



2. IMPLEMENTATION OF THE GRT PROGRAM

Participation in GRT Program

Many of the tables in this brief reflect the four cohorts of GRT proposals that were approved in 1992, 1993, 1994, and 1995. The 1992 cohort projects received standard grants, i.e., all 5 years of funding were provided at the time of award, while cohorts after 1992 received funding through continuing grants, i.e., incremental funding. Participating graduate students receive GRT traineeship support from a funded project, but trainee participation does not usually coincide with all the years for which a particular project is funded. The 1995 cohort was the last group of projects to be implemented under the GRT program; GRT has been succeeded by the Integrative Graduate Education and Research Training (IGERT) program, which made its first awards in 1998.

By FY 1996, the GRT program had made 157 awards to 92 postsecondary institutions. These 157 projects in turn had provided traineeships to 1,595 doctoral students by the end of the 1998 reporting period, an increase of 284 from the 1,311 trainees reported in the 1997 data (Table 1). This increase in the total number of trainees who were ever funded by GRT resulted largely from the replacement of the 280 trainees who had left their Ph.D. programs with newly funded trainees.

Table 1
Number of GRT project awards, institutions receiving awards, and trainees supported, by award cohort: 1998 reporting year

Award recipient	Award cohort				All cohorts: 1998
	1992	1993	1994	1995	
Project awards.....	38	48	33	38	157
Institutions receiving awards	30	44	31	37	92 ¹
Total trainees supported as of 1997.....	385	439	259	228	1,311
Total trainees supported as of 1998.....	449	527	320	299	1,595

¹Number of institutions may vary slightly depending on method used for specifying separate entities. The total number of institutions receiving awards as of the 1998 reporting year is an unduplicated count. The sum of institutions receiving awards in each award year does not equal 92 because institutions may receive disciplinary-distinct awards in more than one year. SOURCE: GRT Distance Monitoring Survey System. Surveys completed in 1997 and 1998.



Awards are categorized into broad focus areas that reflect the seven NSF directorates supporting the SMET initiatives. Many of the analyses in this paper are organized into these broad focus areas. The number of GRT awards in each broad focus area and cohort is shown in Table 2.

Table 2
GRT project awards by broad focus area, by cohort year: 1992-95

Broad focus area	Award cohort				1992-95
	1992	1993	1994	1995	
Total project awards.....	38	48	33	38	157
Biological Sciences (BIO)	8	14	4	8	34
Computer and Information Sciences and Engineering (CISE)	1	6	4	3	14
Education and Human Resources (EHR).....	0	1	3	5	9
Engineering (ENG).....	10	11	6	10	37
Geosciences (GEO).....	2	5	7	3	17
Mathematical and Physical Sciences (MPS).....	11	8	4	6	29
Social, Behavioral, and Economic Sciences (SBE)	6	3	5	3	17

SOURCE: GRT Distance Monitoring Survey System. Survey completed in 1998.

GRT Principal Investigator and Advisor Characteristics

Since the inception of the GRT program in 1992, 176 individuals have served as principal investigators (PIs) and 845 as GRT advisors. PI and advisor characteristics for all cohorts as reported in 1997 and 1998 are shown in Table 3 (and by cohort year in Appendix Table A-1). The data indicate that in both the 1997 and 1998 reporting years, 17-18 percent of PIs were female and 6 percent were minorities, while 14 percent of the advisors were female, and 5 percent were minorities.



Table 3
Characteristics of GRT principal investigators and advisors:
Reporting years 1997 and 1998

Principal investigator and advisor characteristic	All cohorts: 1997	All cohorts: 1998
Total principal investigators	157	176
Gender		
Male	82.2%	81.8%
Female.....	17.8	17.0
Minority status ¹		
Minority	5.7	5.7
Nonminority.....	92.4	92.0
Disability status		
Disabled	0.6	0.6
Not disabled	98.1	97.2
Citizenship		
U.S. citizen.....	92.4	90.3
Permanent resident.....	7.6	8.5
Total advisors	733	845
Gender		
Male	84.3%	82.5%
Female.....	13.8	14.1
Minority status ¹		
Minority	4.5	5.0
Nonminority.....	86.8	85.4
Disability status		
Disabled	1.0	0.9
Not disabled	84.2	85.0
Citizenship		
U.S. citizen.....	86.1	83.8
Permanent resident.....	9.4	9.8

¹Race was coded as minority if race/ethnicity was reported as black, Hispanic, Pacific Islander, or American Indian/Alaskan Native. Race was coded as nonminority when race/ethnicity was reported as white or Asian.

NOTE: Percents may not add to 100 because of rounding and/or data items not reported.

SOURCE: GRT Distance Monitoring Survey System. Surveys completed in 1997 and 1998.



GRT Trainee Characteristics

The GRT program emphasized increased participation in integrative research and education experiences by persons with disabilities, women, and individuals from groups that are underrepresented in SMET studies generally and in related technical and teaching careers. In 1998, 37 percent of the 1,595 trainees who had been provided financial support were female and 11 percent were minorities (Table 4). Percentages of female and minority trainees were similar in both reporting periods.⁴

The data showing trainee characteristics by award cohort suggest that efforts to recruit minority students into the GRT program were slightly more successful for the 1993 and 1994 cohorts (Appendix Table A-2). The percentage of minority trainees rose from about 9 percent in the 1992 cohort to 12 percent in the 1993 cohort and 16 percent in the 1994 cohort, dropping again to 9 percent for the 1995 cohort. Projects reported that overall, just 1 percent of trainees were disabled, which was the case across all cohorts. However, for 18 percent of trainees, disability status was not reported. Nearly 90 percent of GRT trainees were U.S. citizens; another 5 percent were permanent residents.

GRT trainee characteristics by broad focus show that the highest representation of women trainees was in Education and Human Resources (46 percent) and Biological Sciences (45 percent), while the lowest was in Computer and Information Sciences and Engineering (21 percent). The largest representation of black trainees but the lowest of Hispanics was in Computer and Information Sciences and Engineering (12 and 2 percent, respectively). Trainees who were reported as disabled comprised 2 percent of trainees in each of three areas: Computer and Information Sciences and Engineering, Education and Human Resources, and Mathematical and Physical Sciences; Engineering reported no disabled trainees. These data, as well as citizenship status by cohort and broad focus area are presented in Appendix Tables A-3 through A-7.

⁴ In comparing GRT data for 1997 and 1998, the high rates (9.7 percent and 9.0 percent, respectively) at which race/ethnicity was not reported should be kept in mind.



Table 4
Characteristics of GRT trainees: Reporting years 1997 and 1998

Trainee characteristic	All cohorts: 1997	All cohorts: 1998
Total trainees.....	1,311	1,595
Gender		
Male.....	61.6%	61.8%
Female	37.5	36.8
Race/ethnicity		
White	70.8	72.7
Black.....	7.2	6.8
Hispanic	3.4	3.3
Asian.....	7.6	7.1
Pacific Islander	0.5	0.4
American Indian/ Alaskan Native.....	0.9	0.8
Not reported.....	9.7	9.0
Minority status¹		
Minority	11.9	11.2
Nonminority.....	78.4	79.7
Not reported.....	9.7	9.0
Disability status		
Disabled	1.3	1.0
Not disabled.....	78.5	81.4
Not reported.....	20.2	17.6
Citizenship		
U.S. citizen	89.9	89.8
Permanent resident.....	4.3	4.7

¹Race was coded as minority if race/ethnicity was reported as black, Hispanic, Pacific Islander, or American Indian/Alaskan Native. Race was coded as nonminority when race/ethnicity was reported as white or Asian.

NOTE: Percents may not add to 100 because of rounding and/or data items not reported or missing.

SOURCE: GRT Distance Monitoring Survey System. Surveys completed in 1997 and 1998.



Gender. In Table 5, comparison of GRT data from reporting year 1998 with those from NSF’s biennial Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) for 1995 and 1997 shows that the percentage of women participating in the GRT program (37 percent) was lower than the percentage of all women graduate students in science and engineering in both 1995 and 1997 (41 and 43 percent, respectively).

Table 5
Comparisons of GRT trainee participation with national graduate student enrollment, by gender

Survey	Total	Male	Female
NSF GRT Monitoring System			
1998 reporting year.....	1,572	62.7%	37.3%
NSF Survey of Graduate Students and Postdoctorates in Science and Engineering			
1995, science and engineering fields.....	325,135	58.6	41.4
1997, science and engineering fields.....	308,835	56.7	43.3

NOTE: For comparability, GRT data on trainees for whom gender was unknown were not included in this table. Since GSS race/ethnicity data are available only for U.S. citizens and permanent residents, percentages are calculated using only data for citizens and permanent residents. The 1995 GSS data in this table should be used as the new baseline to compare GRT data to national trends, rather than the GSS data in Table 3-2 of the GRT baseline report.

SOURCE: GRT Distance Monitoring Survey Systems, reporting year 1998, and special tabulations of the National Science Foundation 1995 and 1997 Surveys of Graduate Students and Postdoctorates.

As shown in Appendix Table A-8, female GRT trainees in two broad focus areas exceeded the national rate for female graduate students: 8 percent more in Engineering, and 5 percent more in Geosciences. On the other hand, nationally, women in Biological Sciences, Computer and Information Sciences and Engineering, and Social, Behavioral, and Economic Sciences, composed, respectively, 3, 5, and 15 percent more of the graduate student population than they did of GRT trainees in those fields.

Race/Ethnicity. Comparison of GRT data on race/ethnicity of trainees from reporting year 1998 with those from the GSS survey for 1995 and 1997 show that the percentages of trainees in each group were very close to those reported by the GSS survey (see Table 6). In comparing GRT and GSS data, however, the high rates at which race/ethnicity was unreported or not known (9 percent for GRT and 6 percent for GSS) should be kept in mind.



Asians are not one of the underrepresented groups identified for GRT. In order to mirror the categories in which student data are collected by GSS, it is necessary to combine Asian and Pacific Islander data for GRT trainees. This combination makes it impossible to use GSS data as a baseline for assessing the GRT program's progress in promoting involvement of Pacific Islanders in SMET. These data are shown by broad focus area in Table A-9.

Table 6
Comparisons of GRT trainee participation with national graduate student enrollment, by race/ethnicity

Survey	Total	Race/ethnicity					
		White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	Not reported
NSF GRT Monitoring System							
1998 reporting year	1,595	72.7%	6.8%	3.3%	7.5%	0.8%	9.0%
NSF Survey of Graduate Students and Postdoctorates in Science and Engineering							
1995, science and engineering fields	325,135	75.9	5.6	4.3	8.0	0.5	5.6
1997, science and engineering fields	308,835	73.8	6.3	4.9	8.4	0.5	6.1

NOTE: For comparability, GRT data on trainees for whom gender was unknown were not included in this table. Since GSS racial/ethnic data are available only for U.S. citizens and permanent residents, percentage are calculated using only data for citizens and permanent residents. The GSS data on race/ethnicity for 1995 presented in Table 3-4 of the GRT baseline report mistakenly excluded data on female students; therefore the 1995 GSS data above should be used as the new baseline to compare GRT data to national trends. Percents may not add to 100 because of rounding.

SOURCE: GRT Distance Monitoring Survey Systems, reporting year 1998, and special tabulations of the National Science Foundation 1995 and 1997 Surveys of Graduate Students and Postdoctorates.

