

**Status on Research Funding
At the University of Missouri
2000**

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EXECUTIVE SUMMARY

This report highlights research funding at the University of Missouri using data provided by the National Science Foundation (NSF). More specifically, it examines research funding at the public AAU institutions and at the four campuses of the University of Missouri. NSF data have been used because they provide consistent data on research funding for all thirty-two public AAU institutions. Please note that the data used in this study are from fiscal year 1998. Although more recent data are available for the University of Missouri, this is the most recent data available for all public AAU institutions. References to the “University of Missouri” or the “University” refer to the four-campus system. Trends in research funding have been examined from 1990 to 1998 and from 1995 to 1998.

The key findings include:

Federal Research Expenditures

- On average, federal research expenditures at the University of Missouri have increased 39% over the past three years and 97% over the past eight years. This compares to an increase of 9% and 54%, respectively, at the public AAU institutions (Table 1).
- From 1995 to 1998, the University’s market share in federal research expenditures among the public AAU institutions has increased from 1.11% to 1.42%. It is the second consecutive year that the University’s market share has improved relative to the public AAU institutions. (Table 2).
- In terms of federal research expenditures, the University of Missouri ranked 28th among the 32 public AAU institutions in 1998. The University held the rank of 29th in 1990 (Table 3).
- Eighteen of the thirty-two public AAU institutions in 1998 relied on one disciplinary area to provide the majority of their federal research expenditures. In each of these eighteen cases the discipline area was life sciences (Table 4).

Industry-Sponsored Research Expenditures

- The University of Missouri secured \$6.5 million in industry-sponsored research expenditures in 1998. Although this amount is lower than in past years (e.g., \$10.1 million in 1995), new accounting methods have been responsible in part for this decline (Table 6).

Restricted Research Expenditures

- Fifty-five percent of the total research expenditures at the University of Missouri were restricted in 1998. This would rank the University 30th among the public AAU institutions in terms of the percentage of restricted research expenditures (Table 7).

ORGANIZATION

The report has been organized into the following sections:

Section I:	Federal Research Expenditures (Tables 1–5)
Section II:	Research Expenditures from Industry (Table 6)
Section III:	Restricted and Unrestricted Research Expenditures and Sources of Expenditures (Tables 7-8)
Section IV:	Definitions and Technical Notes
Appendix A & B:	Research Expenditures and Campus Comparison Groups

SECTION I: FEDERAL RESEARCH EXPENDITURES

The federal research expenditures reported in this section include expenditures classified as science and engineering (S&E) research and development (R&D) funds. When trend data are examined, increases or decreases in funding are noted from 1990 to 1998 and from 1995 to 1998. In addition, a definition of *federal research expenditures* is provided in Section IV: Definitions and Technical Notes.

Federal Flow-Through Expenditures

Beginning in 1996, federal research expenditures for the University of Missouri include federal flow-through expenditures. Originating from a federal agency, these expenditures have been awarded to industry, state agencies in Missouri, foundations, or another college or university and then passed on to the University of Missouri. The University has typically classified these expenditures based on the intermediary (i.e., industry, etc.). In 1996, however, the University of Missouri began classifying these expenditures based on their original source, the federal government. Consequently, the increase in federal research expenditures in fiscal years 1996, 1997 and 1998 for the University of Missouri can be partially attributed to this NSF-accepted classification method.

Please note that annual totals in research expenditures for FY1996 and FY1997 were retroactively changed in 1999. Consequently, these revised totals will not match previously published figures for these two fiscal years.

Table 1:

Public AAU Institutions: Trends in Federal Research Expenditures

Table 1 shows the trend in federal research expenditures for the public AAU institutions and the four campuses of the University of Missouri. Percentage increases in funds are displayed since 1990 and 1995.

- On average, federal research expenditures at the University of Missouri have increased 39% over the past three years and 97% over the past eight years. This compares to an increase of 9% and 54%, respectively, at the public AAU institutions.
- Since 1995, the University of Maryland, the University of Colorado, and the University of Florida, in that order, have made the most significant percentage gains among the public AAU institutions. There were nine public AAU institutions that did not show increases in federal research funding from 1995 to 1998.

Table 1. Trends in Federal Expenditures for Science and Engineering R&D at Public AAU Institutions from 1990 and 1995

Institution	(\$ in thousands)					% increase	% increase
	1990	1995	1996	1997	1998	since 1990	since 1995
U of Maryland-College Park	66,410	94,071	99,688	102,928	129,198	95%	37%
U of Colorado	116,394	169,666	177,517	192,201	228,342	96%	35%
U of Florida	64,614	79,361	86,973	94,231	106,510	65%	34%
U of Illinois-Urbana	117,168	139,078	145,514	156,366	168,871	44%	21%
U of Kansas	26,786	42,209	41,858	46,733	50,567	89%	20%
U of Pittsburgh	90,700	144,487	149,960	160,833	168,511	86%	17%
U of California-Los Angeles	164,442	201,773	236,635	238,919	233,702	42%	16%
U of Washington	203,353	291,284	312,695	320,784	336,748	66%	16%
U of Texas-Austin	109,593	143,939	147,808	151,954	165,082	51%	15%
U of Oregon	20,151	23,789	26,411	26,020	27,041	34%	14%
U of Nebraska-Lincoln	22,686	36,897	32,352	41,269	41,888	85%	14%
U of Michigan	180,456	275,956	281,062	296,028	311,450	73%	13%
U of Iowa	79,046	103,115	105,646	108,534	115,312	46%	12%
Indiana U	57,155	86,041	90,881	96,087	95,840	68%	11%
U of N Carolina-Chapel Hill	92,468	156,626	157,034	153,985	171,505	85%	9%
U of Virginia	58,801	85,244	75,256	82,488	93,328	59%	9%
U of California-Berkeley	131,717	157,826	168,171	186,349	171,135	30%	8%
U of California-Santa Barbara	47,873	63,443	73,400	74,149	68,408	43%	8%
U of Minnesota	143,810	194,819	198,927	200,149	204,741	42%	5%
U of Wisconsin-Madison	178,862	229,381	233,174	233,760	240,513	34%	5%
Michigan State U	58,221	77,499	77,243	82,977	81,146	39%	5%
Ohio State U	78,878	122,660	118,811	122,582	124,177	57%	1%
SUNY-Buffalo	66,876	75,713	87,813	78,092	76,037	14%	0%
Purdue U	64,464	93,256	91,632	91,969	92,844	44%	0%
Pennsylvania State U	136,656	187,481	190,688	185,206	186,274	36%	-1%
Rutgers, the State U of NJ	40,977	72,567	67,588	68,225	69,829	70%	-4%
U of Arizona	92,920	168,791	154,004	152,221	161,999	74%	-4%
U of California-Irvine	52,492	69,655	72,994	71,472	65,902	26%	-5%
U of California-Davis	77,424	122,645	130,188	123,673	114,912	48%	-6%
U of California-San Diego	182,555	284,445	291,917	274,860	262,303	44%	-8%
Iowa State U	34,043	58,766	54,904	52,938	51,196	50%	-13%
Public AAU Institution Average	92,193	130,725	134,798	137,677	142,429	54%	9%
University of Missouri:*							
Columbia	24,422	32,420	38,938	43,335	45,448	86%	40%
Kansas City	2,767	4,506	5,087	5,380	6,199	124%	38%
Rolla	3,863	5,834	7,542	8,080	7,934	105%	36%
St Louis	1,167	2,840	3,349	3,650	3,975	241%	40%
University Total	32,219	45,600	54,916	60,445	63,556	97%	39%

Source: National Science Foundation, Survey of Research and Development Expenditures at Colleges and Universities, FY1998

* Federal flow-through funds are included in the University of Missouri figures beginning in FY 1996.
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Table 2:

Public AAU Institutions: Market Share Increases and Decreases in Federal Research Expenditures

An alternative approach to understanding how well the University of Missouri has "competed" with other public AAU institutions is to examine the market share of each institution over time. That is, of the total federal research expenditures secured by the public AAU institutions in a given year, what percentage of that total has each institution secured? How has that institution's market share shifted from year to year? One advantage of market share analysis is that it helps to level the playing field among major and less-than-major players who compete for research dollars. In Table 2, the market share of federal research expenditures has been calculated for the public AAU institutions in 1990, 1995, and 1998.

- Among the public AAU institutions, the market share for the University of Missouri held steady at 1.11% from 1990 to 1995. During the past three years, however, the University's market share has increased from 1.11% to 1.42%.

Table 2. Market Share Gain or Loss in Federal Expenditures for Science and Engineering R&D at Public AAU Institutions, 1990 to 1998

(\$ in thousands)

Institution	1990		1995		1998		MS +/- since 1990	MS +/- since 1995
	\$	Market Share	\$	Market Share	\$	Market Share		
U of Colorado	116,394	4.03	169,666	4.14	228,342	5.10	1.07	0.96
U of Maryland-College Park	66,410	2.30	94,071	2.30	129,198	2.88	0.59	0.59
U of Florida	64,614	2.24	79,361	1.94	106,510	2.38	0.14	0.44
U of Washington	203,353	7.04	291,284	7.11	336,748	7.52	0.48	0.41
U of Illinois-Urbana	117,168	4.05	139,078	3.39	168,871	3.77	-0.28	0.38
University Total	32,219	1.11	45,600	1.11	63,556	1.42	0.30	0.31
U of California-Los Angeles	164,442	5.69	201,773	4.92	233,702	5.22	-0.47	0.29
U of Pittsburgh	90,700	3.14	144,487	3.53	168,511	3.76	0.62	0.24
U of Michigan	180,456	6.24	275,956	6.73	311,450	6.95	0.71	0.22
U of Texas-Austin	109,593	3.79	143,939	3.51	165,082	3.69	-0.11	0.17
U of Kansas	26,786	0.93	42,209	1.03	50,567	1.13	0.20	0.10
U of Iowa	79,046	2.73	103,115	2.52	115,312	2.57	-0.16	0.06
Indiana U	57,155	1.98	86,041	2.10	95,840	2.14	0.16	0.04
U of Nebraska-Lincoln	22,686	0.78	36,897	0.90	41,888	0.94	0.15	0.03
U of Oregon	20,151	0.70	23,789	0.58	27,041	0.60	-0.09	0.02
U of N Carolina-Chapel Hill	92,468	3.20	156,626	3.82	171,505	3.83	0.63	0.01
U of Virginia	58,801	2.03	85,244	2.08	93,328	2.08	0.05	0.00
U of California-Santa Barbara	47,873	1.66	63,443	1.55	68,408	1.53	-0.13	-0.02
U of California-Berkeley	131,717	4.56	157,826	3.85	171,135	3.82	-0.74	-0.03
Michigan State U	58,221	2.01	77,499	1.89	81,146	1.81	-0.20	-0.08
SUNY-Buffalo	66,876	2.31	75,713	1.85	76,037	1.70	-0.62	-0.15
U of Minnesota	143,810	4.98	194,819	4.75	204,741	4.57	-0.40	-0.18
Purdue U	64,464	2.23	93,256	2.28	92,844	2.07	-0.16	-0.20
Rutgers, the State U of NJ	40,977	1.42	72,567	1.77	69,829	1.56	0.14	-0.21
Ohio State U	78,878	2.73	122,660	2.99	124,177	2.77	0.04	-0.22
U of Wisconsin-Madison	178,862	6.19	229,381	5.60	240,513	5.37	-0.82	-0.23
U of California-Irvine	52,492	1.82	69,655	1.70	65,902	1.47	-0.34	-0.23
Iowa State U	34,043	1.18	58,766	1.43	51,196	1.14	-0.03	-0.29
Pennsylvania State U	136,656	4.73	187,481	4.57	186,274	4.16	-0.57	-0.42
U of California-Davis	77,424	2.68	122,645	2.99	114,912	2.57	-0.11	-0.43
U of Arizona	92,920	3.21	168,791	4.12	161,999	3.62	0.40	-0.50
U of California-San Diego	182,555	6.32	284,445	6.94	262,303	5.86	-0.46	-1.08
		100.00		100.00		100.00		

Market Share (MS): An institution's federal research expenditures in a given year divided by the federal research expenditures for all public AAU institutions in the same year.

Source: National Science Foundation, Survey of Research and Development Expenditures at Colleges and Universities, FY 1998

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* Federal flow-through funds are included in the University of Missouri figures beginning in FY 1996.

Table 3:

Public AAU Institutions: The University of Missouri's Rank in Federal Research Expenditures

Table 3 ranks the public AAU institutions in terms of federal research dollars secured in 1990 and 1998.

- The University of Missouri ranked 28th among the 32 public AAU institutions in 1998. This is one position better than its 1990 ranking (29th).

Table 3. Federal Expenditures for Science and Engineering R&D: Changes in Rank Among the Public AAU Institutions between 1990 and 1998

(\$ in thousands)					
1990			1998		
Rank	Institution	\$	Rank	Institution	\$
1	U of Washington	203,353	1	U of Washington	336,748
2	U of California-San Diego	182,555	2	U of Michigan	311,450
3	U of Michigan	180,456	3	U of California-San Diego	262,303
4	U of Wisconsin-Madison	178,862	4	U of Wisconsin-Madison	240,513
5	U of California-Los Angeles	164,442	5	U of California-Los Angeles	233,702
6	U of Minnesota	143,810	6	U of Colorado	228,342
7	Pennsylvania State U	136,656	7	U of Minnesota	204,741
8	U of California-Berkeley	131,717	8	Pennsylvania State U	186,274
9	U of Illinois-Urbana	117,168	9	U of N Carolina-Chapel Hill	171,505
10	U of Colorado	116,394	10	U of California-Berkeley	171,135
11	U of Texas-Austin	109,593	11	U of Illinois-Urbana	168,871
12	U of Arizona	92,920	12	U of Pittsburgh	168,511
13	U of N Carolina-Chapel Hill	92,468	13	U of Texas-Austin	165,082
14	U of Pittsburgh	90,700	14	U of Arizona	161,999
15	U of Iowa	79,046	15	U of Maryland-College Park	129,198
16	Ohio State U	78,878	16	Ohio State U	124,177
17	U of California-Davis	77,424	17	U of Iowa	115,312
18	SUNY-Buffalo	66,876	18	U of California-Davis	114,912
19	U of Maryland-College Park	66,410	19	U of Florida	106,510
20	U of Florida	64,614	20	Indiana U	95,840
21	Purdue U	64,464	21	U of Virginia	93,328
22	U of Virginia	58,801	22	Purdue U	92,844
23	Michigan State U	58,221	23	Michigan State U	81,146
24	Indiana U	57,155	24	SUNY-Buffalo	76,037
25	U of California-Irvine	52,492	25	Rutgers, the State U of NJ	69,829
26	U of California-Santa Barbara	47,873	26	U of California-Santa Barbara	68,408
27	Rutgers, the State U of NJ	40,977	27	U of California-Irvine	65,902
28	Iowa State U	34,043		University Total	63,556
	University Total	32,219	28	Iowa State U	51,196
29	U of Kansas	26,786	29	U of Kansas	50,567
30	U of Missouri-Columbia	24,422	30	U of Missouri-Columbia	45,448
31	U of Nebraska-Lincoln	22,686	31	U of Nebraska-Lincoln	41,888
32	U of Oregon	20,151	32	U of Oregon	27,041

Source: National Science Foundation, Survey of Research and Development Expenditures at Colleges and Universities, FY 1998

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Table 4:
Distribution of Federal Research Expenditures by Field

Table 4 displays the federal research expenditures by discipline area for the University of Missouri and public AAU institutions.

- In 1998 the majority of federal research funds expended by the public AAU institutions were in the life sciences (52%) followed by engineering (16%), the physical sciences (13%) and environmental sciences (7%). The remaining disciplines accounted for 12% of the expenditures.
- Eighteen of the thirty-one public AAU institutions in 1998 (not including the University of Missouri) relied on one disciplinary area to provide the majority of their federal research expenditures. In every one of these cases the discipline area was life sciences.
- Where Columbia and Kansas City secured 70% and 80% of their federal expenditures from life sciences, respectively, Rolla garnered 69% of its federal funds in engineering and St Louis received 32% of its federal funds in physical sciences and 32% of its federal funding in life sciences.

Table 4. Federal R&D Expenditures at the Public AAU Institutions by Science and Engineering Field, FY1998

Institution	Engi- neering	Physical	Environ- mental	Math & computer	Life sciences	Psy- chology	Social sciences	Other sciences	Total
	Row Percentages								(in thousands)
U of Washington	7	5	17	2	66	3	0	0	336,748
University of Michigan	22	6	6	1	55	2	8	0	311,450
U CA San Diego	10	11	23	5	48	1	2	0	262,303
U WI Madison	14	12	7	3	53	6	5	0	240,513
U CA Los Angeles	12	10	2	4	68	2	1	0	233,702
University of Colorado	7	13	27	3	46	2	1	0	228,342
University of Minnesota	12	7	2	4	71	3	1	0	204,741
Pennsylvania State U	46	8	7	1	28	3	6	1	186,274
U of NC Chapel Hill	0	5	4	4	76	2	10	0	171,505
U CA Berkeley	28	24	1	2	38	3	2	1	171,135
U of Illinois Urbana	32	11	4	25	19	2	2	6	168,871
University of Pittsburgh	2	5	0	2	86	2	2	1	168,511
U TX Austin	28	45	4	9	11	2	1	0	165,082
University of Arizona	15	27	4	4	46	1	3	0	161,999
U MD College Park	30	25	5	10	9	1	21	0	129,198
Ohio State University	15	9	5	3	58	2	7	0	124,177
U of Iowa	7	10	0	1	77	2	2	0	115,312
U CA Davis	9	8	2	2	77	1	1	0	114,912
University of Florida	20	9	2	5	60	2	2	0	106,510
Indiana University	0	18	1	2	68	6	5	0	95,840
University of Virginia	16	11	4	6	60	3	1	0	93,328
Purdue University	38	15	3	5	35	2	3	0	92,844
Michigan State University	6	24	0	2	56	2	9	0	81,146
SUNY Buffalo	19	7	0	3	64	6	1	0	76,037
Rutgers the State U NJ	16	15	9	12	36	4	7	0	69,829
U CA Santa Barbara	39	20	17	10	8	2	5	0	68,408
U CA Irvine	6	19	2	4	63	3	2	0	65,902
Iowa State University	28	10	2	6	40	0	14	0	51,196
University of Kansas	15	11	4	1	56	1	1	10	50,567
U of Nebraska Lincoln	9	10	21	2	53	1	4	0	41,888
University of Oregon	6	22	9	10	44	6	3	0	27,041
Public AAU Distribution	16	13	7	5	52	2	4	0	
University of Missouri:									
Columbia	9	5	1	1	70	5	8	0	45,448
Kansas City	0	6	0	12	80	0	1	0	6,199
Rolla	69	20	7	3	2	0	0	0	7,934
St Louis	0	32	0	2	32	21	14	0	3,975
University Total	15	8	2	3	60	5	7	0	63,556

Source: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, FY1998
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Table 5:
Market Share of Federal Research Expenditures within Each Discipline Area among the Public AAU Institutions

Table 5 displays each public AAU institution's market share within the eight discipline areas. The University of Missouri's federal research expenditures from the four campuses has been pooled.

- The discipline areas where the University of Missouri had secured the most significant market share were in psychology (3.0%), social sciences (2.4%), life sciences (1.6%), and engineering (1.3%).
- Market share leaders in each discipline area were: Pennsylvania State in engineering (11.7%), the University of Texas in the physical sciences (12.9%), the University of Colorado in environmental sciences (19.1%), and the University of Illinois in math and computer science (20.6%). In addition, the leaders by discipline area included the University of Washington in life sciences (9.5%), UW Madison in psychology (13.1%), and the University of Maryland in the social sciences (15.0%).

Table 5. Market Share in Federal R&D Expenditures by Discipline Area Among the Public AAU Institutions, FY1998

Institution	Engi- neering	Physical	Environ- mental	Math & computer	Life sciences	Psy- chology	Social sciences	Other sciences	Total
	Row Percentages								(in thousands)
U of Washington	3.0	2.9	17.8	3.9	9.5	8.3	0.4	0.0	336,748
University of Michigan	9.4	3.0	5.7	1.8	7.3	5.0	14.7	1.7	311,450
U CA San Diego	3.7	4.9	18.4	6.0	5.4	2.3	2.6	0.2	262,303
U WI Madison	4.7	4.9	5.3	3.8	5.4	13.1	6.9	0.1	240,513
U CA Los Angeles	3.8	4.2	1.7	4.3	6.8	4.8	1.6	0.0	233,702
University of Colorado	2.3	5.4	19.1	3.1	4.5	3.8	1.3	4.7	228,342
University of Minnesota	3.3	2.6	1.4	4.3	6.2	5.1	1.2	0.0	204,741
Pennsylvania State U	11.7	2.5	3.8	1.1	2.2	5.3	6.6	11.0	186,274
U of NC Chapel Hill	0.0	1.4	1.9	3.0	5.6	2.8	9.5	0.0	171,505
U CA Berkeley	6.6	7.3	0.8	1.9	2.8	4.1	2.3	5.4	171,135
U of Illinois Urbana	7.4	3.3	2.0	20.6	1.3	3.5	1.8	42.4	168,871
University of Pittsburgh	0.5	1.5	0.2	1.3	6.2	3.8	1.5	5.4	168,511
U TX Austin	6.4	12.9	2.0	7.6	0.8	2.4	1.2	0.2	165,082
University of Arizona	3.3	7.7	1.8	3.3	3.2	0.8	2.8	0.6	161,999
U MD College Park	5.3	5.6	2.1	6.3	0.5	1.1	15.0	0.0	129,198
Ohio State University	2.6	2.0	1.9	1.7	3.1	2.5	5.2	1.7	124,177
U of Iowa	1.2	2.1	0.1	0.4	3.8	2.1	1.3	0.0	115,312
U CA Davis	1.4	1.6	0.6	1.3	3.8	1.3	0.4	0.0	114,912
University of Florida	3.0	1.8	0.6	2.5	2.7	2.1	0.9	0.1	106,510
Indiana University	0.0	3.0	0.2	1.1	2.8	5.1	2.6	0.5	95,840
University of Virginia	2.0	1.8	1.2	2.7	2.4	2.5	0.3	0.0	93,328
Purdue University	4.8	2.5	0.7	2.1	1.4	1.6	1.5	0.7	92,844
Michigan State University	0.7	3.4	0.1	1.0	1.9	1.2	4.2	0.2	81,146
SUNY Buffalo	1.9	0.9	0.1	1.1	2.1	3.9	0.5	0.0	76,037
Rutgers the State U NJ	1.6	1.8	1.9	4.3	1.1	2.9	2.8	0.2	69,829
U CA Santa Barbara	3.6	2.4	3.5	3.3	0.2	1.1	2.0	0.2	68,408
U CA Irvine	0.6	2.2	0.5	1.3	1.8	2.1	0.9	0.0	65,902
University Total	1.3	0.9	0.3	0.8	1.6	3.0	2.4	0.1	63,556
Iowa State University	2.0	0.9	0.3	1.6	0.9	0.0	3.9	0.9	51,196
University of Kansas	1.1	1.0	0.7	0.3	1.2	0.7	0.2	23.6	50,567
U of Nebraska Lincoln	0.5	0.7	2.7	0.5	1.0	0.3	0.8	0.0	41,888
University of Oregon	0.2	1.1	0.7	1.4	0.5	1.4	0.5	0.0	27,041
Public AAU Distribution	727,840	572,916	326,581	201,840	2,341,970	107,415	178,311	21,994	4,478,867

Note: Boxed figures in each column identify the market share leader among the public AAU institutions in each discipline area.

Source: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, FY1998

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SECTION II: RESEARCH EXPENDITURES FROM INDUSTRY

***Table 6:
Industry-Sponsored Research Expenditures***

Table 6 shows the growth in industry-sponsored research expenditures for the public AAU institutions from 1990 to 1998 and from 1995 to 1998. The institutions are arranged in descending order based on their level of growth in dollars since 1995. Please note that a definition of *industry-sponsored research expenditures* is provided in Section III: Definitions and Technical Notes.

- Over the past three years, the University of Texas, Ohio State University, and UC San Diego have shown the largest gains in industry-sponsored research expenditures among the public AAU institutions.
- The institutions that lead the public AAU group in terms of industry-sponsored research are Pennsylvania State University (\$63.3 million), Ohio State University (\$40.4 million), and the University of Washington (\$38.4 million).
- The University of Missouri secured \$6.5 million in industry-sponsored research expenditures in 1998.

Table 6. Industry-Sponsored R&D Expenditures at Public AAU Institutions Since 1990 and 1995

Institution	(\$ in thousands)					\$ Gain/Loss since 1995
	1990	1995	1996	1997	1998	
U TX Austin	3,507	3,257	15,029	29,887	31,326	28,069
Ohio State University	14,744	21,827	30,870	36,685	40,401	18,574
U CA San Diego	9,135	11,363	15,130	19,266	26,814	15,451
Pennsylvania State U	34,806	50,225	52,771	56,666	63,319	13,094
U CA Los Angeles	8,310	14,892	15,788	19,586	27,817	12,925
University of Florida	12,237	10,611	23,532	25,217	21,393	10,782
U CA Berkeley	10,892	13,842	15,128	17,125	20,483	6,641
U CA Irvine	3,115	9,139	10,391	10,445	15,712	6,573
U CA Davis	7,461	8,053	9,387	9,362	14,077	6,024
U of Iowa	6,827	11,359	14,862	15,712	17,262	5,903
Iowa State University	5,525	8,017	7,407	8,499	13,717	5,700
University of Michigan	27,128	28,987	34,975	31,411	33,029	4,042
U of NC Chapel Hill	2,179	2,403	2,592	3,311	4,860	2,457
University of Colorado	7,426	7,607	8,902	9,403	9,963	2,356
University of Pittsburgh	6,481	8,208	7,880	9,753	10,436	2,228
U of Illinois Urbana	20,762	11,832	12,365	11,761	13,917	2,085
Purdue University	11,632	25,147	25,720	26,090	26,988	1,841
U of Nebraska Lincoln	3,394	3,145	3,465	4,651	4,721	1,576
U of Washington	22,215	36,892	36,180	37,744	38,370	1,478
U WI Madison	12,123	12,948	13,871	14,832	14,371	1,423
Rutgers the State U NJ	6,754	7,797	7,079	8,848	9,038	1,241
University of Arizona	10,246	15,300	13,106	14,964	16,392	1,092
U CA Santa Barbara	2,655	2,576	2,988	2,876	3,666	1,090
University of Minnesota	18,086	23,427	23,726	24,196	24,094	667
Indiana University	2,316	5,815	5,357	4,242	6,333	518
University of Kansas	4,473	8,149	9,356	8,201	8,281	132
Michigan State University	4,557	7,853	6,818	6,973	7,250	-603
University of Virginia	6,406	15,442	4,552	7,627	12,400	-3,042
SUNY Buffalo	2,118	13,390	13,186	14,480	3,021	-10,369
U MD College Park	14,229	25,431	24,044	5,009	2,127	-23,304
Public AAU Average	10,058	14,164	15,549	16,494	18,053	
University of Missouri:						
Columbia	9,130	10,114	3,158	3,777	4,348	-5,766
Kansas City	1,383	636	154	348	505	-131
Rolla	2,186	1,316	2,364	1,575	1,361	45
St Louis	69	409	191	274	273	-136
University Total	12,768	12,475	5,867	5,974	6,487	-5,988

Source: National Science Foundation, Survey of Research and Development Expenditures at Colleges and Universities, FY 1998
P&B, 1/2000

SECTION III:

RESTRICTED AND UNRESTRICTED RESEARCH EXPENDITURES

Universities have sources other than federal agencies for funding research operations on their campus. These sources include funds from state & local agencies, business & industry, and funds that are provided by the institution itself. Typically, funds that are provided by a source external to the institution (e.g., federal agency, state agency, industry, etc.) for a specific research purpose are labeled "restricted expenditures." That is, they are "restricted" because the external agency has provided the funds for a specific research project and these funds must be spent on this project. On the other hand, unrestricted research expenditures are generally provided by internal sources (e.g., governing board, the institution, etc.) and can be used for a research purpose determined by the institution.

Generally speaking, the higher the percentage of restricted research expenditures the better because the institution is using external sources to fuel its research endeavors. In addition, it is probably even more favorable if these restricted research expenditures originate from federal or industry sources in contrast to state & local sources. That is, state funds that are used to fuel research at public universities are still commitments of the state's resources. Further, research funds provided by federal agencies--in contrast to state agencies--typically provide a higher percentage of the indirect costs affiliated with the research project.

Table 7:
Restricted and Unrestricted Research Expenditures

Table 7 shows the restricted and unrestricted research expenditures for the public AAU institutions. These data originate from the IPEDS-F (Finance) annual survey and not from the NSF survey.

- The University of Washington (95%), UC San Diego (91%), and the University of Colorado (91%) received the highest percentage of restricted research funds among the public AAU institutions. The public AAU institutions average 80% in restricted research expenditures.
- Fifty-five percent of the total research expenditures at the University of Missouri were restricted in 1998. This would rank the University 30th among the public AAU institutions in terms of the percentage of restricted research expenditures.

Table 7. Restricted and Unrestricted Research Expenditures at Public AAU Institutions, FY1998

Institutions	(\$ in thousands)			Percentage Restricted
	Unrestricted	Restricted	Total	
U of Washington	16,766	341,002	357,768	95%
University of Colorado	12,903	138,603	151,506	91%
U CA San Diego	27,359	284,522	311,881	91%
U of Iowa	15,911	121,984	137,895	88%
U CA Los Angeles	37,386	282,659	320,045	88%
U CA Santa Barbara	9,829	67,120	76,949	87%
Iowa State University	17,411	109,118	126,529	86%
Ohio State University	27,329	171,075	198,404	86%
University of Michigan	55,014	330,336	385,350	86%
U CA Irvine	14,131	82,663	96,794	85%
Purdue University	16,754	96,351	113,105	85%
University of Virginia	19,187	110,162	129,349	85%
U of NC Chapel Hill	25,411	135,717	161,128	84%
U CA Berkeley	46,362	220,183	266,545	83%
Michigan State University	26,167	124,271	150,438	83%
University of Minnesota	57,879	271,820	329,699	82%
University of Pittsburgh	34,293	159,582	193,875	82%
U TX Austin	41,125	173,565	214,690	81%
University of Oregon	6,779	27,468	34,247	80%
Indiana University	12,635	42,697	55,332	77%
Pennsylvania State U	54,401	181,032	235,433	77%
U of Illinois Urbana	58,829	178,537	237,366	75%
University of Arizona	53,709	153,504	207,213	74%
SUNY Buffalo	15,261	42,928	58,189	74%
U MD College Park	47,813	127,729	175,542	73%
U WI Madison	114,158	299,443	413,601	72%
U CA Davis	57,202	143,415	200,617	71%
University of Kansas	24,985	38,083	63,068	60%
Rutgers the State U NJ	57,910	79,974	137,884	58%
University of Florida	117,625	134,555	252,180	53%
U of Nebraska Lincoln	48,505	32,165	80,670	40%
Public AAU Average	37,775	151,686	189,461	80%
University of Missouri:				
Columbia	46,635	52,466	99,101	53%
Kansas City	3,457	6,966	10,423	67%
Rolla	6,245	9,329	15,574	60%
St Louis	2,860	4,280	7,140	60%
University Total	59,197	73,041	132,238	55%

Notes: 1) The figures reported in this table are from the IPEDS Finance (F-1) report and not from NSF, the source used for all previous tables. 2) Please note that this table does not include indirect costs.

Source: IPEDS F-1
P&B, 1/2000

Table 8:
Sources of Research Expenditures

Table 8 shows the sources of research expenditures for the public AAU institutions. The institutions are arranged in descending order, based on the institution's percentage of research funds that are provided by the federal government.

- The University of Oregon, University of Pittsburgh, and University of Washington received over 75% of their research expenditures from the federal government, ranking them at the top among the public AAU institutions.
- Among the thirty-two public AAU institutions, the University of Missouri would rank near the bottom in terms of the percentage of research funds it receives from the federal government.
- The University of Missouri funds a higher percentage of its research program (42% to 50%, depending on which campus) with institutional funds than the other public AAU institutions.

Table 8. Total R&D Expenditures at the Public AAU Institutions by Source of Funds, FY1998

Institution	Federal Gov't	State & Local	Industry	Institutional*	Other	Total
						(in thousands)
University of Oregon	81%	1%	0%	11%	7%	33,315
University of Pittsburgh	79%	0%	5%	9%	7%	213,842
U of Washington	78%	2%	9%	9%	2%	432,383
University of Colorado	73%	2%	3%	11%	11%	311,203
U of NC Chapel Hill	73%	13%	2%	12%	0%	235,296
U CA Santa Barbara	71%	2%	4%	16%	7%	96,034
University of Virginia	70%	3%	9%	9%	9%	133,049
U TX Austin	67%	6%	13%	12%	2%	244,843
University of Michigan	63%	1%	7%	22%	8%	496,761
U CA San Diego	63%	5%	6%	17%	9%	418,790
U of Iowa	58%	3%	9%	23%	7%	199,063
U MD College Park	58%	17%	1%	22%	3%	223,190
University of Minnesota	57%	13%	7%	15%	8%	360,323
Indiana University	56%	1%	4%	28%	11%	171,754
U WI Madison	54%	9%	3%	22%	12%	443,695
University of Arizona	54%	3%	5%	34%	4%	302,328
U CA Los Angeles	52%	2%	6%	26%	14%	447,367
Pennsylvania State U	51%	4%	17%	28%	0%	362,643
U CA Irvine	51%	4%	12%	21%	12%	130,415
SUNY Buffalo	50%	3%	2%	26%	19%	151,650
U of Illinois Urbana	50%	10%	4%	32%	4%	338,841
University of Kansas	43%	8%	7%	30%	11%	117,115
Purdue University	43%	11%	12%	34%	0%	216,479
Michigan State University	42%	18%	4%	32%	4%	193,611
Ohio State University	41%	18%	13%	20%	8%	301,518
U CA Berkeley	41%	11%	5%	34%	9%	420,435
U CA Davis	40%	7%	5%	41%	8%	288,796
University of Florida	39%	21%	8%	29%	4%	274,862
Rutgers the State U NJ	35%	12%	5%	40%	8%	197,053
U of Nebraska Lincoln	35%	33%	4%	26%	2%	118,857
Iowa State University	33%	30%	9%	27%	2%	156,766
Public AAU Average	55%	9%	6%	23%	7%	
University of Missouri:						
Columbia	33%	12%	3%	46%	4%	136,061
Kansas City	48%	1%	4%	42%	5%	12,875
Rolla	36%	1%	6%	50%	7%	21,740
St Louis	42%	3%	3%	49%	3%	9,462

* Institutional funds include: 1) institutionally financed funds and 2) unreimbursed costs.

Source: NSF, Survey of R&D Expenditures at Colleges and Universities, FY1998.

P&B, 1/2000

SECTION IV: DEFINITIONS AND TECHNICAL NOTES

The following definitions, provided by the National Science Foundation (NSF), are most relevant to the tables in this report:

Federal research expenditures: when funds for research from the federal government are actually spent they are then considered "expenditures." For example, if the University received a two-year, two million dollar grant from NASA in FY1993 and spent \$1.5 million the first year and \$0.5 million in the second year, the federal expenditures would be \$1.5 million for FY1993 and \$0.5 million for FY1994. The reporting of expenditures, in contrast to obligations, provides a more accurate picture of an institution's research performance because it represents funds that have been already spent as compared to funds that have been promised or are expected. Furthermore, expenditure figures are less likely to show major shifts from year to year because funds received for multi-year grants are only reported in the year that they are spent.

Industry-sponsored research expenditures: these are funds provided by profit making organizations and expended by the University for research-related purposes. These amounts are reported in the fiscal year that they are expended.

The National Science Foundation has historically reported research obligations and expenditures from a number of different perspectives. In this report, specifically, academic Science & Engineering (S&E) obligations and expenditures for Research & Development (R&D) are examined. Thus, funds received from the federal government for Plant, Facilities & Equipment; Fellowships, Traineeships, and Training Grants; General Support; and for other categories have been excluded. For brevity, "Science and Engineering" and "Research and Development" have not been repeated in the text of this document.

For further clarification, please see "IB99-4: Defining Federal Research Expenditures, Federal Research Obligations, and Federal Research Awards" at the following website:

http://www.system.missouri.edu/planning/Issue_Brief/IB99-4.html.

Questions or Comments

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APPENDIX A AND B: RESEARCH EXPENDITURES AND CAMPUS COMPARATOR GROUPS

In response to the University-wide Strategic Planning initiative, the following tables were added to the Research Funding Report. Appendix A examines federal research expenditures relative to a different group of comparator institutions for each of the University of Missouri campuses. Specifically, annual growth and market share are reported. Appendix B examines industry-sponsored research expenditures relative to the same group of comparator institutions for each campus. In these tables, annual growth and rank are reported.

For more information on how the comparator institutions for each campus were determined, see <http://www.system.missouri.edu/planning/reports/comparator.pdf>.

Note: Revisions to Appendix A were made on February 2, 2000.

Appendix A

Federal Research Expenditures for Science and Engineering R&D at the University of Missouri Campuses and Respective Comparison Groups, FY1997 and FY1998

	(\$ in thousands)		
UM-Columbia Comparison Group	1997	1998	% +/-
NC State University	69,473	79,533	14.5%
U of Missouri Columbia	43,335	45,448	4.9%
Louisiana St U, All Camp	65,257	67,090	2.8%
U of Nebraska Lincoln	41,269	41,888	1.5%
Colorado State University	79,393	80,451	1.3%
University of Georgia	54,364	54,712	0.6%
University of Kentucky	62,128	60,760	-2.2%
Iowa State University	52,938	51,196	-3.3%
VA Polytech Inst & St U	87,657	82,734	-5.6%
U of Tennessee System	74,049	69,793	-5.7%
U CA Davis	123,673	114,912	-7.1%
West Virginia University	29,443	24,985	-15.1%
Total	782,979	773,502	-1.2%
Market Share for UM-Columbia	5.5%	5.9%	

UM-Kansas City Comparison Group*	1997	1998	% +/-
U of Missouri Kansas City	5,380	6,199	15.2%
U of Louisville	13,521	15,067	11.4%
U of Alabama Birmingham	150,501	166,830	10.8%
U WI Milwaukee	8,156	8,936	9.6%
Temple U	26,374	28,793	9.2%
Wayne State University	53,707	57,646	7.3%
Virginia Commonwealth U	44,982	48,167	7.1%
University of IL Chicago	70,739	73,797	4.3%
U of Houston	21,695	22,018	1.5%
Total	395,055	427,453	8.2%
Market Share for UM-Kansas City	1.4%	1.5%	

*Data were unavailable for IUPUI-Indianapolis.

Continued on next page

Note: Revisions to Appendix A were made on February 2, 2000.

Appendix A continued

	(\$ in thousands)		
UM-Rolla Comparison Group**	1997	1998	% +/-
Kettering University	176	192	9.1%
SD Sch of Mines & Tech	2,990	3,221	7.7%
Michigan Tech University	12,941	13,938	7.7%
U of Missouri Rolla	8,080	7,934	-1.8%
Rensselaer Polytech Inst	22,785	21,774	-4.4%
Colorado School of Mines	9,330	8,694	-6.8%
Clarkson University	3,368	3,010	-10.6%
Worcester Polytech Inst	7,315	5,230	-28.5%
Total	66,985	63,993	-4.5%
Market Share for UM-Rolla	12.1%	12.4%	

** Data were unavailable for Rose-Hulman Institution of Technology.

UM-St Louis Comparison Group	1997	1998	% +/-
University of Toledo	2,937	5,366	82.7%
U WI Milwaukee	8,156	8,936	9.6%
U of Missouri St Louis	3,650	3,975	8.9%
Wright State University	10,001	10,832	8.3%
The University of Memphis	5,413	5,849	8.1%
Florida International U	13,828	14,243	3.0%
Wichita State U	2,602	2,646	1.7%
San Diego State U	20,237	19,721	-2.5%
U of Akron	5,146	4,042	-21.5%
UT-Arlington	26,829	11,294	-57.9%
Total	98,799	86,904	-12.0%
Market Share for UM-St Louis	3.7%	4.6%	

Source: NSF Survey of R&D Expenditures at Colleges and Universities, FY1998.
P&B, 1/2000

Note: Revisions to Appendix B were made on February 2, 2000.

Appendix B

Industry-Sponsored Research Expenditures for Science and Engineering R&D at the University of Missouri Campuses and Respective Comparison Groups, FY1997 and FY1998

	(\$ in thousands)			
UM-Columbia Comparison Group	1997	1998	%+/-	Rank by \$
Iowa State University	8,499	13,717	61.4%	3
U CA Davis	9,362	14,077	50.4%	2
West Virginia University	3,719	4,547	22.3%	11
University of Kentucky	11,259	13,668	21.4%	4
NC State University	26,834	31,429	17.1%	1
U of Missouri Columbia	3,777	4,348	15.1%	12
Colorado State U	5,712	6,155	7.8%	9
VA Polytech Inst & St U	11,385	12,132	6.6%	7
University of Georgia	10,283	10,534	2.4%	8
U of Nebraska Lincoln	4,651	4,721	1.5%	10
U of Tennessee System	12,675	12,551	-1.0%	5
Louisiana St U, All Campus	13,331	12,157	-8.8%	6
Total	121,487	140,036	15.3%	

UM-Kansas City Comparison Group*	1997	1998	%+/-	Rank by \$
Temple U	4,690	8,855	88.8%	4
U WI Milwaukee	374	554	48.1%	8
U of Missouri Kansas City	348	505	45.1%	9
U of Louisville	3,522	4,800	36.3%	6
University of IL Chicago	6,947	9,424	35.7%	3
U of Alabama Birmingham	16,233	16,842	3.8%	1
Wayne State University	10,959	11,207	2.3%	2
U of Houston	1,815	1,707	-6.0%	7
Virginia Commonwealth U	9,172	8,478	-7.6%	5
Total	54,060	62,372	15.4%	

*Data were not available for UIPU-Indianapolis.

Continued on next page

Note: Revisions to Appendix B were made on February 2, 2000.

Appendix B continued

UM-Rolla Comparison Group**	(\$ in thousands)		%+/-	Rank by \$
	1997	1998		
Worcester Polytech Inst	1,185	1,485	25.3%	5
Colorado School of Mines	8,038	9,877	22.9%	2
Rensselaer Polytech Inst	9,340	10,974	17.5%	1
Clarkson University	1,512	1,500	-0.8%	4
Michigan Tech University	3,819	3,747	-1.9%	3
U of Missouri Rolla	1,575	1,361	-13.6%	6
Total	25,469	28,944	13.6%	

** Data were not available for Kettering University, SD Sch of Mines and Tech, and Rose-Hulman Institute of Technology.

UM-St Louis Comparison Group***			%+/-	Rank by \$
	1997	1998		
U WI Milwaukee	374	554	48.1%	5
UT-Arlington	2,641	2,642	0.0%	2
U of Missouri St Louis	274	273	-0.4%	6
Wright State University	1,409	1,325	-6.0%	3
The University of Memphis	903	784	-13.2%	4
U of Akron	3,411	2,767	-18.9%	1
Total	9,012	8,345	-7.4%	

*** Data were not available for the Florida International U, San Diego State U, U of Toledo and Wichita State U.

Source: NSF Survey of R&D Expenditures at Colleges and Universities, FY1998.
P&B, 1/2000