity to meet with you.

Feedback is welcome!

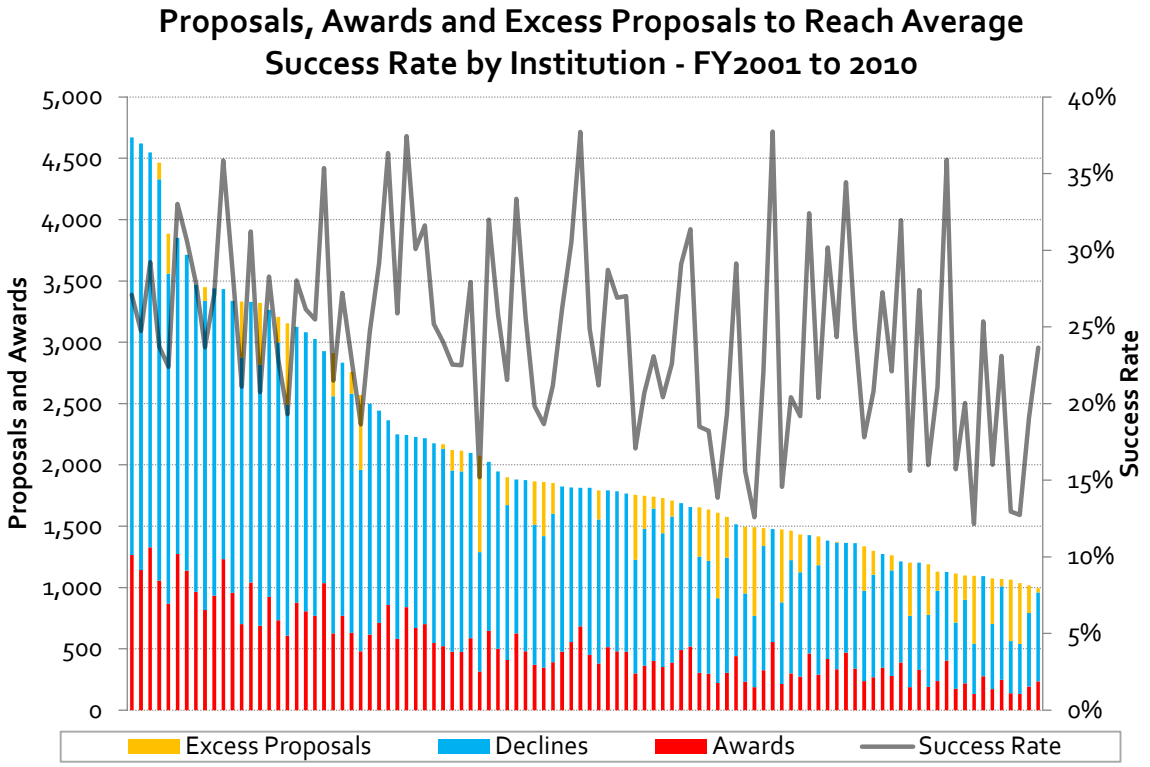
Email: **smeacham@nsf.gov**

BACKUP SLIDES

Historical data

Data: Institutional success rates

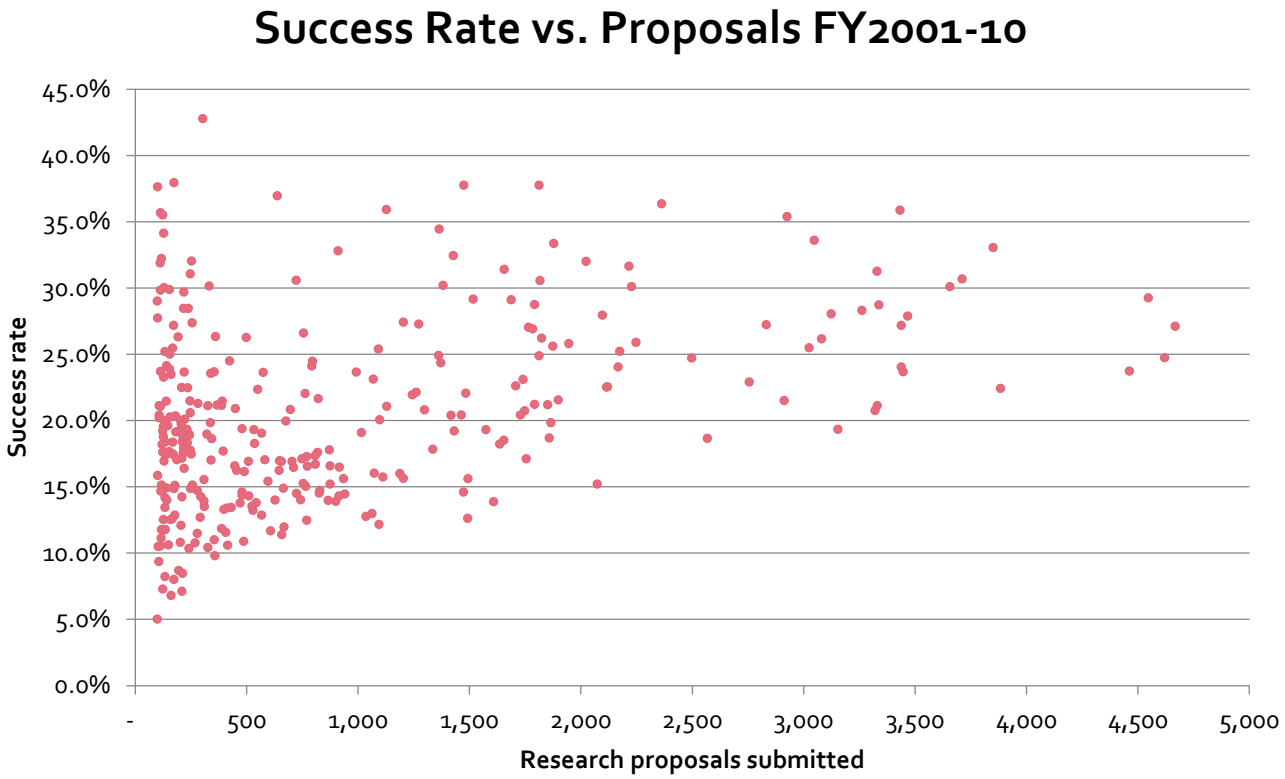
Success rates of top 100 proposal-submitting institutions



Success rate varies by a factor of 3!

Data: Institutional success rates

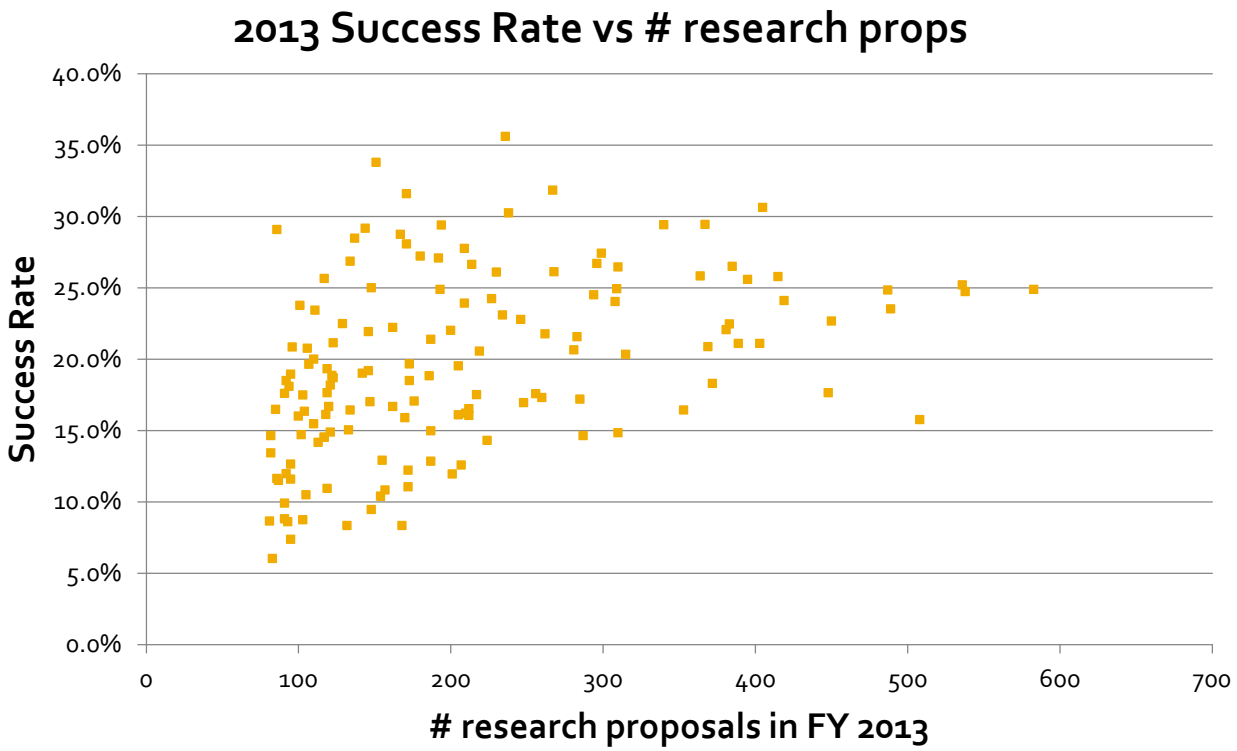
Success rates of institutions submitting more than 100 research proposals in FY 2001 to FY 2010.



Success rate varies by more than 8

Data: Institutional success rates

Success rates of academic institutions with more than 80 research proposals in FY 2013.



Data: Increasing burden for PIs

PI submission and decline rates (3-year avgs)

	2001-03	2002-04	2004-06	2006-08	2008-10	2010-12
PIs applied (000s)	39.2	42.0	45.2	47.0	51.7	55.6
PIs awarded (000s)	16.2	16.4	16.1	17.4	20.5	19.7
% PI not funded	59%	61%	64%	63%	60%	65%
# props/PI for 1 award	2.0	2.1	2.2	2.2	2.3	2.4

- PIs spend more time submitting proposals
- Good ideas left on the table
  – value of declined proposals with average rating of "Very Good" or better exceeded $4B in each of the past three years

Data: Award size, duration and salary support

Research grant median size, mean duration & salary per individual (Size = annualized amount in constant dollars [2005])

	2003	2009	2010	2011	2012
Median Size (constant $)	105,865	108,855	110,866	105,522	108,074
Duration (years)	2.9	3.0	2.9	2.9	2.9
Avg mths salary (single-PI)	1.5	1.2	1.1	1.0	0.9
Avg mths salary (multiple-PI)	1.5	1.1	1.0	0.9	0.9

- Award sizes still benefiting from echoes of ARRA
- No improvement in award duration

Data: Demographic differences

SUCCESS RATE BY DEMOGRAPHIC GROUP

	2001	2008	2009	2010	2011	2012
All PIs	31%	25%	32%	23%	22%	24%
Female PIs	32%	27%	34%	25%	23%	26%
Minority PIs	29%	24%	30%	22%	21%	22%
New PIs	23%	19%	25%	17%	15%	17%

PROPORTION OF PROPOSALS BY DEMOGRAPHIC GROUP

	2001	2008	2009	2010	2011	2012
Female PIs	18%	21%	22%	21%	22%	22%
Minority PIs	5%	6%	7%	7%	7%	7%
New PIs	37%	37%	37%	39%	37%	37%

PROPORTION OF PIs WHO ARE EARLY CAREER PIs

	2008	2009	2010	2011	2012
Early Career PIs	24%	24%	22%	23%	21%

Data: 2012 Success Rates

PROPOSAL PRESSURE & SUCCESS RATE

- Picture is distorted by increasing use of preliminary proposals

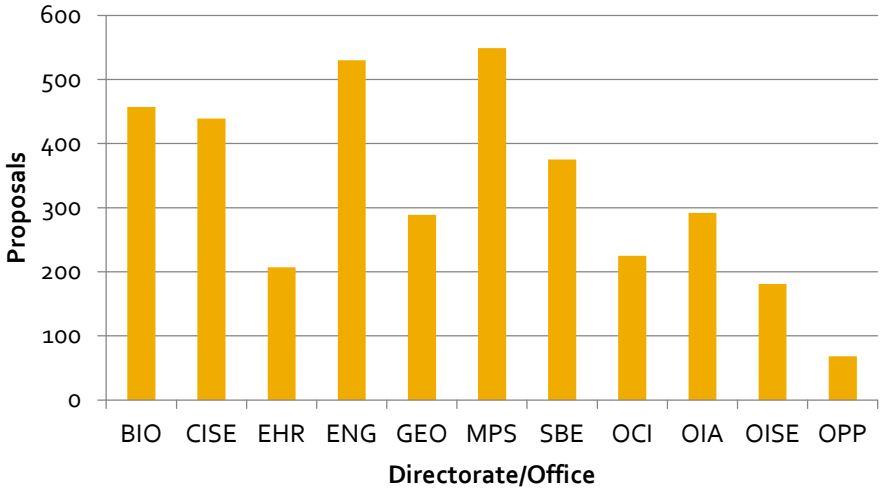
- Old metric: Full proposals
  - '12 vs. '11 - number acted on is down, "success rate" is up
- More relevant metric: Ideas proposed (approximated by # full proposals + # prelim proposals)
  - '12 vs. '11 - number acted on is up, success rate is flat

Year	Full Props	FP success rate	Full Props + Pre-props	Awards / (FP+PP)
2008	44,428	25%	47,631	23%
2009	45,181	32%	49,037	30%
2010	55,542	23%	58,425	22%
2011	51,562	22%	52,527	21%
2012	48,613 -6%	24%	53,748 +2%	21%

ARRA data included

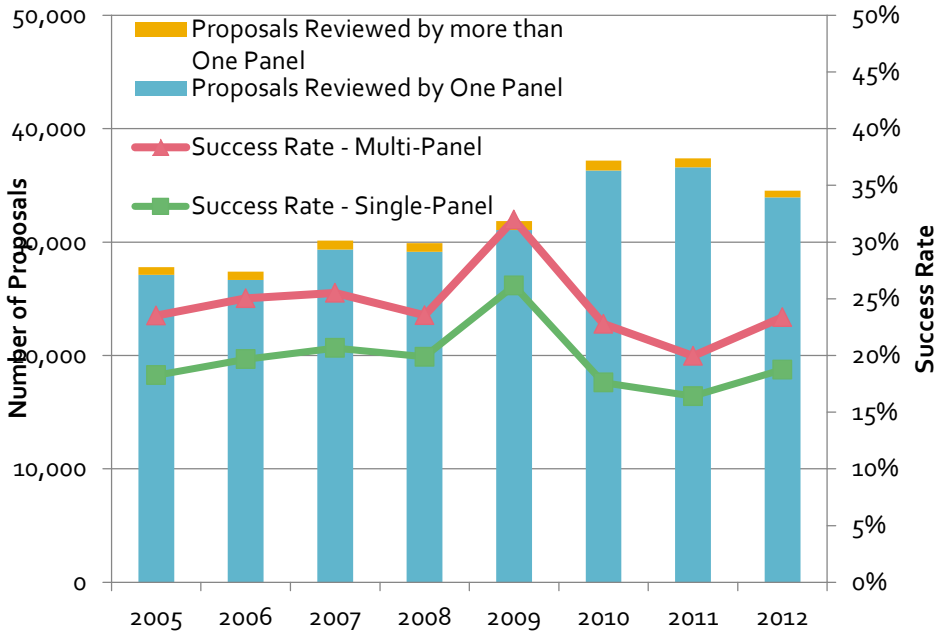
Interdisciplinary proposals & awards

FY 2012 awards co-funded



- 1,546 co-funded awards 13.4% - inc EPSCoR & ISE
- 1,189 co-funded awards 10.3% - exc EPSCoR & ISE

Proposals undergoing multi-panel review



Submitting interdisciplinary proposals

Interdisciplinary Research Portal – source of information
http://www.nsf.gov/od/iia/additional_resources/interdisciplinary_research/

Principal mechanisms

- Solicited interdisciplinary programs
- Center competitions
- Unsolicited interdisciplinary proposals
- Interdisciplinary education and training
  - E.g.: Research Experiences for Undergraduates; and Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences.
- Workshops, conferences, & symposia

Talk to program officers!