

# PREVALENCE AND COMBINATIONS OF SUPPORT MODES

This chapter focuses on the prevalence of support modes and combinations of support modes for the 1995 cohort of S&E Ph.D. recipients. It examines how these combinations vary with the field of study, sex, race/ethnicity, citizenship, and the control and research emphasis of the degree-granting institution. If differences do exist, any policy with respect to graduate support will probably need to take into account these differences in order to accomplish its objectives. Further work may also be needed to determine the reasons for these differences. The chapter also presents the percentage of 1995 S&E Ph.D. recipients reporting each of the seven support modes as one of their modes of support, and as their primary mode of support.

As table 2 (on page 6) indicates, a substantial majority of all 1995 S&E Ph.D. recipients cited RAs and their own funds as modes of support. TAs were reported by about half of all S&E Ph.D. recipients in 1995, and each of the remaining modes of support was noted by less than one-quarter of respondents.

Few S&E doctorate recipients used only one mode of support to fund their graduate education. Five combinations of support modes, out of a possible 127, were reported by just under 40 percent of all new science and engineering Ph.D.s in 1995. About 2,700 new Ph.D.s reported using the RA + TA combination<sup>17</sup>. About 2,500 used the RA + own funds combination. Together, these two combina-

tions accounted for about 20 percent of all responses. They were followed by the RA + TA + own funds combination and RA support by itself. TA + own funds was the fifth most frequently cited support mode (figure 1).

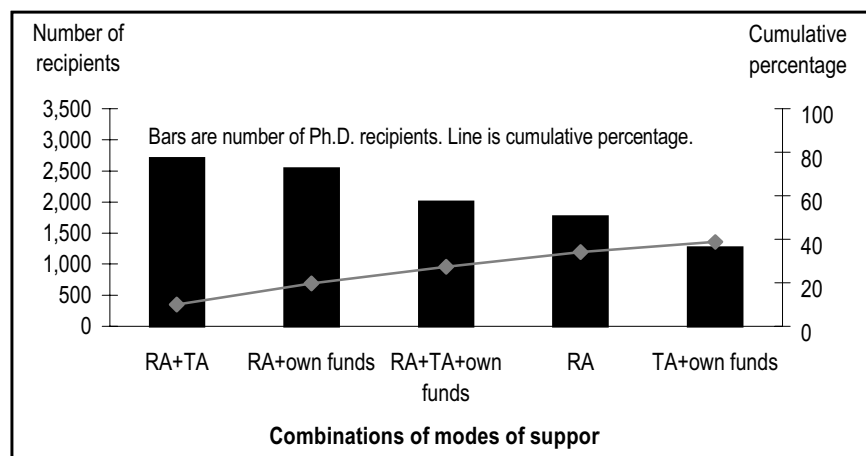
## Guide to Interpreting the Figures

All figures report on the top five combinations of support modes reported by a group. The figures presented in this report plot data on two axes.

The number of doctorates reporting these top five combinations (shown in the bars) is plotted on the left axis. Because the top five combinations differ depending on the group examined, and because the total number of recipients differs by group, the scales for the left axes vary. The bars show which are the top five combinations for a given group and the frequency of use of those combinations. Comparisons between groups (or between figures) can be made concerning which combinations are the top five combinations, not concerning the number of doctorates using particular combinations.

The cumulative percentage of doctorates reporting these combinations corresponds to the right axis and is plotted as a line. Comparisons between groups (or between figures) can be made concerning the percentage of doctorates using the top five combinations of support modes.

**Figure 1. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

<sup>17</sup>Order does not imply anything in combinations of support modes.

The following sections examine how use of the various support modes differs by demographic and institutional characteristics.

## SEX, RACE/ETHNICITY, AND CITIZENSHIP

### SEX

#### Any and Primary Support

Among 1995 S&E doctorates, women were more likely than men to have used traineeships, their own funds, or loans. Men were more likely than women to have reported support in the form of RAs. Women and men cited fellowships, TAs, and “other” modes for their support in graduate school to similar degrees (table 10). Most—though not all—of these apparent differences in use of students’ own funds and RAs are related to differences in field of doctorate. Women were more likely than men to have earned doctorates in psychology or the health sciences—fields in which use of one’s own funds is common. Men were more likely to earn Ph.D.s in engineering and the physical sciences—fields in which use of RAs is common. Within most fields, differences between women and men in primary mode of support were not great. For example, own funds in psychology was cited as primary by 45 percent of women and 42 percent of men. In engineering, 58 percent of women and 55 percent of men reported RAs as their primary mode of support. In the physical sciences, 55 percent of women and 57 percent of men reported RAs as their primary mode of support (table 10).

However, differences in primary support between women and men remain large in the health sciences and computer and information sciences. Women were far more likely than men to use their own funds (58 percent versus 33 percent in the health sciences, and 35 percent versus 22 percent in the computer and information sciences). They were also far less likely than men to use RAs (12 percent versus 26 percent in the health sciences and 30 percent versus 42 percent in the computer and information sciences).

#### Combinations of Support Modes

The combinations of various support modes also differ by sex and by field. While the three most prevalent combinations of support for women and men are identical, for women own funds and RA were the fourth and fifth most frequently reported modes; for men, RA and

TA + own funds were the fourth and fifth most frequently reported modes. The top five support modes for women accounted for 31 percent of respondents; the men’s top five accounted for 44 percent of them (figures 2 and 3).

These patterns are influenced by the differential distribution by sex across the various S&E fields of study.<sup>18</sup> For example, in psychology, the field in which 26 percent of women (and 7 percent of men) receiving S&E doctorate degrees received their degree in 1995, own funds and own funds + loan were the two top support combinations for both women and men (table 11). These differences in field distribution most likely explain why own funds is the fourth most frequently reported combination for women.

However, the distribution across fields by sex does not entirely explain the overall results since combinations of support modes do differ by sex within some fields as well. In the health sciences, a field predominated by women, 12 percent of women and 6 percent of men reported using their own funds as their sole mode of support. In mathematics, women and men have the same top four combinations of support—RA + TA, TA + own funds, RA + TA + own funds, and TA alone. The predominant combination for men was RA + TA; the predominant combination for women was TA + own funds. Similarly, in the earth, atmospheric and ocean sciences, women and men shared the same top four combinations, but the predominant combination for women was RA + TA + own funds and the predominant combination for men was RA + own funds.

In other fields—e.g., the social sciences, computer and information sciences, physical sciences, biological sciences, and engineering—the combinations of support modes were similar for women and men. In the social sciences, the top five combinations for men and women were identical. In engineering, the physical sciences, and the biological sciences, RA, RA + TA, RA + own funds, and RA + TA + own funds were prevalent combinations for both women and men.

### RACE/ETHNICITY AND CITIZENSHIP STATUS

This section examines the variations in support modes by the new S&E Ph.D.s race/ethnicity and citizenship. The race/ethnicity and citizenship groups are divided into three discrete race/ethnicity categories for U.S. citizens and permanent residents only plus one foreign category, as follows:

<sup>18</sup>See NSF 1996c for tables showing the 1995 distribution of field by sex.

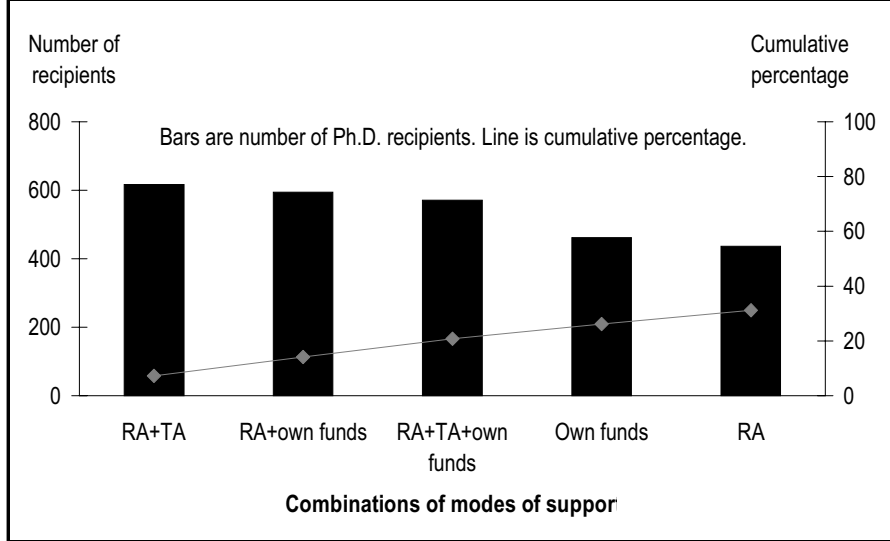
**Table 10. Percentages of 1995 S&E Ph.D. recipients citing any and primary support mode, by major field of study, support mode, and sex**

Field	Support mode	Percentage any support		Percentage primary support		Field	Support mode	Percentage any support		Percentage primary support	
		Female	Male	Female	Male			Female	Male	Female	Male
Total S&E	Fellowship.....	9	6	4	3	Mathematics	Fellowship.....	7	5	3	3
	Traineeship.....	26	19	11	7		Traineeship.....	20	20	4	4
	Research assistantship...	60	69	30	42		Research assistantship...	45	48	12	15
	Teaching assistantship...	51	51	16	18		Teaching assistantship...	89	84	62	60
	Own funds.....	68	58	28	18		Own funds.....	56	46	13	10
	Loans.....	27	17	4	1		Loans.....	10	11	0	0
	Other.....	26	23	8	10		Other.....	19	20	6	8
Agricultural sciences	Fellowship.....	7	5	5	3	Physical sciences	Fellowship.....	7	5	3	3
	Traineeship.....	12	8	2	3		Traineeship.....	16	14	6	3
	Research assistantship...	75	73	49	53		Research assistantship...	86	86	55	57
	Teaching assistantship...	22	18	7	3		Teaching assistantship...	75	72	23	22
	Own funds.....	61	57	17	17		Own funds.....	41	41	8	8
	Loans.....	16	16	2	1		Loans.....	15	12	0	0
Other.....	33	32	18	19	Other.....	19	14	6	6		
Biological sciences	Fellowship.....	8	7	4	4	Earth, atmospheric & ocean sciences	Fellowship.....	15	5	5	2
	Traineeship.....	36	33	21	19		Traineeship.....	16	15	4	4
	Research assistantship...	68	67	41	40		Research assistantship...	85	81	54	51
	Teaching assistantship...	42	41	13	14		Teaching assistantship...	54	47	12	13
	Own funds.....	53	53	14	14		Own funds.....	57	59	14	19
	Loans.....	19	18	1	1		Loans.....	20	15	0	0
Other.....	20	19	6	8	Other.....	31	29	12	11		
Health sciences	Fellowship.....	5	5	1	2	Psychology	Fellowship.....	4	3	2	2
	Traineeship.....	32	20	11	9		Traineeship.....	20	20	7	7
	Research assistantship...	43	53	12	26		Research assistantship...	45	48	15	17
	Teaching assistantship...	29	40	5	17		Teaching assistantship...	49	52	13	17
	Own funds.....	87	72	58	33		Own funds.....	87	84	45	42
	Loans.....	23	21	2	3		Loans.....	50	52	11	9
Other.....	36	31	10	12	Other.....	26	25	7	6		
Engineering	Fellowship.....	15	4	8	2	Social sciences	Fellowship.....	17	11	5	3
	Traineeship.....	18	11	6	3		Traineeship.....	33	29	12	11
	Research assistantship...	82	78	58	55		Research assistantship...	49	43	14	14
	Teaching assistantship...	43	41	7	10		Teaching assistantship...	64	62	25	28
	Own funds.....	51	57	10	16		Own funds.....	78	73	34	31
	Loans.....	10	9	0	1		Loans.....	32	26	3	2
Other.....	25	24	11	13	Other.....	32	31	7	10		
Computer & information sciences	Fellowship.....	11	6	5	3						
	Traineeship.....	19	13	6	3						
	Research assistantship...	69	71	30	42						
	Teaching assistantship...	55	56	16	20						
	Own funds.....	66	61	35	22						
	Loans.....	9	9	1	0						
Other.....	29	25	8	10							

**NOTE:** Primary support columns may not total 100 percent due to rounding. 6,621 Ph.D.s did not report a primary mode of support and, of these, 1,779 did not report any mode of support. Percentages are based on actual responses. The nonresponse rate was 4 percent for any support and 24 percent for primary support.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

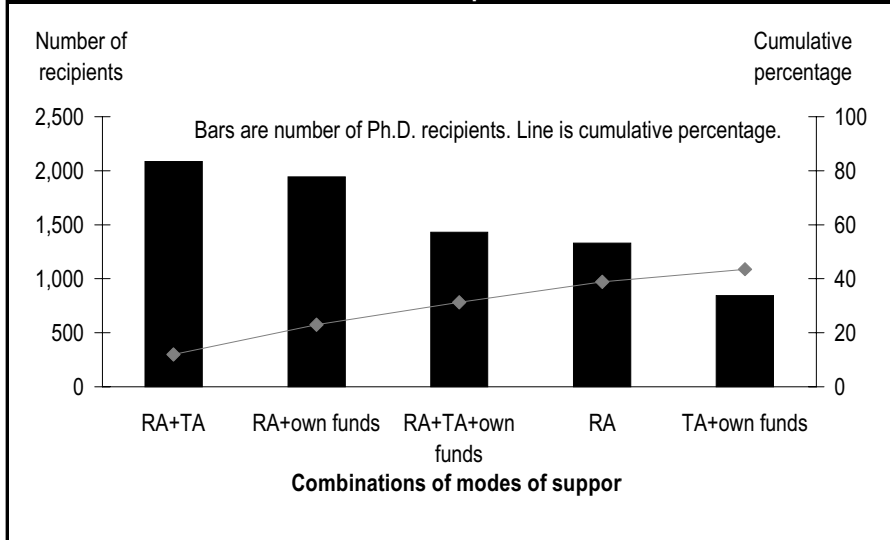
**Figure 2. Top five combinations of modes of support reported by female 1995 S&E Ph.D. recipients**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Figure 3. Top five combinations of modes of support reported by male 1995 S&E Ph.D. recipients**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Table 11. Percentages of 1995 S&E Ph.D. recipients, by selected combinations of support modes, sex, and field**

Field	Sex	Own funds	Own funds + Other	Trainee-ship + Own funds	RA + Own funds	RA + TA + Own funds	TA + Own funds	Own funds + Loan	Other	RA + TA + Own funds + Other	RA + Own funds + Loan	RA	TA + Own funds + Loan	RA + TA	RA + TA + Own funds + Loan	Trainee-ship + RA	RA + Other	Trainee-ship - TA
Agricultural sciences.....	F	3	3	0	23	4	1	0	6	2	6	11	0	3	1	1	5	
	M	3	5	1	22	3	1	1	8	1	4	15	1	4	2	1	6	
Biological sciences.....	F	2	2	4	9	6	3	0	1	2	2	10	1	7	2	4	2	
	M	2	3	4	10	6	3	1	2	1	2	9	1	8	2	4	2	
Health sciences.....	F	12	11	8	7	4	3	3	3	2	2	2	2	1	1	1	1	
	M	6	6	2	10	6	5	3	4	2	1	8	3	4	2	1	2	
Engineering.....	F	1	2	0	14	6	2	0	2	2	1	12	0	12	2	3	3	
	M	3	5	1	18	10	3	0	4	2	2	11	0	12	2	2	4	
Computer/information sciences.....	F	4	5	2	7	11	7	1	1	5	0	6	1	13	1	2	3	
	M	5	5	0	12	12	6	0	2	3	2	4	1	14	2	2	3	
Mathematics.....	F	2	2	0	2	9	20	0	0	2	0	2	2	14	2	1	0	
	M	1	2	1	2	8	13	0	2	1	0	1	2	16	2	1	1	
Physical sciences.....	F	0	1	0	6	11	2	0	1	3	0	7	1	26	3	2	2	
	M	1	1	0	8	12	3	0	1	2	1	8	0	29	3	1	1	
Earth, atmospheric & ocean sciences.....	F	3	1	2	6	11	1	0	1	4	4	10	0	9	4	2	5	
	M	2	4	1	14	9	3	1	3	4	2	10	1	11	2	2	3	
Psychology.....	F	10	4	2	4	6	6	10	1	1	3	0	5	2	6	0	0	
	M	8	3	2	4	5	5	9	1	1	5	1	6	3	8	1	1	
Social sciences.....	F	6	5	2	4	5	9	1	1	2	1	1	2	3	3	1	1	
	M	6	5	2	5	5	10	1	3	2	1	2	3	3	3	1	1	

**NOTE:** Rows do not add to 100 percent because only selected combinations of support modes are shown. 1,779 Ph.D.s did not report any mode of support. Percentage at least one mode of support. Combinations selected are those which include the top five combinations for any field. No combinations representing 5 percent or from this table.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

- U.S. citizens and permanent residents:
  - white, non-Hispanic;
  - Asian (Asian or Pacific Islander); or
  - underrepresented minority (black, non-Hispanic; Hispanic; and American Indian or Alaskan Native);
- foreign students (persons on temporary visas).

Patterns of support for S&E doctorate recipients by race/ethnicity reflect differences in eligibility for various support modes. Support patterns in S&E for Asians<sup>19</sup> and foreign students on temporary visas are similar and patterns for whites and underrepresented minorities are similar. Asians and foreign students on temporary visas are similar because a large proportion of the Asian group, especially Chinese students, are permanent residents who may have entered graduate school on temporary visas.

### Any Support

Higher percentages of Asians and foreign students reported use of RAs as *one* of their modes of support than other groups of Ph.D. recipients. Nearly 8 of 10 Ph.D. recipients of Asian background reported having some RA support (table 12). Similarly, 71 percent of foreign students received RAs. Asians and foreign students were less likely than other students to report use of own funds, loans, fellowships, and traineeships. Foreign students differed from Asians in that a higher percentage of foreign students than of Asians reported use of own funds and “other” support (which includes support from foreign governments) and foreign students were the least likely of any group to use loans.<sup>20</sup>

The support mode identified as *one* of the modes of support by the largest percentage of both underrepresented minorities and whites was their own funds, 67 and 72 percent, respectively. Although RAs were the second largest support mode reported by both of these two groups, substantially smaller proportions of whites or underrepresented minorities reported having RAs than did either Asians or foreign students. Whites and underrepresented minorities were also much more likely to report the use of loans than were Asians or foreign

students. Underrepresented minorities were most likely of any racial/ethnic group to report the use of both fellowships and traineeships.

The overall patterns of support for the various racial/ethnic groups are also generally reflected in individual S&E fields. In all S&E fields, use of some loan funds is far more prevalent among both whites and underrepresented minorities than among Asians or foreign students. Also, in all S&E fields use of loans is more prevalent among underrepresented minorities than it is among whites (although some differences are small).<sup>21</sup> The use of loans was least likely to be reported by foreign students in every field except the agricultural and earth, atmospheric, and ocean sciences.

In every field except the agricultural sciences, biological sciences, and mathematics, underrepresented minorities reported less use of RAs than the other three groups. In contrast, a higher percentage of underrepresented minorities reported using fellowships and traineeships than any other group in almost every major field of study. (The exception was fellowships in the earth, atmospheric, and ocean sciences, where whites reported the greatest use.) Asians reported the greatest use of RAs in every field except for the computer and information sciences and psychology; in these fields, foreign students had higher RA usage than Asians.

### Primary Support<sup>22</sup>

Use of various *primary* support modes follows the same patterns noted above for *any* use of the various support modes. Over half of Asian S&E doctorate recipients, and nearly half of foreign students, reported RAs as their primary mode of support; this compares with fewer than one-third of whites and about one-fifth of underrepresented minorities. In contrast, whites and underrepresented minorities were more than twice as likely to report that own funds were their primary mode of support as were Asians or foreign students. Table 12 details the primary mode of support reported by these race/ethnicity and citizenship groups. RAs are the most frequently cited primary mode for each group except for underrepresented minorities: they most frequently cited use of their own funds.

<sup>19</sup>See “Asian S&E Ph.D. Recipients—U.S. Citizens Compared to Permanent Residents” on page 23 for a cautionary note on how one should interpret the comparisons across race/ethnicity and citizenship classifications.

<sup>20</sup>Most foreign students on temporary visas are not eligible for many Federal loan programs.

<sup>21</sup>For information about indebtedness at the time of receipt of the doctorate by race/ethnicity, see NSF 1999b.

<sup>22</sup>Because nonresponse to primary source of support was high and varied somewhat between groups (see table A2), the reader is cautioned that some of the differences between groups in primary support may be due to differences in nonresponse.

**Table 12. Percentages of 1995 S&E Ph.D. recipients citing any and primary support mode, by major field of study, support mode, citizenship, and racial/ethnic background of U.S. citizens and permanent residents**

Field	Support mode	Percentage any support				Percentage primary support			
		Asian/ Pacific Islander <sup>1</sup>	Under- represented minority <sup>1,2</sup>	White <sup>1</sup>	Foreign on temporary visa <sup>3</sup>	Asian/ Pacific Islander <sup>1</sup>	Under- represented minority <sup>1,2</sup>	White <sup>1</sup>	Foreign on temporary visa <sup>3</sup>
Total S&E	Fellowship.....	5	16	8	4	2	11	4	1
	Traineeship.....	18	35	25	13	8	18	9	5
	Research assistantship....	79	50	61	71	55	21	31	47
	Teaching assistantship....	54	44	52	50	21	12	16	21
	Own funds.....	40	67	72	49	10	24	29	11
	Loans.....	7	40	31	1	1	6	3	0
	Other.....	13	26	26	25	4	9	8	15
Agricultural sciences	Fellowship.....	5	11	5	6	3	15	2	5
	Traineeship.....	3	14	13	5	0	12	4	1
	Research assistantship....	91	70	76	68	84	35	54	45
	Teaching assistantship....	12	30	26	12	2	8	6	2
	Own funds.....	30	51	77	43	6	19	26	8
	Loans.....	1	30	29	2	0	0	1	1
	Other.....	19	27	25	43	5	12	7	39
Biological sciences	Fellowship.....	6	18	9	4	3	12	4	2
	Traineeship.....	31	44	39	20	21	19	22	13
	Research assistantship....	76	65	64	68	54	38	35	47
	Teaching assistantship....	39	37	43	39	12	10	13	17
	Own funds.....	32	52	63	42	6	12	19	6
	Loans.....	6	30	27	1	0	2	1	0
	Other.....	10	17	21	25	3	7	6	15
Health sciences	Fellowship.....	1	9	5	4	0	7	1	2
	Traineeship.....	19	37	31	16	10	18	10	8
	Research assistantship....	68	35	43	58	46	11	13	24
	Teaching assistantship....	28	33	34	33	8	8	8	16
	Own funds.....	56	86	89	63	25	42	58	26
	Loans.....	10	38	27	3	4	4	2	1
	Other.....	17	31	35	41	6	8	8	24
Engineering	Fellowship.....	4	18	9	2	2	14	5	1
	Traineeship.....	10	30	17	7	2	13	4	1
	Research assistantship....	87	64	71	82	68	27	46	62
	Teaching assistantship....	45	34	39	43	11	5	7	12
	Own funds.....	46	64	66	52	12	21	20	12
	Loans.....	5	23	19	1	0	0	1	0
	Other.....	14	36	33	21	5	20	16	12
Computer & information sciences	Fellowship.....	5	41	9	3	2	29	4	1
	Traineeship.....	15	24	17	10	0	7	5	3
	Research assistantship....	69	47	66	79	48	0	31	50
	Teaching assistantship....	57	47	49	66	20	7	14	27
	Own funds.....	57	71	74	49	23	21	35	10
	Loans.....	7	35	14	2	0	14	0	0
	Other.....	19	47	30	22	8	21	11	10

See NOTE and SOURCE at end of table.

**Table 12. Percentages of 1995 S&E Ph.D. recipients citing any and primary support mode, by major field of study, support mode, citizenship, and racial/ethnic background of U.S. citizens and permanent residents**

Field	Support mode	Percentage any support				Percentage primary support			
		Asian/ Pacific Islander <sup>1</sup>	Under- represented minority <sup>1, 2</sup>	White <sup>1</sup>	Foreign on temporary visa <sup>3</sup>	Asian/ Pacific Islander <sup>1</sup>	Under- represented minority <sup>1, 2</sup>	White <sup>1</sup>	Foreign on temporary visa <sup>3</sup>
Mathematics	Fellowship.....	2	18	8	3	1	11	5	0
	Traineeship.....	14	41	22	19	2	11	4	6
	Research assistantship....	52	45	45	47	14	17	13	16
	Teaching assistantship....	91	73	85	83	78	39	54	63
	Own funds.....	28	59	62	40	4	22	17	4
	Loans.....	2	23	20	1	0	0	0	0
	Other.....	8	32	24	20	2	0	7	12
Physical sciences	Fellowship.....	2	18	8	2	1	12	4	0
	Traineeship.....	13	28	17	10	3	13	4	2
	Research assistantship....	91	71	85	87	65	36	53	61
	Teaching assistantship....	76	69	73	70	26	22	19	27
	Own funds.....	25	53	50	34	4	6	11	4
	Loans.....	3	26	22	0	0	2	0	0
	Other.....	6	18	20	11	2	8	7	6
Earth, atmospheric & ocean sciences	Fellowship.....	4	6	9	6	0	8	4	0
	Traineeship.....	10	31	17	13	5	8	3	5
	Research assistantship....	94	69	81	77	77	31	46	54
	Teaching assistantship....	35	50	57	36	10	8	14	13
	Own funds.....	31	56	68	50	7	23	22	9
	Loans.....	2	25	23	2	0	8	0	0
	Other.....	11	25	31	36	1	15	11	19
Psychology	Fellowship.....	3	10	2	5	1	8	1	0
	Traineeship.....	17	33	19	18	7	22	5	10
	Research assistantship....	60	35	45	62	23	9	16	26
	Teaching assistantship....	54	37	51	51	27	7	14	26
	Own funds.....	76	79	89	71	26	32	47	26
	Loans.....	38	57	53	4	9	15	11	1
	Other.....	32	26	26	30	7	8	6	11
Social sciences	Fellowship.....	13	23	14	9	4	9	4	3
	Traineeship.....	30	38	33	22	12	20	11	10
	Research assistantship....	54	39	45	44	19	5	14	17
	Teaching assistantship....	71	54	64	60	39	18	25	30
	Own funds.....	61	74	83	63	21	32	39	22
	Loans.....	17	53	40	1	2	11	3	0
	Other.....	22	29	31	35	4	6	5	19

<sup>1</sup> U.S. citizens and permanent residents only.

<sup>2</sup> Underrepresented minorities include blacks, Hispanics, and American Indians/Alaskan Natives.

<sup>3</sup> Foreign students who were on temporary visas at the time of Ph.D. conferral.

**NOTE:** Primary support columns may not total 100 percent due to rounding. 6,621 Ph.D.s did not report a primary mode of support and, of these, 1,779 did not report any mode of support. Percentages are based on actual responses. The nonresponse rate was 4 percent for any support and 24 percent for primary support.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.



### Asian S&E Ph.D. Recipients—U.S. Citizens Compared to Permanent Residents

The analysis of 1995 data on Asian U.S. citizen and permanent resident S&E Ph.D.s is complicated by the Chinese Student Protection Act of 1992. The Act allowed Chinese students to apply for permanent residency in 1993. As a result the number of Asian U.S. citizen plus permanent resident S&E Ph.D.s in 1995 is higher than it would have been had this Act not been passed. In fact, only 24 percent of the 1995 doctoral recipients in this combined group were U.S. citizens while the remaining 76 percent were permanent residents.<sup>23</sup> Seventy-seven percent of those permanent residents were from the People's Republic of China.

Table 13 indicates that the primary support patterns of Asian U.S. citizen and Asian permanent resident S&E Ph.D.s differ rather substantially. A comparison of table 13 and table 12 indicates that the former group has patterns which are more like those of the white U.S. citizens plus permanent resident group, while the latter group has patterns more like the foreigners on temporary visas. Therefore, these distinctions should be kept in mind when interpreting the results of this study.

**Table 13. Percentages of permanent resident and U.S. citizen Asian/Pacific Islander 1995 S&E Ph.D. recipients by primary support mode**

Support mode	Percentage primary support	
	Asian/Pacific Islander permanent resident <sup>1</sup>	Asian/Pacific Islander U.S. citizen
Fellowship.....	1	5
Traineeship.....	6	14
Research assistantship.....	61	39
Teaching assistantship.....	23	14
Own funds.....	7	17
Loans.....	0	2
Other.....	2	7

<sup>1</sup> See box above for the influence of the Chinese Student Protection Act of 1992 on numbers of Asian/Pacific Islander permanent residents.

**NOTE:** The 949 U.S. citizen and permanent resident Asian or Pacific Islander Ph.D.s not reporting a primary mode of support were excluded from this table. Percentages are based on those reporting a primary mode of support.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

Some of these variations in modes of support reflect field differences among groups. For example, appendix table A4 shows that most Asian students received their Ph.D.s in engineering (27 percent), the biological sciences (25 percent), or the physical sciences (20 percent). Each of these three fields showed a large percentage of students citing RAs as a primary or secondary mode of support. By comparison, 24 percent of Ph.D.s granted to underrepresented minorities were in psychology and 20 percent in the social sciences. Those two fields were among those with the smallest percentages of students reporting that RAs were either their primary or secondary mode of support.

Despite differences in racial/ethnic distributions across fields, groups vary in mode of support within major fields of study (table 12). In every major field of study, a larger percentage of both underrepresented minorities and whites report using their own funds and loans as *one* of their modes of support than do Asians or foreign students. Similarly in all major fields of study, with the exception of the computer and information sciences, a larger percentage of underrepresented minorities and whites than of Asians and foreign students reported that their own funds and loans were their *primary* source of support. The differences in the percentage reporting any support from own funds and—especially—loans between the underrepresented minority and white groups on the one hand, and the Asian and foreign student groups on the other, are generally much larger than the differences in the percentages reporting own funds and loans as their *primary* mode of support.

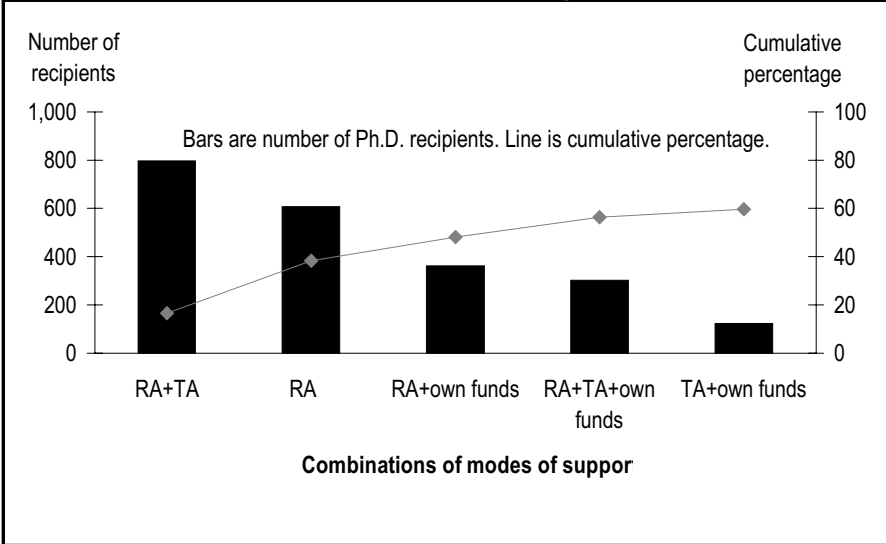
### Combinations of Support Modes

An examination of the combinations of support shows that almost 40 percent of Asians received their support from either the RA + TA combination or from RAs alone (figure 4). The top five combinations for Asians accounted for the support of about 60 percent of Asian Ph.D.s.

Each of the top five combinations of modes of support for underrepresented minorities involves using their own resources (figure 5); no other group shows such extensive reliance on own funds in their top five combinations of support. These top five support combinations provided support for 22 percent of underrepresented minority Ph.D. recipients. In fact, the top 10 combinations provided support for 37 percent, far below the numbers for other groups, which ranged from 48 to 75 percent.

<sup>23</sup>In 1992, 49 percent of this combined group were U.S. citizens.

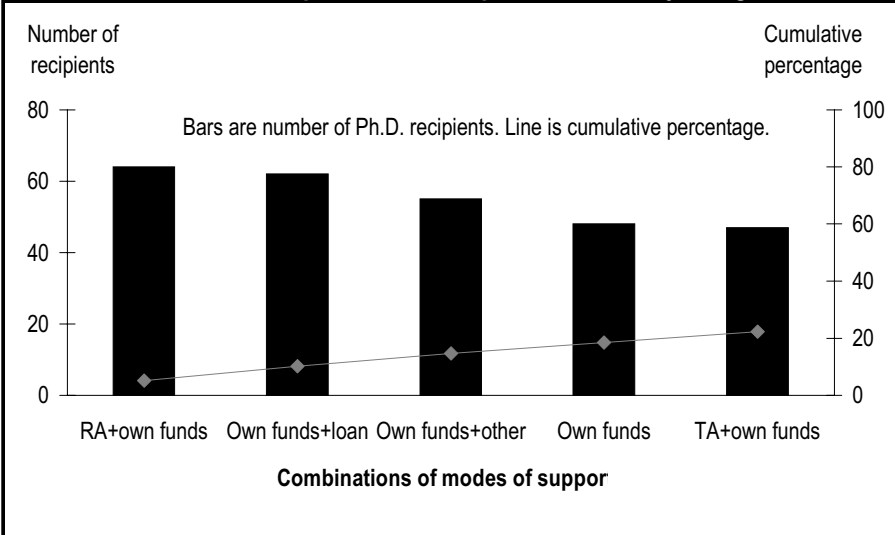
**Figure 4. Top five combinations of modes of support reported by Asian/Pacific Islander 1995 S&E Ph.D. recipients**



**NOTES:** Only U.S. citizens and permanent residents are included in this figure. RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Figure 5. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients of underrepresented minority background**



**NOTES:** Only U.S. citizens and permanent residents are included in this figure. The underrepresented minority group includes blacks, Hispanics, and American Indians/Alaskan Natives. RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

For white Ph.D. recipients (figure 6), as for underrepresented minorities, RA + own funds was the most frequently used combination. Also, like underrepresented minorities, whites relied heavily on own funds in the top five combinations of modes of support.

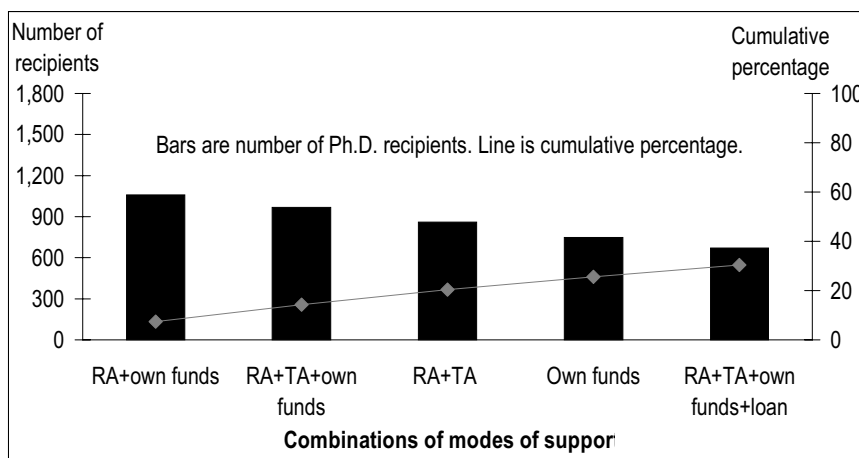
Whites are also similar to Asian and foreign students in use of RAs in four of the top five combinations and in use of TAs in three of the top five combinations. The top five combinations provided support for 30 percent of white Ph.D. recipients. The top 10 combinations provide funding for 48 percent of whites.

The RA + own funds combination provided funding for approximately 15 percent of S&E Ph.D. recipients who are not U.S. citizens, slightly more than the RA + TA combination (figure 7). The top five combinations account for the support of 57 percent of these S&E Ph.D.s.

## INSTITUTIONAL CHARACTERISTICS

This section examines how support patterns differ based on the type of institutional control—public or private, and on research emphasis as determined by Carnegie classification.

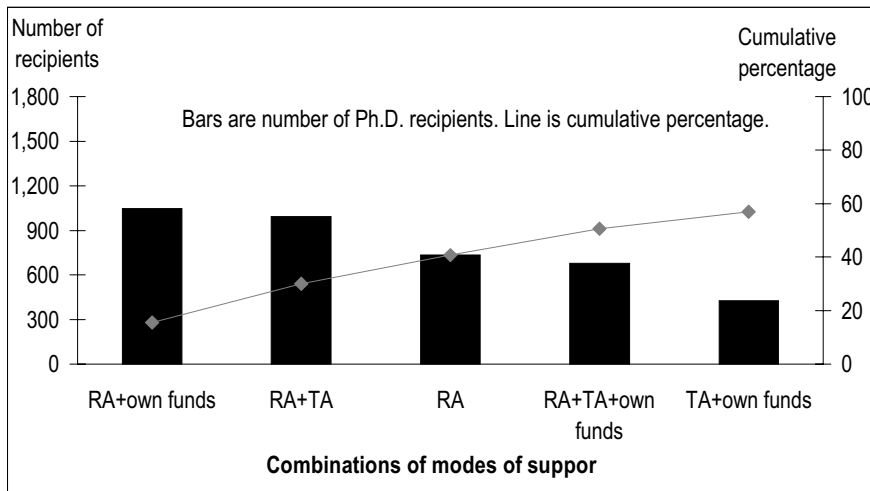
**Figure 6. Top five combinations of modes of support reported by white 1995 S&E Ph.D. recipients**



**NOTE:** Only U.S. citizens and permanent residents are included in this figure. RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Figure 7. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients on temporary visas**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies. Survey of Earned Doctorates.

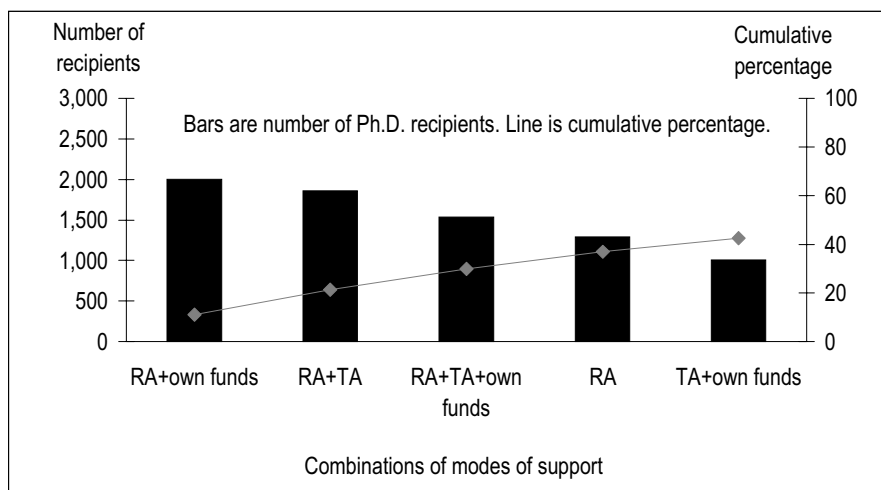
## INSTITUTIONAL CONTROL

Support patterns show little variation between publicly and privately controlled institutions. As table 14 shows, there is more similarity than difference in how students in the two types of institutions fund their graduate education. In both types of institutions, RAs are the most frequently used support mode, with students' own funds the next most frequent, followed by TAs.

In both types of institutions, over half of the new Ph.D.s reported RAs and use of their own funds among

their support modes. In public institutions, half also reported TAs as a mode of support. Graduate fellowships (nationally-competitive) were infrequently reported in either type of institution, but were cited less in public than in private ones. The top four combinations are the same for both types of institutions, with only the order and level varying (figures 8 and 9). The fifth most prevalent combination in public institutions was TA + own funds; the fifth most prevalent combination in private institutions was own funds. The top five combinations in private institutions were used by 33 percent of the doctoral recipients compared with 43 percent in public institutions.

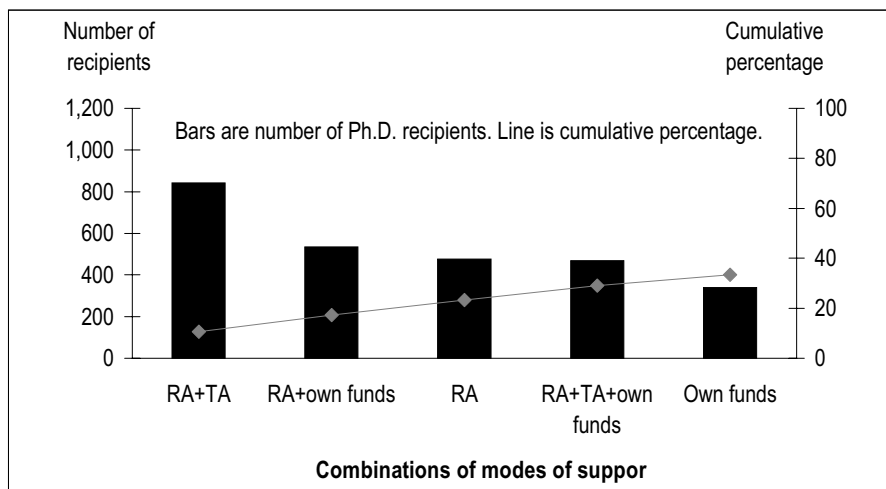
**Figure 8. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients in public institutions**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Figure 9. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients in private institutions**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Table 14. Percentages of 1995 S&E Ph.D. recipients citing any and primary support mode, by institutional control, major field of study, and support mode**

Field	Support mode	Percentage any support		Percentage primary support		Field	Support mode	Percentage any support		Percentage primary support	
		Public	Private	Public	Private			Public	Private	Public	Private
		Total S&E	Fellowship.....	6	10			2	5	Mathematics	Fellowship.....
	Traineeship.....	19	27	6	13		Traineeship.....	17	27	3	8
	Research assistantship...	68	60	40	34		Research assistantship...	44	54	12	20
	Teaching assistantship...	53	47	20	13		Teaching assistantship...	88	79	65	51
	Own funds.....	62	58	22	20		Own funds.....	51	43	12	7
	Loans.....	20	21	1	3		Loans.....	11	9	0	0
	Other.....	23	26	9	10		Other.....	20	18	7	9
Agricultural sciences	Fellowship.....	5	16	3	16	Physical sciences	Fellowship.....	4	8	2	5
	Traineeship.....	8	18	3	7		Traineeship.....	14	16	3	5
	Research assistantship...	74	67	53	36		Research assistantship...	86	87	55	59
	Teaching assistantship...	19	25	4	7		Teaching assistantship...	74	69	25	17
	Own funds.....	59	33	17	7		Own funds.....	44	35	9	6
	Loans.....	16	15	1	2		Loans.....	15	9	0	0
	Other.....	32	38	19	27		Other.....	15	16	5	7
Biological sciences	Fellowship.....	6	10	3	6	Earth, atmospheric & ocean sciences	Fellowship.....	7	11	2	5
	Traineeship.....	28	49	14	33		Traineeship.....	14	22	3	8
	Research assistantship...	71	57	44	33		Research assistantship...	81	83	52	51
	Teaching assistantship...	46	32	16	8		Teaching assistantship...	49	49	13	11
	Own funds.....	56	47	15	11		Own funds.....	61	50	19	11
	Loans.....	20	15	1	1		Loans.....	16	15	0	0
	Other.....	19	19	7	9		Other.....	30	28	10	14
Health sciences	Fellowship.....	4	7	1	1	Psychology	Fellowship.....	3	3	2	2
	Traineeship.....	27	32	9	12		Traineeship.....	22	16	7	7
	Research assistantship...	50	35	18	12		Research assistantship...	54	32	20	9
	Teaching assistantship...	34	27	11	4		Teaching assistantship...	59	36	19	7
	Own funds.....	82	80	48	53		Own funds.....	84	90	40	52
	Loans.....	21	24	2	5		Loans.....	47	56	6	18
	Other.....	34	37	11	11		Other.....	26	26	7	5
Engineering	Fellowship.....	5	7	2	5	Social sciences	Fellowship.....	10	19	3	6
	Traineeship.....	11	14	3	4		Traineeship.....	25	40	6	20
	Research assistantship...	79	78	56	56		Research assistantship...	47	41	16	12
	Teaching assistantship...	41	42	10	9		Teaching assistantship...	65	58	31	20
	Own funds.....	59	49	18	10		Own funds.....	76	74	34	30
	Loans.....	10	8	1	0		Loans.....	28	29	2	2
	Other.....	23	29	11	16		Other.....	29	36	8	10
Computer & information sciences	Fellowship.....	6	9	2	6						
	Traineeship.....	13	16	3	5						
	Research assistantship...	72	68	39	42						
	Teaching assistantship...	60	48	22	12						
	Own funds.....	62	62	25	22						
	Loans.....	8	9	0	0						
	Other.....	25	27	9	13						

**NOTE:** Primary support columns may not total 100 percent due to rounding. A total of 6,621 Ph.D.s did not report a primary mode of support and, of these, 1,779 did not report any mode of support. Percentages are based on actual responses. The nonresponse rate was 4 percent for any support and 24 percent for primary support.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

## CARNEGIE INSTITUTIONAL CLASSIFICATION

Academic institutions were divided into the largest research-performing universities (Research I institutions; see Appendix A) and all other institutions in order to examine how institutions that differ in terms of research emphasis vary in terms of modes of support used by their students.

Table 15 shows that 1995 S&E Ph.D.s from Research I institutions were less likely to report their own funds and more likely to report RAs than doctorates from other types of institutions. Fifty-eight percent of those in Research I institutions and 68 percent of those from other institutions used their own funds. Seventy percent of S&E Ph.D recipients from Research I institutions received support via an RA, while slightly more than half of those from other institutions received support in the form of an RA. These patterns hold for almost all S&E fields. Those

in Research I institutions were also somewhat more likely to have held fellowships or traineeships or to have served as teaching assistants.

For doctorates from non-Research I institutions, RA + own funds was the most frequently cited mode of support, whereas the RA + TA combination was the most frequently cited one at Research I institutions (figures 10 and 11). An examination of the combinations of support used by students in the Research I institutions versus all others shows some similarities and some differences. Four of the top five combinations of modes of support—RA + TA, RA + own funds, RA + TA + own funds, and TA + own funds—are identical for both types of institutions. Own funding is important at both types of institutions but less so at Research I institutions, where it is an element of three of the five top combinations of support modes, compared with four of the top five at the other institutions. Own funds only is the third most prevalent combination of support at non-Research I institutions.

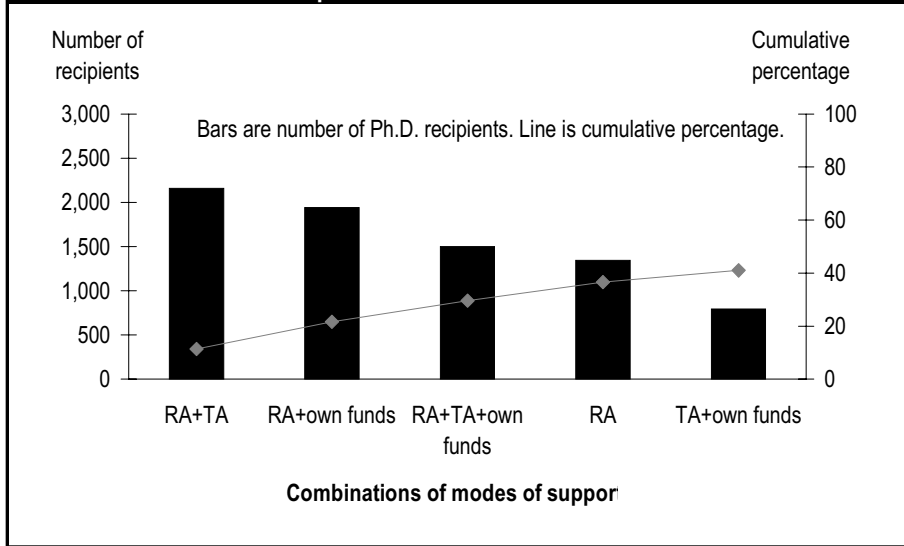
**Table 15. Percentages of 1995 S&E Ph.D. recipients citing any and primary support mode, by Carnegie classification, major field of study, and support mode**

Field	Support mode	Percentage any support		Percentage primary support		Field	Support mode	Percentage any support		Percentage primary support	
		Research I	All others	Research I	All others			Research I	All others	Research I	All others
		Total S&E	Fellowship.....	8	3			4	1	Mathematics	Fellowship.....
	Traineeship.....	24	16	9	6		Traineeship.....	20	20	4	6
	Research assistantship...	70	54	42	28		Research assistantship...	53	30	16	9
	Teaching assistantship....	53	47	17	18		Teaching assistantship....	88	78	62	57
	Own funds.....	58	68	18	32		Own funds.....	44	62	9	18
	Loans.....	18	26	1	4		Loans.....	9	15	0	0
	Other.....	24	25	9	10		Other.....	19	22	7	10
Agricultural sciences	Fellowship.....	6	5	4	3	Physical sciences	Fellowship.....	6	3	4	1
	Traineeship.....	10	7	3	4		Traineeship.....	16	12	4	2
	Research assistantship...	75	69	53	49		Research assistantship...	89	77	60	45
	Teaching assistantship....	19	19	4	6		Teaching assistantship....	73	72	20	32
	Own funds.....	58	56	17	18		Own funds.....	40	46	7	12
	Loans.....	16	15	1	2		Loans.....	12	16	0	0
	Other.....	33	30	19	18		Other.....	15	15	6	7
Biological sciences	Fellowship.....	9	5	5	2	Earth, atmospheric, & ocean sciences	Fellowship.....	9	5	3	1
	Traineeship.....	38	25	21	16		Traineeship.....	16	13	4	4
	Research assistantship...	70	59	42	35		Research assistantship...	83	77	54	45
	Teaching assistantship....	42	41	12	18		Teaching assistantship....	47	54	12	16
	Own funds.....	52	57	12	20		Own funds.....	56	65	15	24
	Loans.....	18	20	0	1		Loans.....	15	17	0	1
	Other.....	19	20	7	8		Other.....	31	27	12	9
Health sciences	Fellowship.....	5	3	2	0	Psychology	Fellowship.....	5	1	3	0
	Traineeship.....	30	21	11	7		Traineeship.....	27	13	10	4
	Research assistantship...	51	36	18	14		Research assistantship...	55	38	21	10
	Teaching assistantship....	35	27	10	9		Teaching assistantship....	58	43	20	9
	Own funds.....	81	84	45	60		Own funds.....	81	92	34	55
	Loans.....	22	20	2	3		Loans.....	42	59	5	16
	Other.....	35	33	12	7		Other.....	25	27	8	5
Engineering	Fellowship.....	6	3	4	1	Social sciences	Fellowship.....	16	5	5	1
	Traineeship.....	13	9	3	4		Traineeship.....	33	21	13	6
	Research assistantship...	82	68	59	44		Research assistantship...	47	37	15	11
	Teaching assistantship....	41	44	8	14		Teaching assistantship....	65	52	28	22
	Own funds.....	56	58	14	21		Own funds.....	74	80	29	46
	Loans.....	10	9	1	0		Loans.....	28	29	2	3
	Other.....	24	27	11	17		Other.....	31	32	8	11
Computer & information sciences	Fellowship.....	9	2	4	0						
	Traineeship.....	15	11	4	3						
	Research assistantship...	81	45	48	18						
	Teaching assistantship....	60	48	19	20						
	Own funds.....	58	73	18	41						
	Loans.....	8	10	0	0						
	Other.....	23	33	7	17						

**NOTE:** Primary support columns may not total 100 percent due to rounding. A total of 6,621 Ph.D.s did not report a primary mode of support and, of these, 1,779 did not report any mode of support. Percentages are based on actual responses. The nonresponse rate was 4 percent for any support and 24 percent for primary support.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

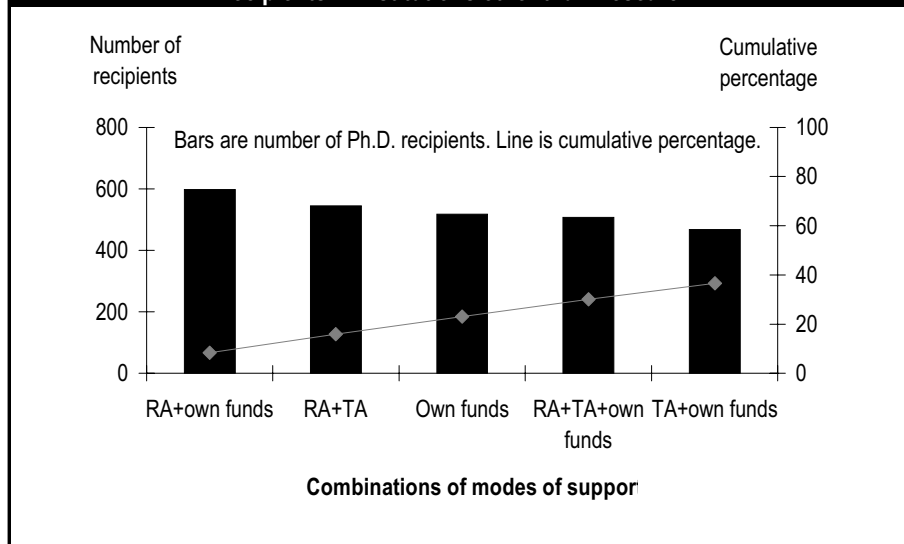
**Figure 10. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients in Research I institutions**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.

**Figure 11. Top five combinations of modes of support reported by 1995 S&E Ph.D. recipients in institutions other than Research I**



**NOTE:** RA=research assistantship; TA=teaching assistantship.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Earned Doctorates.