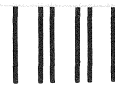


National Science Foundation

Washington, D.C. 20550

Official Business

PENALTY FOR PRIVATE USE, \$300



POSTAGE AND FEES PAID
NATIONAL SCIENCE FOUNDATION
NSF-640

Recent Doctorate Faculty More Actively Seeking Research Support

In the spring of 1986, the National Science Foundation collected information on faculty research activities from 2,074 doctorate-granting departments in 21 science and engineering fields at 181 institutions. This survey marked the continuation of similar surveys conducted in fewer fields in 1974 and 1980 at institutions meeting the same criterion: having federal obligations for research and development totalling \$1.0 million in 1972 constant dollars, the equivalent of \$2.15 million in current dollars.

The 181 universities involved in the 1986 survey constituted 56 percent of the doctorate-granting institutions. They accounted for 96 percent of the research and development expenditures, and 86 percent of the science and engineering graduate enrollment in 1985. The surveyed departments accounted for about 25 percent of the science and engineering graduate programs at doctorate-granting institutions. Trend findings reported here were based on comparisons of population estimates for appropriate science and engineering fields.

In 1986, faculty members with recently won doctorates (defined as those who have received their doctoral degrees within the most recent seven years) sought research support more actively than was the case in 1980. The number of proposals submitted by recent doctorates outstripped their gains in faculty positions in almost all fields; in 1986, while the number of recent-doctorate-holding faculty increased 11 percent, proposal submissions grew 27 percent. Their success rates (the proportion of submitted proposals funded) were also down from 1980 in most fields, however. In 1986, 58 percent of proposals from holders of recent doctorates were funded, compared to 62 percent in 1980.¹ Faculty members whose doctorates were more senior fared better; their success rates were unchanged at 69 percent.

Compared to 1980, department heads were more likely to say that recent-doctorate faculty should receive a higher percentage of research funds in 1986. They commented that tenure decisions in both science and engineering were based increasingly on access to external research support and that difficulties encountered by holders of recent doctorates in generating research support affected their willingness to stay in academia.

The head of a physics department stated, "University support for research is poor. Non-tenured faculty must obtain external research support for tenure." A microbiologist commented, "We have lost one and will likely lose another fine young investigator because of tenure policy and the very competitive research support situation in recent years."

"There is no shortage of qualified American faculty. There is only a shortage of qualified people willing to work under present salary and tenure conditions," according to a civil engineering department head. And a biologist remarked, "Many faculty [members] are wrestling with the moral dilemma of training graduate students for careers in academe for which they see a very limited future."

The pressure to obtain research support has paid off to the extent that the ratio of funded proposals to recent-doctorate faculty was up from 0.55 to 0.60 in 1986 compared to 1980. Nonetheless, comments by the heads of departments and the data both suggest that the continuing need to seek research funding may discourage holders of recent doctorates from accepting faculty positions.

The implications of this situation affect both the caliber of current academic research and the quality of training provided to future researchers.

¹ Proposal submissions include those for continuing funding. They also include proposals to all sources of funding, not only the federal government. No information on the amount of funding was collected.

Change in recent-doctorate faculty, proposal submissions, and funded proposals by department

Department	Number		Percent change 1980-86	Proposals submitted		Percent change 1980-86	Proposals funded		Percent change 1980-86
	1980	1986		1980	1986		1980	1986	
ENGINEERING									
Aeronautical	NA	104	NA	NA	161	NA	NA	78	NA
Chemical	235	325	38%	402	697	73%	181	281	55%
Civil	416	500	20%	841	1,037	23%	345	449	30%
Electrical	405	738	82%	467	829	78%	201	361	80%
Industrial	NA	159	NA	NA	226	NA	NA	80	NA
Mechanical	391	572	46%	526	993	89%	253	439	74%
SCIENCE									
Chemistry	541	579	7%	1,012	1,339	32%	583	579	-1%
Physics	379	422	11%	327	406	24%	194	230	19%
Geosciences	269	288	7%	398	521	31%	235	229	-3%
Mathematics	989	1,042	5%	487	563	16%	255	274	7%
Computer sciences	320	572	79%	227	547	141%	115	259	125%
Biochemistry	243	352	45%	413	520	26%	243	234	-4%
Biology	457	520	14%	543	628	16%	293	317	8%
Botany	162	122	-25%	159	184	16%	89	72	-19%
Microbiology	257	321	25%	330	373	13%	212	182	-14%
Physiology	323	314	-3%	444	528	19%	270	273	1%
Zoology	240	170	-29%	206	187	-9%	112	108	-4%
Psychology	917	747	-19%	631	656	4%	318	286	-10%
Economics	758	801	6%	371	354	-5%	178	198	11%
Political science	567	398	-30%	317	198	-38%	188	97	-48%
Sociology	607	364	-40%	404	223	-45%	225	118	-48%

SOURCE: National Science Foundation, SRS