



Licensing and Patent Activity at Universities in Fiscal Year 1999

When the results of university-based research and development are transferred to the commercial sector and to the public, the process is called "technology transfer." Technology transfer generates income for universities that supports education and research. It also tends to generate economic activity in a university's home state.

Universities that include technology transfer as part of their mission often use indicators of licensing and patent activity to track their performance over time and to compare themselves with peer institutions. These same indicators of technology transfer can be aggregated to the state level to provide strategic information to state policy makers.

Technology transfer from universities

The latest available data on technology transfer comes from an annual survey of fiscal year 1999 licensing and patent activity conducted by the Association of University Technology Managers (AUTM). This data tracks licensing and patent activity at New York's universities and permits comparisons with other states. More detailed information can be found on the Association's web site, <http://www.autm.net/>.

Licensing and patent activity at universities in New York State in fiscal year 1999

- New York's public and private universities were active in technology transfer in fiscal year 1999. They received \$123.7 million in licensing income, granted 633 licenses that generated income, received 261 U.S. patents, filed applications for 474 U.S. patents, formed 17 start-up companies and received commitments of \$1.58 billion for research spending related to technology transfer. (*Table 1*)
- Independent sector universities, led by Columbia University and the Cornell Research Foundation, accounted for the vast majority of all technology transfer activity in New York. (*Figure 1, Table 1*)
- The State University of New York, with 26% of the total research spending reported to AUTM for New York, accounted for 11% of licensing income, 24% of licenses generating income, 20% of U.S. patents issued, 26% of U.S. patent applications and 18% of start-up companies from universities. (*Table 1*)
- The City University of New York was not in AUTM's national sample so its technology transfer is not included in any of the data reported here. City University established an Office of Technology Licensing, Management and Support in September 1999. Further information can be found on the Web at http://www.rfcuny.org/tech_transfer/tech_transfer.html

How New York compares to other states

AUTM's 1999 data show that New York is a leader in technology transfer, ranking in the top five states on six major indicators.

- **Licensing income.** Licensing income comes from licenses and options to use technologies and other intellectual property. New York ranked first among the states with \$123.7 million in licensing income. California was a close second and Texas was third with \$79.9 million, 65% of New York's total. (*Figure 2, Table 2*)

- **Licenses generating income.** With 633 licenses generating income, New York ranked second. California ranked first with 1,148 licenses or 1.8 times New York's total. Massachusetts ranked third with 613 licenses, 97% of New York's total. (*Figure 3, Table 3*)
- **U.S. patents issued.** New patents are an indicator of future economic activity. Receiving a total of 261 U.S. patents, New York's universities ranked third in the nation. California ranked first with 448 patents and Massachusetts ranked second with 300 patents (*Figure 4, Table 4*)
- **U.S. patent applications filed.** Patent applications are another indicator of future economic activity. New York ranked fourth, with a total of 474 U.S. patent applications filed. California ranked first with 1,225 applications or 2.5 times the number in New York. Massachusetts ranked second with 629 applications or 1.3 times New York's, and Pennsylvania ranked third with 568 applications or 1.2 times New York's. (*Figure 5, Table 5*)
- **Start-up companies formed.** Start-up companies are an indicator of future economic activity in a university's home state. Nationwide, 82% of start-up companies formed by universities in 1999 were located in the same state as the university. New York ranked fourth in the number of start-up companies formed by universities. New York had 17 start-up companies, compared to 45 in California, 31 in Massachusetts and 18 in Pennsylvania. (*Figure 6, Table 6*)
- **Total research spending.** As defined by AUTM, total research spending includes the research support committed to a university in fiscal year 1999 that was related to license or option agreements signed in that year. New York ranked third in total research spending with \$1.58 billion reported to AUTM. California

ranked first with \$2.74 billion or 1.7 times New York. Massachusetts ranked second with \$1.62 billion, 2% more than New York. (*Figure 7, Table 7*)

- **One-year change in technology transfer activity.** No firm conclusions should be drawn from a single year's change, but the latest one-year changes suggest that New York may not be keeping up with other states. New York's universities did not increase technology transfer activity as much as the nation as a whole for four of six of the AUTM indicators. (*Figure 8*)

Conclusions and policy implications

- **Record of success.** New York has a successful record of university-based technology transfer compared to other states. On every one of six major indicators, New York ranks in the top 5 states. (*Figures 2-7*)
- **Public and private universities contribute.** Although independent sector universities play a dominant role in technology transfer in New York, the State University of New York accounts for 18-26% of technology transfer activity. (*Figure 1*)
- **Competitive pressures.** New York ranks higher on indicators of past research (licensing income and licenses generating income) than on indicators of future economic activity related to technology transfers (patents issued, patent applications and start-up companies). New York faces competition from other states. (*Figures 2-8*)
- **Strategic investment.** To keep New York competitive in technology transfer and its associated economic activity, State leaders should consider strategic investments and track success using indicators such as those developed by AUTM.

Figure 1
Percent of Total Licencing and Patent Activities in New York State by Sector
Fiscal Year 1999

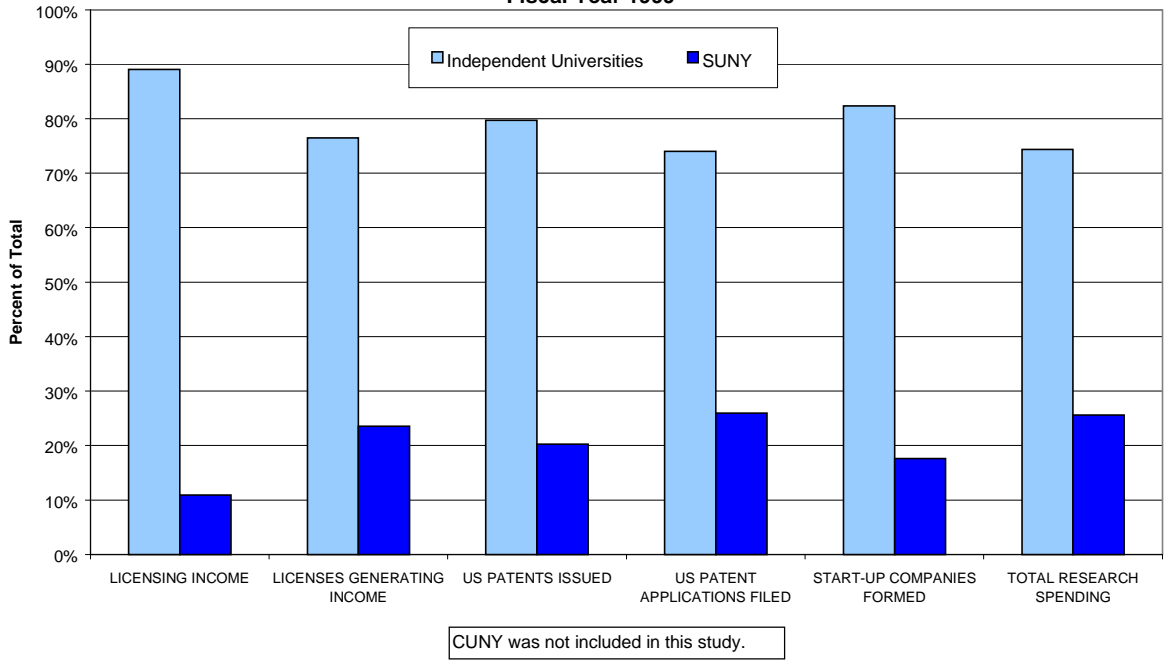


Figure 2
Licensing Income to Universities in Highest Ranking States
Fiscal Year 1999



Figure 3
Licenses Generating Income to Universities in Highest Ranking States
Fiscal Year 1999

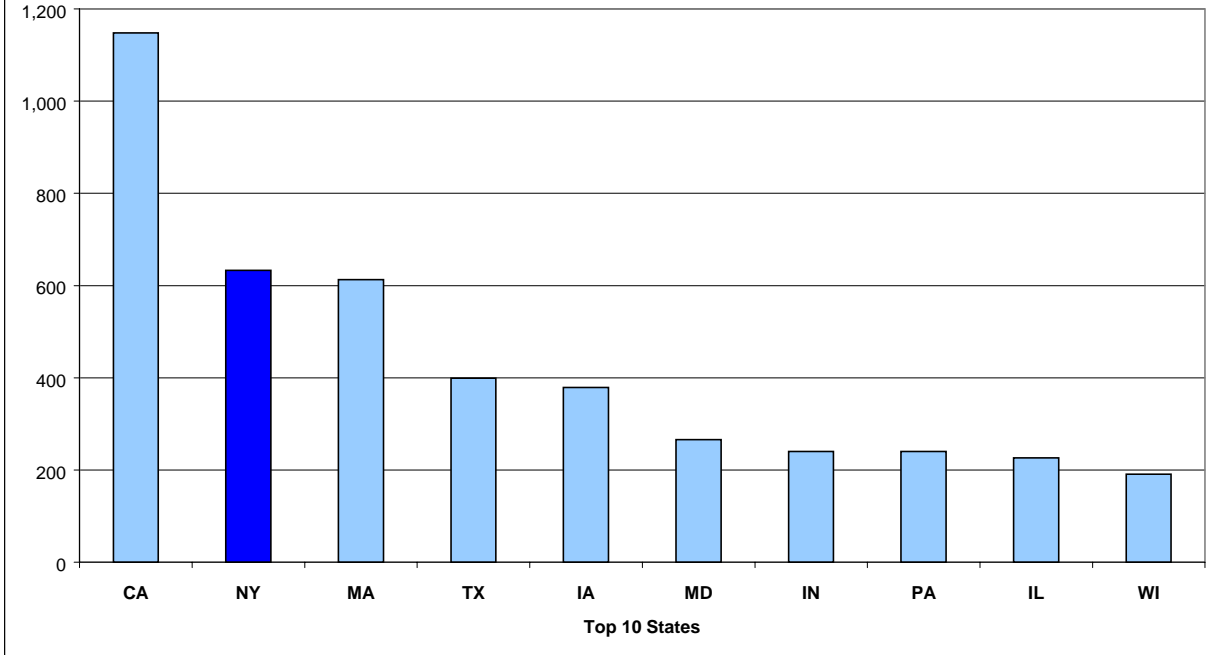


Figure 4
U.S. Patents Issued by Universities in Highest Ranking States
Fiscal Year 1999

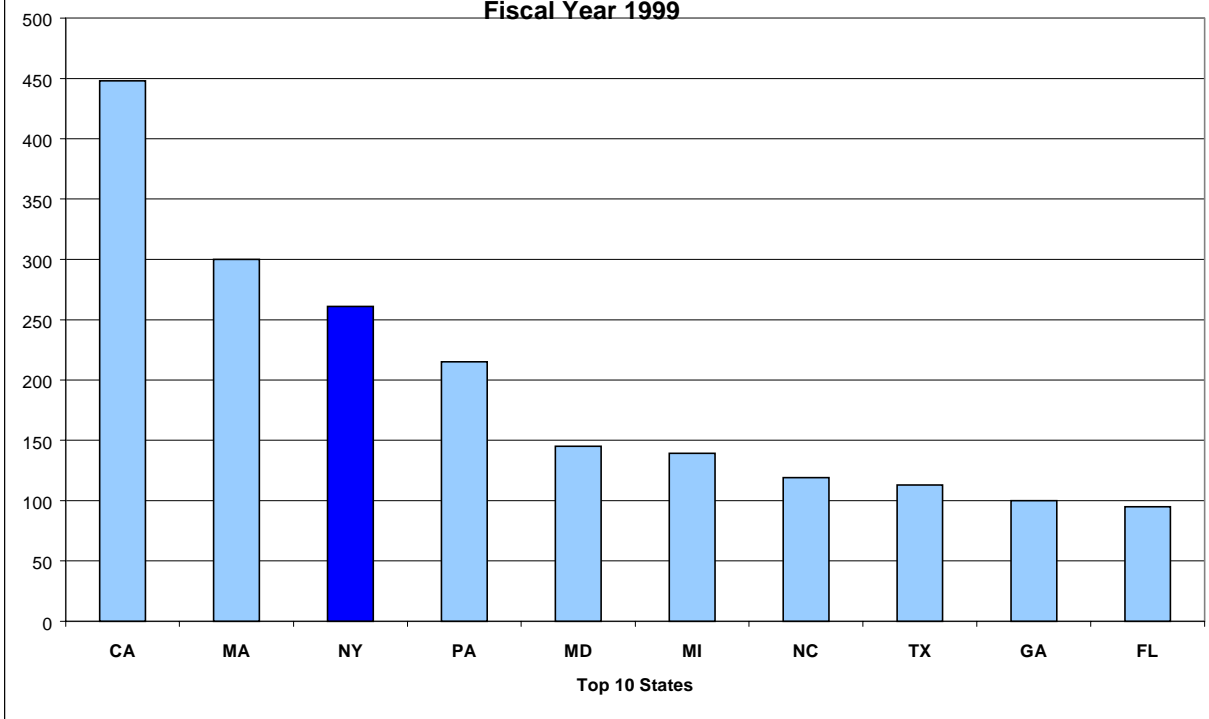


Figure 5
U.S. Patent Applications Filed by Universities
in Highest Ranking States
Fiscal Year 1999

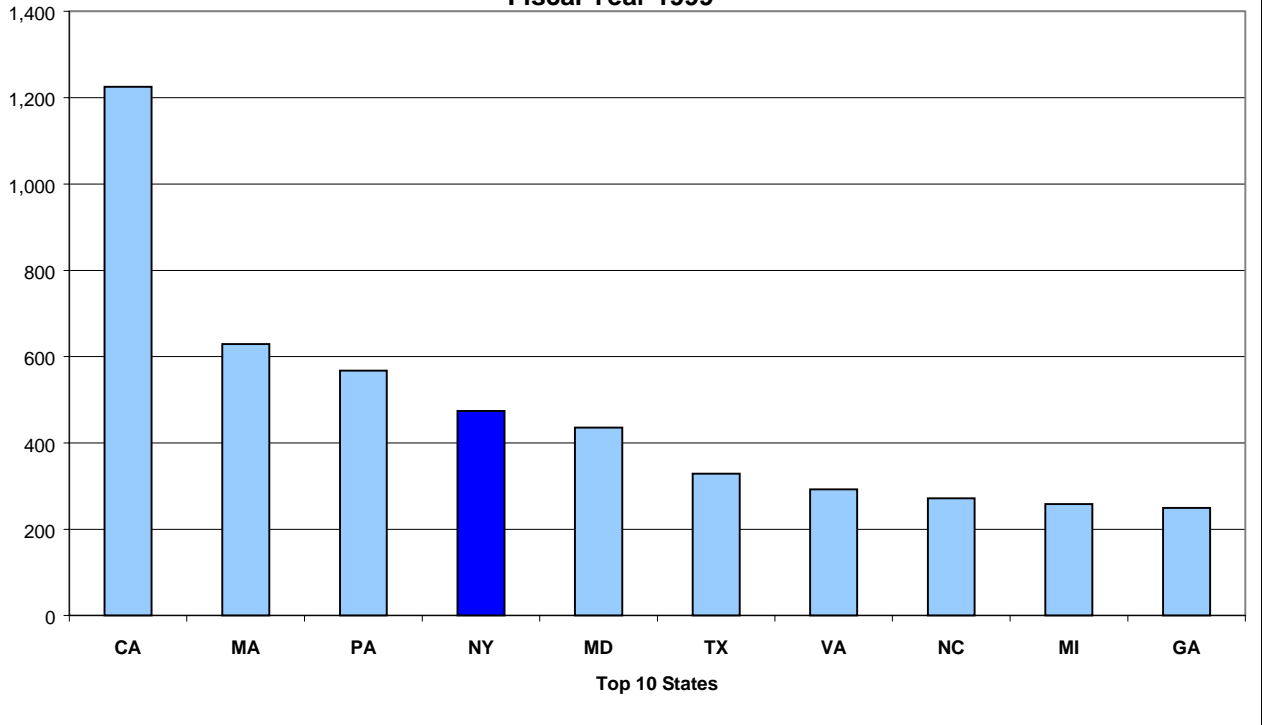


Figure 6
Start-Up Companies Formed by Universities
in Highest Ranking States
Fiscal Year 1999

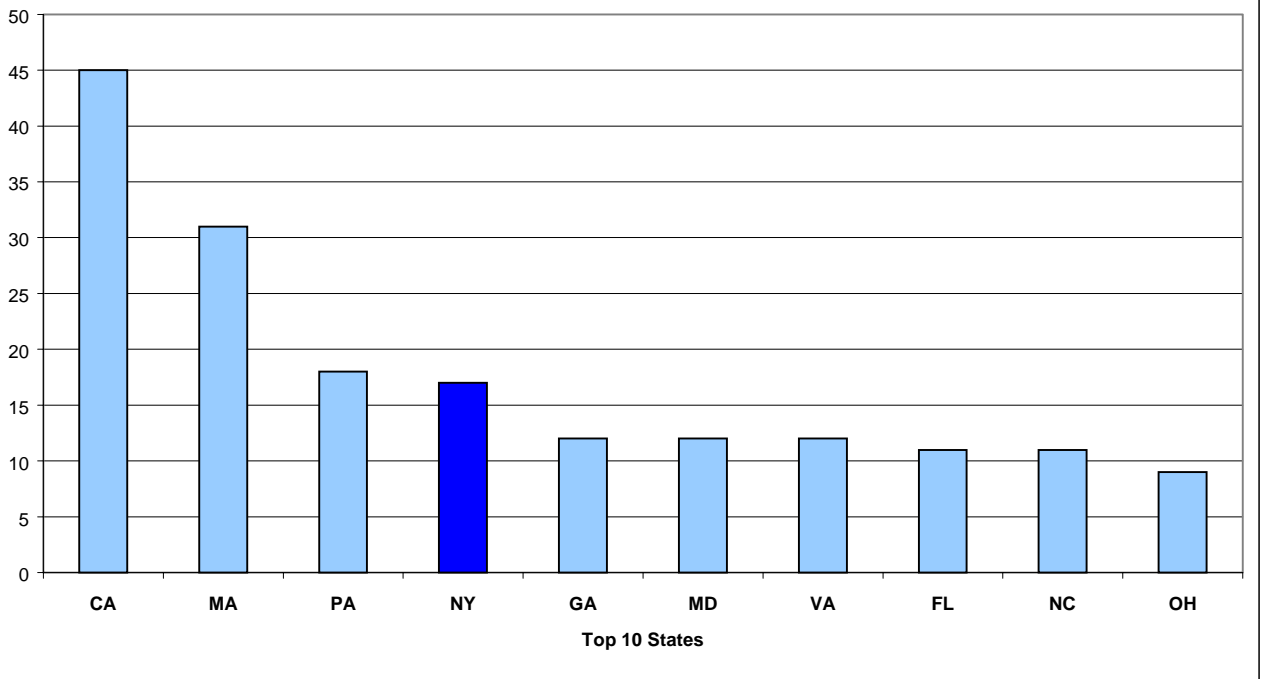


Figure 7
Total Research Spending Related to Technology Transfer
at Universities in Highest Ranking States
Fiscal Year 1999

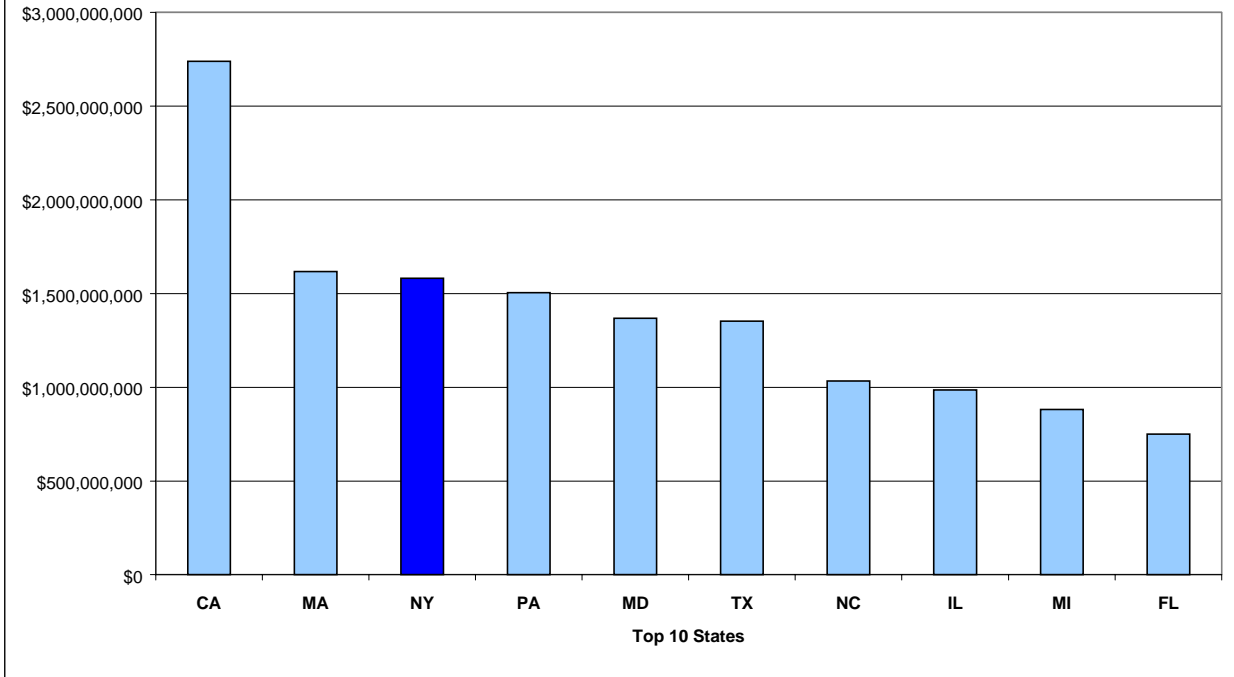


Figure 8
FY 1998 to FY 1999 Percentage Change in Technology Transfer Activity
at Universities in the United States and New York State

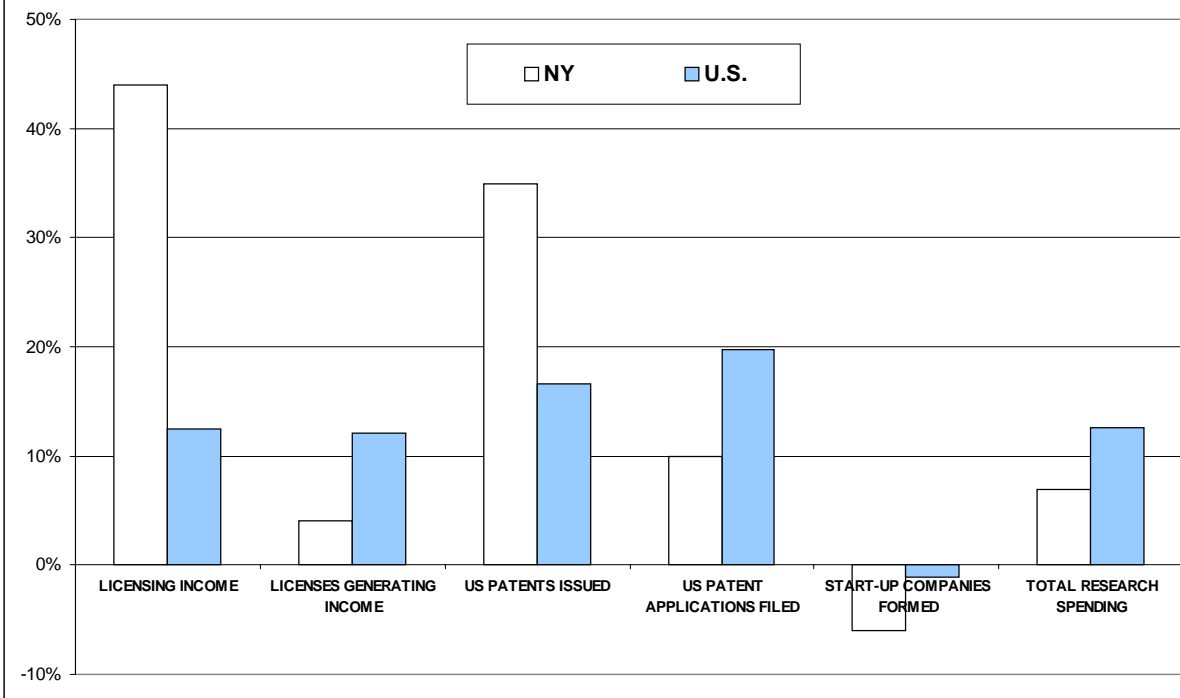


Table 1
Licensing and Patent Activity at Universities in New York State
Fiscal Year 1999

UNIVERSITY NAME	LICENSING INCOME	LICENSES GENERATING INCOME	US PATENTS ISSUED	US PATENT APPLICATIONS FILED	START-UP COMPANIES FORMED	TOTAL RESEARCH SPENDING
Columbia U	\$ 89,159,556	212	77	109	5	\$ 279,275,674
Cornell Research Foundation	\$ 6,070,000	199	70	147	4	\$ 376,784,000
Mount Sinai School of Medicine of New York U	\$ 1,012,061	14	9	35	-	\$ 123,404,735
New York Medical College	\$ 87,589	8	3	3	2	\$ 22,821,758
New York U	\$ 10,700,000	18	30	-	2	\$ 149,000,000
State U of New York Research Foundation	\$ 13,538,619	149	53	123	3	\$ 405,238,284
Syracuse U	\$ 112,529	16	5	4	-	\$ 39,500,000
U of Rochester	\$ 2,994,170	17	14	53	1	\$ 185,488,000
NY Total	\$ 123,674,524	633	261	474	17	\$1,581,512,451
Columbia U	72%	33%	30%	23%	29%	18%
Cornell Research Foundation	5%	31%	27%	31%	24%	24%
Mount Sinai School of Medicine of New York U	1%	2%	3%	7%	0%	8%
New York Medical College	0%	1%	1%	1%	12%	1%
New York U	9%	3%	11%	0%	12%	9%
State U of New York Research Foundation	11%	24%	20%	26%	18%	26%
Syracuse U	0%	3%	2%	1%	0%	2%
U of Rochester	2%	3%	5%	11%	6%	12%
NY Total	100%	100%	100%	100%	100%	100%

SOURCE: Data from the Association of University Technology Managers as published by the *Chronicle of Higher Education*. Analysis by NYSED-OHE-Institutional Assessment and Effectiveness, November 2000.

State	Total	Rank
NY	\$ 123,674,524	1
CA	\$ 108,874,923	2
FL	\$ 79,885,936	3
CT	\$ 41,176,740	4
MA	\$ 31,012,108	5
TX	\$ 28,393,049	6
WA	\$ 27,878,900	7
MI	\$ 27,864,810	8
GA	\$ 20,690,808	9
WI	\$ 18,011,400	10
NC	\$ 13,888,968	11
PA	\$ 13,669,706	12
MD	\$ 11,812,395	13
IL	\$ 9,938,084	14
MO	\$ 9,333,428	15
LA	\$ 8,678,040	16
OH	\$ 7,411,152	17
VA	\$ 5,973,742	18
NJ	\$ 5,807,116	19
MN	\$ 5,662,088	20
IA	\$ 5,278,703	21
SC	\$ 4,944,955	22
ID	\$ 4,102,471	23
CO	\$ 3,514,293	24
UT	\$ 3,484,955	25
IN	\$ 3,189,092	26
KY	\$ 2,545,418	27
RI	\$ 1,832,901	28
TN	\$ 1,702,632	29
AZ	\$ 1,588,444	30
AL	\$ 1,567,765	31
OR	\$ 1,348,414	32
KS	\$ 1,143,063	33
ND	\$ 1,059,797	34
NE	\$ 920,611	35
NH	\$ 525,998	36
DE	\$ 470,303	37
NM	\$ 401,992	38
VT	\$ 338,000	39
MT	\$ 310,700	40
OK	\$ 265,211	41
AR	\$ 259,883	42
OH	\$ 244,056	43
HI	\$ 171,877	44
TX	\$ 108,857	45
WV	\$ 41,800	46
ME	\$ -	47

State	Total	Rank
CA	1148	1
NY	633	2
MA	613	3
TX	399	4
IA	379	5
MD	266	6
IN	240	7
PA	240	8
IL	226	9
WI	191	10
NC	189	11
WA	185	12
MI	168	13
VA	158	14
MN	153	15
GA	151	16
MO	150	17
FL	99	18
OR	97	19
NJ	96	20
OH	93	21
UT	73	22
KS	70	23
TN	68	24
AL	61	25
ID	57	26
NH	52	27
AZ	49	28
CT	38	29
LA	38	30
ND	38	31
SC	33	32
CO	28	33
NE	28	34
RI	23	35
MT	22	36
AR	21	37
HI	19	38
OH	15	39
OK	14	40
NM	12	41
TX	10	42
DE	8	43
WV	5	44
KY	4	45
VT	3	46
ME	0	47

SOURCE: Data from the Association of University Technology Managers as published by *The Chronicle of Higher Education*. Analysis by NYSED-OHE-Institutional Assessment and Effectiveness, November 2000.

State	Total	Rank
CA	448	1
MA	300	2
NY	261	3
PA	215	4
MD	145	5
MI	139	6
NC	119	7
TX	113	8
GA	100	9
FL	95	10
IL	95	11
IA	83	12
WI	79	13
VA	77	14
MO	67	15
OH	64	16
NJ	61	17
MN	55	18
CT	48	19
UT	46	20
IN	42	21
CO	40	22
WA	36	23
TN	34	24
AL	30	25
KY	26	26
OR	26	27
KS	22	28
TX	21	29
AZ	20	30
NH	20	31
RI	20	32
NM	17	33
SC	14	34
AR	13	35
LA	12	36
OK	12	37
HI	11	38
NE	11	39
OH	11	40
MT	9	41
ID	7	42
ME	4	43
ND	4	44
DE	3	45
VT	2	46
WV	2	47

State	Total	Rank
CA	1225	1
MA	629	2
PA	568	3
NY	474	4
MD	436	5
TX	329	6
VA	292	7
NC	272	8
MI	258	9
GA	250	10
IL	242	11
FL	204	12
IA	191	13
NJ	172	14
WI	162	15
CT	142	16
OH	133	17
MO	130	18
AL	124	19
IN	119	20
WA	114	21
TN	105	22
UT	105	23
MN	99	24
AZ	87	25
OR	81	26
CO	80	27
NM	63	28
SC	57	29
OK	54	30
RI	43	31
KY	41	32
KS	38	33
TX	38	34
HI	36	35
NE	31	36
NH	31	37
LA	30	38
DE	29	39
AR	21	40
OH	20	41
ID	19	42
MT	14	43
VT	11	44
ND	7	45
ME	3	46
WV	3	47

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Analysis by NYSED-OHE-Institutional Assessment and Effectiveness, November 2000.

State	Total	Rank
CA	45	1
MA	31	2
PA	18	3
NY	17	4
GA	12	5
MD	12	6
VA	12	7
FL	11	8
NC	11	9
OH	9	10
UT	9	11
IL	7	12
CO	5	13
CT	5	14
IN	5	15
MN	5	16
MO	5	17
NJ	5	18
AZ	4	19
IA	4	20
MI	4	21
SC	4	22
WI	4	23
KS	3	24
KY	3	25
OR	3	26
TN	3	27
TX	3	28
AL	2	29
DE	2	30
NE	2	31
NM	2	32
OK	2	33
AR	1	34
ID	1	35
LA	1	36
MT	1	37
OH	1	38
RI	1	39
HI	0	40
ME	0	41
ND	0	42
NH	0	43
TX	0	44
VT	0	45
WA	0	46
WV	0	47

State	Total	Rank
CA	\$ 2,738,948,651	1
MA	\$ 1,617,582,102	2
NY	\$ 1,581,512,451	3
PA	\$ 1,505,506,470	4
MD	\$ 1,368,850,452	5
TX	\$ 1,352,593,063	6
NC	\$ 1,032,668,291	7
IL	\$ 986,247,372	8
MI	\$ 882,707,860	9
FL	\$ 749,973,072	10
GA	\$ 747,278,675	11
OH	\$ 661,146,792	12
MO	\$ 573,251,803	13
VA	\$ 511,672,500	14
WA	\$ 479,654,994	15
CO	\$ 479,243,283	16
IN	\$ 462,172,457	17
IA	\$ 459,362,277	18
CT	\$ 421,753,000	19
WI	\$ 421,600,000	20
MN	\$ 417,556,493	21
AZ	\$ 380,336,361	22
TN	\$ 336,096,000	23
NJ	\$ 310,372,573	24
OR	\$ 302,839,378	25
UT	\$ 263,293,250	26
SC	\$ 250,405,895	27
KS	\$ 220,172,214	28
NM	\$ 211,637,606	29
AL	\$ 199,084,756	30
OK	\$ 174,484,836	31
NE	\$ 156,746,000	32
LA	\$ 153,939,252	33
HI	\$ 151,809,406	34
NH	\$ 141,070,627	35
KY	\$ 137,001,077	36
RI	\$ 117,730,000	37
ND	\$ 87,827,073	38
TX	\$ 85,000,000	39
MT	\$ 72,737,757	40
ID	\$ 67,572,054	41
DE	\$ 64,872,678	42
AR	\$ 63,110,717	43
WV	\$ 62,000,000	44
VT	\$ 52,500,000	45
ME	\$ 41,453,000	46
OH	\$ 10,193,500	47

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