

## THE EXTENT OF FEDERAL S&E FUNDING TO MINORITY-SERVING INSTITUTIONS

by Richard J. Bennof

Minority institutions are an important subset of the universe of academic institutions. This InfoBrief presents key data on funding to historically black colleges and universities (HBCUs), Hispanic-serving institutions (HSIs), and tribal colleges and universities as derived from two surveys of the National Science Foundation's (NSF's) Division of Science Resources Statistics—the Survey of Federal S&E Support to Universities, Colleges, and Nonprofit Institutions and the Survey of Research and Development Expenditures at Universities and Colleges.

Universities and colleges in each of these three categories of minority institutions receive funds from Federal agencies in support of research and development and other science and engineering activities. More than for nonminority-serving institutions, these Federal S&E dollars are allocated relatively less for R&D and relatively more for S&E capacity-building activities (“capacity building” refers to the ability to create the infrastructure to do research and the training of scientists and engineers).

### Funding to HBCUs

The Survey of Federal S&E Support to Universities, Colleges, and Nonprofit Institutions collects data on six science and engineering (S&E) categories: R&D; fellowships, traineeships, and training grants (FTTGs); R&D plant; facilities and equipment for instruction; general support for S&E; and other S&E activities. The 2001 U.S. Department of Education Accredited Postsecondary Minority Institutions listing reported 105 HBCUs; from the Federal S&E Support survey, 76 HBCUs were reported as receiving Federal S&E obligations in fiscal year 2001.

Federal agencies provided over \$404 million (table 1) to HBCUs in FY 2001 in support of S&E. This was the highest amount ever and was a 21 percent increase over FY 2000. By comparison, Federal S&E obligations to all other academic institutions increased by 13 percent. Over the decade (FYs 1991 through 2001), the average annual increases for S&E obligations at both HBCUs and at all other academic institutions was virtually the same (nearly 7 percent).

R&D played a smaller role in Federal S&E obligations to HBCUs than in such obligations to all other academic institutions. In FY 2001, nearly three-fifths of all Federal S&E obligations to HBCUs was provided for R&D. The corresponding figure for all other academic

TABLE 1. Trends in Federal total S&E and R&D obligations at HBCUs and all other universities and colleges  
(Dollars in millions)

Fiscal year	HBCUs		All other universities	
	S&E	R&D	S&E	R&D
1991	214.2	122.9	11,693.4	9,969.0
1992	244.4	143.5	12,593.7	10,783.2
1993	232.7	141.0	12,602.1	10,884.1
1994	281.4	177.1	13,585.8	11,721.0
1995	328.8	202.7	14,132.3	11,978.2
1996	286.4	188.4	14,163.5	12,157.3
1997	327.3	185.0	14,768.7	12,834.5
1998	293.0	167.2	15,799.8	13,708.6
1999	326.4	194.6	17,730.7	15,374.5
2000	333.0	191.7	19,544.2	17,098.1
2001	404.3	240.3	22,084.0	19,144.4

HBCUs = historically black colleges and universities.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.



institutions was 87 percent (approximately \$19 billion of an S&E total of about \$22 billion) (tables 1&2).

The miscellaneous category “other S&E activities” accounted for the second largest portion of Federal S&E obligations at HBCUs (25 percent, or \$103 million) compared with a 6 percent share of Federal S&E support to non-HBCUs. Examples of “other S&E activities” include support for technical conferences, teacher institutes, and programs geared to increase the scientific knowledge of precollege and undergraduate students. Such activities comprise some of the building blocks of science education and future research capability.

### Agency Mix of HBCU Support Compared to All Other Academic Institutions

In FY 2001, the Department of Health and Human Services (HHS) obligated over one-third of all Federal S&E support that went to HBCUs and over two-fifths of all Federal R&D funds that went to HBCUs. The Department of Agriculture (USDA) funded about one-fourth and one-fifth of all HBCU S&E support and R&D, respectively. USDA’s significantly larger share of HBCU Federal S&E obligations when compared to its share for non-HBCUs (25 percent versus 5 percent, respectively) reflects the predominance of land grant colleges among HBCUs. About one-fifth of all HBCUs, but less than one-tenth of the approximately

1,100 non-HBCU academic institutions receiving Federal S&E support, are land grant colleges.

### Top 10 HBCUs

In FY 2001, 56 of the 76 HBCU recipients of Federal S&E funds showed current-dollar increases, as did 47 of the 67 HBCU Federal R&D recipients (table 3). When ranked by the amount of Federal R&D funding received in FY 2001, the leading 10 HBCU recipients accounted for 61 percent of all HBCU Federal R&D support and 53 percent of all HBCU S&E support. Eight of the top 10 HBCU Federal R&D recipients were also among the top 10 S&E recipients. The two institutions ranked among the top 10 Federal R&D HBCUs that were not among the top 10 S&E recipients (Southern University A&M All Campuses and Xavier University of Louisiana) were 11<sup>th</sup> and 12<sup>th</sup>, respectively, in Federal S&E support to HBCUs. Howard University, which received \$30 million in Federal R&D and \$36 million for all S&E, was the leading HBCU recipient ranked in both R&D and S&E obligations, as it has been for 7 consecutive years.

Data from the FY 2001 NSF Survey of Research and Development Expenditures at Universities and Colleges showed that the federally financed portion of R&D expenditures dominates the HBCU R&D total, accounting for 86 percent of FY 2001 total R&D spending at these

TABLE 2. Federal total S&E and R&D obligations to HBCUs and to all other universities and colleges, by agency: FY 2001

Agency	Science and engineering				Research and development			
	HBCUs		All other universities		HBCUs		All other universities	
	Dollars in thousands	Percent	Dollars in thousands	Percent	Dollars in thousands	Percent	Dollars in thousands	Percent
Total	404,252	100.0	22,083,967	100.0	240,332	100.0	19,144,394	100.0
USDA	99,379	24.6	1,099,808	5.0	45,721	19.0	616,655	3.2
DoD	30,826	7.6	2,121,987	9.6	25,348	10.5	1,923,159	10.0
DOE	4,870	1.2	762,941	3.5	4,573	1.9	753,007	3.9
HHS	142,330	35.2	12,688,816	57.5	101,341	42.2	11,789,157	61.6
NASA	51,232	12.7	1,076,107	4.9	33,531	14.0	871,482	4.6
NSF	47,231	11.7	3,273,939	14.8	12,660	5.3	2,564,475	13.4
All others	28,384	7.0	1,060,369	4.8	17,158	7.1	626,459	3.3

USDA = Department of Agriculture; DoD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, Fiscal Year 2001.

TABLE 3. Top 10 HBCUs receiving Federal S&E and R&D obligations in FY 2001, ranked by R&D obligations (Dollars in thousands)

Rank	Institution	R&D	S&E
All HBCUs		240,332	404,252
Top 10 HBCUs		147,317	212,239
1	Howard University	30,141	35,596
2	Morehouse School of Medicine	23,893	31,468
3	Meharry Medical College	15,782	20,550
4	Florida A&M University	14,962	24,615
5	Hampton University	14,186	18,160
6	Tuskegee University	13,222	18,561
7	NC Ag & Tech State U	11,273	23,016
8	Xavier U of Louisiana	8,390	12,204
9	Tennessee State U	8,373	15,654
10	Southern U A&M All Cmp	7,095	12,415

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2001.

institutions (table 4). For all non-HBCU institutions, the Federal share was substantially less (58 percent), which may indicate a Federal commitment to grow the research capability of these minority-serving institutions.

Over the FY 1991 through 2001 time frame, federally financed spending at HBCUs rose on an average annual basis by 8 percent (in current dollars), while other R&D sources at HBCUs showed a 4 percent annual increase. At non-HBCU institutions, in contrast, federally financed expenditures were up 6 percent a year on average over the decade; this rate was the same on average for all other R&D sources at non-HBCUs.

Looking at the R&D expenditures survey by S&E discipline yields the following observations:

- For federally financed R&D expenditures at HBCUs in FY 2001, a significantly larger portion of the total was for agricultural sciences than it was at all other universities and colleges reporting federally financed R&D expenditures (18 percent versus 3 percent). This difference again underscores the relatively large proportion of land grant colleges among HBCUs.
- The share of medical sciences within the federally financed R&D totals was three times greater at all other universities and colleges than at HBCUs reporting federally financed medical science expenditures: 33 percent compared to 11 percent of total S&E expenditures.

### HSIs

Of the approximately 300 Hispanic-serving institutions recognized in 2001 by the Department of Education,<sup>1</sup> 80 such institutions received Federal S&E support in FY 2001 totaling \$509 million. HHS supplied 56 percent of all Federal S&E obligations to HSIs (in line with its 57 percent share to all universities), and NSF obligated 14 percent of the Federal HSI total. Most of the remainder was provided by DoD (10 percent) and the National Aeronautics and Space Administration (9 percent). The top 10 HSIs received \$443 million, or 87 percent of all Federal S&E obligations to such institutions (table 5). The University of Miami (\$124 million) was the largest Hispanic-serving recipient and ranked 54<sup>th</sup> in Federal S&E obligations among all universities; three-fourths of that university's Federal S&E funds came from HHS. That agency funded 92 percent of the \$84 million total to the second-ranked HSI, the University of Texas Health Science Center at San Antonio. HHS supplied 58 percent of all Federal S&E support to the leading 10 HSIs.

TABLE 4. Trends in federally financed and all other R&D expenditures at HBCUs and all other universities and colleges (Dollars in millions)

Fiscal year	HBCUs		All other institutions	
	Federally financed	All other R&D	Federally financed	All other R&D
1991	122.7	28.1	10,111.7	7,323.0
1992	146.6	32.2	10,946.0	7,693.3
1993	157.2	34.2	11,799.4	7,960.1
1994	174.6	36.9	12,471.6	8,339.8
1995	199.3	42.1	13,128.7	8,795.2
1996	222.3	41.2	13,613.6	9,162.7
1997	254.3	36.1	14,055.1	10,017.8
1998	248.6	44.6	14,896.2	10,658.2
1999	216.5	38.3	15,854.1	11,396.0
2000	228.1	35.2	17,280.2	12,498.4
2001	261.9	41.6	18,929.0	13,490.6

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges from WebCASPAR database.

<sup>1</sup>Some of the HSIs are branch campuses within the Federal S&E Support Survey. Examples of branch campuses included in this report are the University of New Mexico—Main Campus, New Mexico State University—Main Campus, and the University of New Mexico—Los Alamos campus. (The University of New Mexico—Los Alamos data are not shown because it fell below the top 10 ranked HSI institutions).

TABLE 5. Top 10 Hispanic-serving institutions ranked by Federal S&amp;E obligations, by agency: FY 2001

(Dollars in thousands)

Rank	Institution	All agencies	USDA	DoD	HHS	DOE	NASA	NSF	All others
All S&E obligations									
All academic institutions		22,488,219	1,199,187	2,152,813	12,831,146	767,811	1,127,339	3,321,170	1,088,753
All Hispanic-serving institutions		509,234	18,512	49,508	286,687	10,387	44,997	69,764	29,379
Top 10		443,247	14,269	47,403	259,352	9,996	38,762	52,919	20,546
1	University of Miami	124,005	0	7,568	92,514	755	5,508	7,259	10,401
2	U of TX Hlth Sci San Antonio	84,401	0	5,759	77,534	0	150	703	255
3	U of New Mexico Main Campus	80,007	0	13,879	47,504	408	6,916	10,451	849
4	New Mexico State U Main Campus	52,655	1,365	15,480	7,047	1,623	16,844	7,343	2,953
5	Florida International U	21,822	0	1,415	7,088	6,422	1,473	3,975	1,449
6	U of PR Mayaguez	21,108	12,754	1,043	2,039	175	1,931	2,846	320
7	U of TX El Paso	17,435	0	774	4,781	0	2,198	9,355	327
8	CUNY City College	16,162	0	819	7,092	613	2,126	5,512	0
9	U of TX San Antonio	13,789	0	286	7,847	0	494	1,170	3,992
10	CA St U Los Angeles	11,863	150	380	5,906	0	1,122	4,305	0
R&D obligations									
All academic institutions		19,384,726	662,376	1,948,507	11,890,498	757,580	905,013	2,577,135	643,617
All Hispanic-serving institutions		379,214	6,810	46,913	236,174	10,387	22,086	43,571	13,273
Top 10		349,473	5,856	44,499	222,968	9,996	17,937	37,134	11,083
1	University of Miami	111,199	0	7,568	86,073	755	5,486	6,416	4,901
2	U of TX Hlth Sci San Antonio	77,270	0	5,530	70,632	0	150	703	255
3	U of New Mexico Main Campus	70,721	0	13,874	41,106	408	5,626	8,891	816
4	New Mexico State U Main Campus	29,919	1,364	13,280	3,964	1,623	1,562	5,381	2,745
5	Florida International U	17,937	0	1,415	4,743	6,422	934	3,136	1,287
6	CUNY City College	11,346	0	739	5,554	613	1,026	3,414	0
7	U of TX El Paso	9,317	0	764	1,911	0	1,444	4,999	199
8	U of PR Mayaguez	8,728	4,492	1,043	504	175	663	1,851	0
9	U of TX San Antonio	7,760	0	286	5,576	0	196	822	880
10	U of PR Rio Piedras	5,276	0	0	2,905	0	850	1,521	0

USDA = Department of Agriculture; DoD = Department of Defense; HHS = Department of Health and Human Services; DOE = Department of Energy; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2001.

Fifty-five HSIs received Federal R&D obligations in FY 2001, totaling \$379 million or 74 percent of total Federal S&E obligations to these institutions. (“Other S&E activities” was the second largest Federal funding category, accounting for 12 percent of the HSI total.) HHS obligated 62 percent of all Federal R&D support to HSIs—a proportion in line with HHS’ 61 percent share of all Federal academic R&D obligations. DoD and NSF provided the next largest shares of Federal R&D obligations to HSIs (12 and 11 percent, respectively).

The top 10 HSIs in terms of Federal R&D obligations accounted for \$349 million, or 92 percent, of all such obligations provided to these institutions. Thus, Federal R&D obligations are much more highly concentrated for HSIs than for HBCUs, whose top 10 Federal R&D share was 61 percent. The leading five Federal R&D recipients were ranked in the same order as for total S&E support to HSIs, and 9 of the top 10 R&D recipients were among the top 10 S&E Hispanic-serving recipients. HHS provided the majority of Federal R&D support to the top 10 recipients, obligating 64 percent of

all R&D to the top 10 R&D recipients and 77 percent of the R&D to the leading R&D recipient, the University of Miami. HHS provided 91 percent of the Federal R&D obligations accorded the second-ranked HSI, the University of Texas Health Science Center at San Antonio.

### **Tribal Colleges and Universities**

Most of the institutions (28 of 32) on the 2001 Department of Education listing of tribal colleges and universities received Federal S&E support in FY 2001; these funds totaled \$29 million. In contrast, just over one-fourth of all HSIs received Federal S&E support that year. NSF (46 percent) and USDA (32 percent) together provided over three-fourths of all Federal S&E funding to tribal institutions in FY 2001. USDA, which obligated S&E support to each of the 28 tribal universities that received Federal S&E funds, accounted for just 5 percent of Federal S&E support to all academic institutions in FY 2001. HHS, the dominant source of Federal support for HSIs, supplied just 9 percent of all tribal S&E support.

Disaggregating funding by S&E activity, \$16 million of the \$29 million obligated to tribal institutions supported the miscellaneous category “other S&E activities,” with \$6 million allocated to R&D and \$4 million to FTTGs. Each of the 28 tribal support recipients showed some Federal FTTG obligations in FY 2001, although only about half received R&D funding (see below). The leading 10 tribal institutions—topped by Montana’s Salish Kootenai College with \$4.3 million—received 77 percent (\$22 million) of the Federal S&E support total; about half of this amount was supplied by NSF (table 6).

The \$6 million in Federal R&D obligated to tribal colleges and universities in FY 2001 was distributed among 15 institutions, led by South Dakota’s Oglala Lakota College (\$1.4 million). HHS and NSF together supplied 91 percent of the R&D to the top two tribal recipients in FY 2001. HHS (27 percent), NSF (25 percent), and USDA (21 percent) together accounted for

nearly three-fourths of all Federal R&D obligations to tribal institutions. In comparison, HHS funded 61 percent of Federal support for academic R&D, NSF 13 percent, and USDA 3 percent.

### **Definitions**

The Higher Education Act of 1965 defines an HBCU as

...any historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of black Americans, and that is accredited by a nationally recognized accrediting agency or association determined by the Secretary [of Education] to be a reliable authority as to the quality of training offered or is, according to such an agency or association, making reasonable progress toward accreditation.

The U.S. Department of Education defines Hispanic-serving institutions are those whose full-time undergraduate enrollment of Hispanic students is 25 percent or more of total enrollment. Thus, the universe of HSIs can vary annually.

The designation of tribal institutions is covered under several Federal statutes. For example, the Tribally Controlled College and University Assistance Act covers 25 postsecondary institutions where 50 percent or more of student enrollment is American Indian.

For more information contact

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TABLE 6. Top 10 tribal colleges and universities ranked by Federal S&E obligations, by agency: FY 2001  
(Dollars in thousands)

Rank	Institution	All agencies	USDA	DoD	HHS	DOE	NASA	NSF	All others
<b>S&amp;E obligations</b>									
All academic institutions		22,488,219	1,199,187	2,152,813	12,831,146	767,811	1,127,339	3,321,170	1,088,753
All tribal colleges and universities		28,836	9,107	427	2,610	531	1,128	13,197	1,836
Top 10		22,220	5,391	367	2,424	531	1,028	11,276	1,203
1	Salish Kootenai College	4,260	314	0	356	0	373	3,217	0
2	Turtle Mountain CC	3,790	2,280	187	73	100	0	1,150	0
3	Fond du Lac Tribal & CC	3,011	362	0	0	0	0	2,649	0
4	Oglala Lakota College	2,603	317	0	0	0	42	2,160	84
5	Dine College	1,743	308	180	900	0	355	0	0
6	Fort Peck CC	1,535	886	0	0	0	0	611	38
7	United Tribes Tech Col	1,375	294	0	0	0	0	0	1,081
8	Haskell Indian Nations U	1,370	275	0	1,095	0	0	0	0
9	Southwestern Indian Poly	1,346	255	0	0	431	160	500	0
10	Northwest Indian College	1,187	100	0	0	0	98	989	0
<b>R&amp;D obligations</b>									
All academic institutions		19,384,726	662,376	1,948,507	11,890,498	757,580	905,013	2,577,135	643,617
All 15 tribal colleges and universities		6,070	1,247	427	1,645	531	0	1,519	701
1	Oglala Lakota College	1,353	109	0	0	0	0	1,160	84
2	Haskell Indian Nations U	1,125	30	0	1,095	0	0	0	0
3	Dine College	730	150	180	400	0	0	0	0
4	Turtle Mountain CC	487	200	187	0	100	0	0	0
5	Southwestern Indian Poly	481	50	0	0	431	0	0	0
6	Fond du Lac Tribal & CC	330	180	0	0	0	0	150	0
7	Sinte Gleska University	284	0	0	0	0	0	0	284
8	Salish Kootenai College	250	10	0	75	0	0	165	0
9	Dull Knife Memorial Col	206	150	0	0	0	0	0	56
10	Stone Child College	192	0	0	75	0	0	0	117
11	Fort Peck CC	188	150	0	0	0	0	0	38
12	United Tribes Tech Col	165	109	0	0	0	0	0	56
13	Fort Belknap College	126	0	60	0	0	0	0	66
14	Sisseton Wahpeton CC	109	109	0	0	0	0	0	0
15	Northwest Indian College	44	0	0	0	0	0	44	0

USDA = Department of Agriculture; DoD = Department of Defense; HHS = Department of Health and Human Services; DOE = Department of Energy;  
NASA = National Aeronautics and Space Administration; NSF = National Science Foundation.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2001.

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