

Center *for an*
Urban
Future

A Newton's cradle with several silver spheres suspended by thin wires, set against a teal background. The spheres are arranged in a curved path, with some in motion, creating a sense of dynamic energy.

2009 INDEX OF
THE NEW YORK
CITY INNOVATION
ECONOMY

ABOUT THE INNOVATION INDEX

This report was written by Jim O'Grady and Jonathan Bowles. It was edited by David Jason Fischer and designed by Design Confederation. Additional research by Tara Colton, Lindsey Ganson, Rachel Greene, Keenan Hughes, Steven Josselson, William King, McKenna Morrigan and Farah Rahaman.

We also acknowledge the helpful support we received from the members of an advisory board created for this project. Advisory board members, who provided suggestions and guidance but were not asked to endorse the final study, included: Harold Varmus, President, Memorial Sloan-Kettering Cancer Center (Co-Chair); Kathryn Wylde, President & CEO, Partnership for New York City (Co-Chair); Stuart Ellman, Managing Partner, RRE Ventures; Ted Greenwood, Program Director, The Alfred P. Sloan Foundation; David Hirsh, Executive Vice President for Research, Columbia University; David Hochman, Consultant in technology-based economic development, Battelle; Jerry Hultin, President, Polytechnic Institute of NYU; Sharon Mates, Chairman & CEO, Intra-Cellular Therapies, Inc; Ed Moran, Director, Deloitte & Touche Technology, Media & Telecommunications (TMT) Group's Tri-State Product Innovation Practice; David Rose, Founding Chair, New York Angels.

This report was made possible by support from The Alfred P. Sloan Foundation.

General operating support for City Futures has been provided by Bernard F. and Alva B. Gimbel Foundation, The Citi Foundation, Deutsche Bank, The F.B. Heron Foundation, Fund for the City of New York, Salesforce Foundation, The Scherman Foundation, Inc., and Unitarian Universalist Veatch Program at Shelter Rock.

The Center for an Urban Future is a New York City-based think tank dedicated to independent, fact-based research about critical issues affecting New York's future, including economic development, workforce development, higher education and the arts. For more information or to sign up for our monthly e-mail bulletin, visit www.nycfuture.org.

The Center for an Urban Future is a project of City Futures, Inc. City Futures Board of Directors: Andrew Reicher (Chair), Margaret Anadu, Michael Connor, Russell Dubner, Ken Emerson, David Lebenstein, Gail O. Mellow, Gifford Miller, Lisette Nieves, Jeffrey Pollock, Ira Rubenstein, John Siegal, Stephen Sigmund, Karen Trella, Peter Williams and Mark Winston Griffith.

This index is the first-ever comprehensive, fact-based assessment of New York City's innovation economy. We publish it at a time when policymakers and economic development officials are beginning to grasp how important it will be in the years ahead for New York City to fully capitalize on its enormous scientific assets and develop a large and sustainable innovation economy, a welcome shift that has been precipitated by the Wall Street meltdown and the steep downturn in the city's economy. But even while officials in the city, region and state are showing more appreciation and interest in the innovation economy, there remains a dearth of information about the city's strengths and weaknesses in science and technology fields. Our index attempts to change that.

The 49 tables and graphs that make up this index are designed to provide policymakers, business and academic leaders, scientists, entrepreneurs and investors with data that illustrates where New York stands compared to other major cities and regions—including Boston, the San Francisco Bay Area, San Diego and Raleigh/Durham—on a broad range of indicators measuring both existing science and technology assets and the level of success at commercializing these assets.

Funded by the Alfred P. Sloan Foundation, our index assesses how New York City scientific institutions stack up against institutions in other regions on everything from the number of members of the New York Academy of Sciences to the amount of R&D expenditures made in fields such as environmental sciences, physics and mathematics. It examines how the city institutions have fared in R&D funding by the federal government, state and local governments and industry. And it includes detailed breakdowns of how New York City institutions have done in technology transfer compared to institutions located upstate and in the rest of the downstate region.

Our index is not limited to comparing and contrasting academic research institutions. It also looks at how New York stacks up against other cities when it comes to attracting venture capital and producing fast-growing technology companies. We also shed light on which technology fields in New York attract the most interest from VCs.

The index accompanies the Center for an Urban Future's 48-page study, "Building New York City's Innovation Economy." That report provides an extensive analysis of the role that universities and nonprofit research institutions play in New York City's economy, their potential to be a catalyst for future growth and the challenges the city faces in fully harnessing these institutions for local economic development.

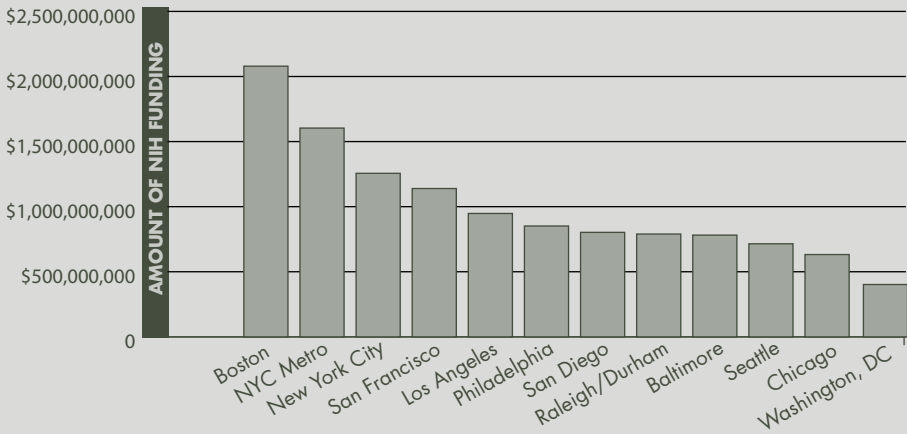
CONTENTS

SECTION 1: OVERALL RESEARCH SPENDING IN NYC AND OTHER LEADING TECH REGIONS	P. 4
<ul style="list-style-type: none">• NIH Funding, 2008• Federal Funding to Nonprofit Scientific Research Institutions, 2006• Overall R&D Spending by Colleges and Universities, 2006• Federal Expenditures for R&D at Colleges and Universities, 2006• State and Local Government Spending at Colleges and Universities, 2006• Industry-financed R&D at Colleges and Universities, 2006• Institution-financed R&D at Colleges and Universities, 2006• All Other Sources of Financing for R&D at Colleges and Universities, 2006	
SECTION 2: RESEARCH SPENDING BY SCIENTIFIC DISCIPLINE	P. 8
<ul style="list-style-type: none">• R&D Spending by Colleges and Universities in Life Sciences, 2006• R&D Spending by Colleges and Universities in Engineering, 2006• R&D Spending by Colleges and Universities in Environmental Sciences, 2006• R&D Spending by Colleges and Universities in Math And Computer Science, 2006• R&D Spending by Colleges and Universities in Physical Sciences, 2006• R&D Spending by Colleges and Universities in Psychology, 2006• R&D Spending by Colleges and Universities in Social Science, 2006	
SECTION 3: STANDOUT INSTITUTIONS IN NYC	P. 12
<ul style="list-style-type: none">• Top 100 Recipients of NIH Support From New York State and New York City, 2008• New York City and New York State Universities and Colleges Among Nation's Top 200 in Total R&D Expenditures, 2006• New York City and New York State Universities and Colleges Among Nation's Top 200 in Federally Financed R&D Expenditures, 2006• New York City and New York State Nonprofit Research Institutions Among Nation's Top 200 Recipients of Federal R&D Funds, 2006• NYC Universities vs. Top 10 U.S. institutions in R&D Spending on Engineering, 2007• Top U.S. Universities and Nonprofit Research Institutions for Seeding Start-ups, 2007• Top 15 U.S. Universities for Licensing Income, 2007	
SECTION 4: NYC'S TALENT DIVIDEND	P. 18
<ul style="list-style-type: none">• Regions with the Most Howard Hughes Medical Investigators, February 2009• Regions with the Most National Academy of Sciences Members, February 2009	
SECTION 5: NYC/NYS BREAKDOWNS	P. 19
<ul style="list-style-type: none">• Breakdown of NIH Funding in New York State, 2008• Breakdown of Total R&D Spending at Colleges and Universities in New York State, 2006* Breakdown of Federal Government Financed R&D Spending at Colleges And Universities in New York State, 2006• Breakdown of State and Local Government R&D Spending at Colleges And Universities in New York State, 2006• Breakdown of Industry Spending on R&D at Universities and Colleges in New York State, 2006• Breakdown of Institutional R&D spending in New York State, 2006• Breakdown of Federal Funding to Nonprofit Research Institutions in NYS, 2006	
SECTION 6: VENTURE SUPPORT	P. 23
<ul style="list-style-type: none">• Most Active VC Firms by Location, 2007 and 2008• Top 10 Regions for Attracting Venture Capital Investment (Number of Deals), 2008• Top 10 Regions for Attracting Venture Capital Investment (Dollar Value), 2008	
SECTION 7: VENTURE SUPPORT BY SECTOR	P. 25
<ul style="list-style-type: none">• Share of Region's VC Deals Going To Biotech Firms, 4q 2008• Share of Region's VC Deals Going to Software Firms, 4q 2008• Share of Region's VC Deals Going to Financial Services Firms, 4q 2008• Share of Region's VC Deals going to Media and Entertainment Firms, 4q 2008• Share of Region's VC Deals Going to IT Service Firms, 4q 2008• Share of Region's VC Deals Going to Medical Devices and Equipment Firms, 4q 2008• Share of Region's VC Deals Going to Telecom Services Firms, 4q 2008	
SECTION 8: SBIR/STTR WEAKNESSES	P. 29
<ul style="list-style-type: none">• Number of SBIR Awards by Region, 2006• Number of STTR Awards by Region, 2006• Breakdown of SBIR Awards in New York State, 2006• Breakdown of STR Awards in New York State, 2006	
SECTION 9: HIGH TECH ECONOMY	P. 31
<ul style="list-style-type: none">• Regions with the Most Companies on the 2008 Deloitte Technology Fast 500 List, 2008• Top Metropolitan Area Ranked by Number of Individuals Employed in Science And Engineering Occupations, 2006• Top Metropolitan Area Ranked by Percentages of Metro Area Workforce Employed in Science and Engineering Occupations, 2006• Top High-Tech Centers in North America, Ranked by Milken Institute, 2007	

SECTION 1: OVERALL RESEARCH SPENDING IN NYC AND OTHER LEADING TECH REGIONS

1

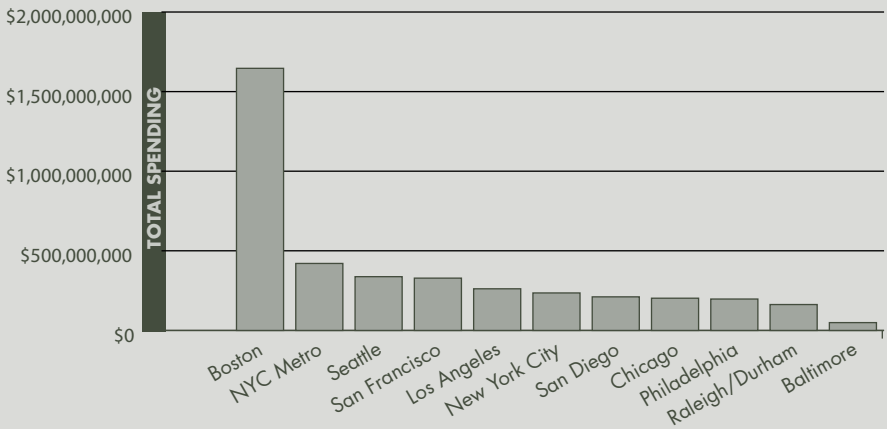
TOP REGIONS FOR NIH FUNDING, 2008



Source: National Institutes of Health

2

FEDERAL FUNDING TO NONPROFIT SCIENTIFIC RESEARCH INSTITUTIONS, 2006

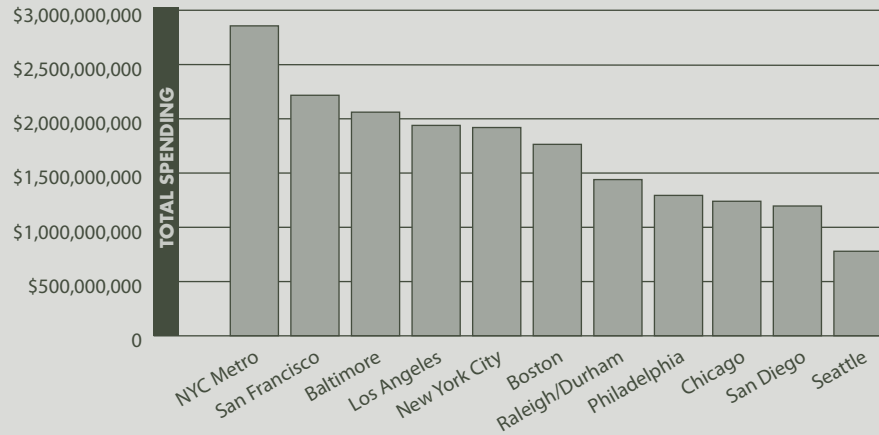


Source: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2006. Data shows federal obligations for science and engineering research and development and R&D plant to nonprofit institutions.

OVERALL R&D BY COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation/ Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2006.

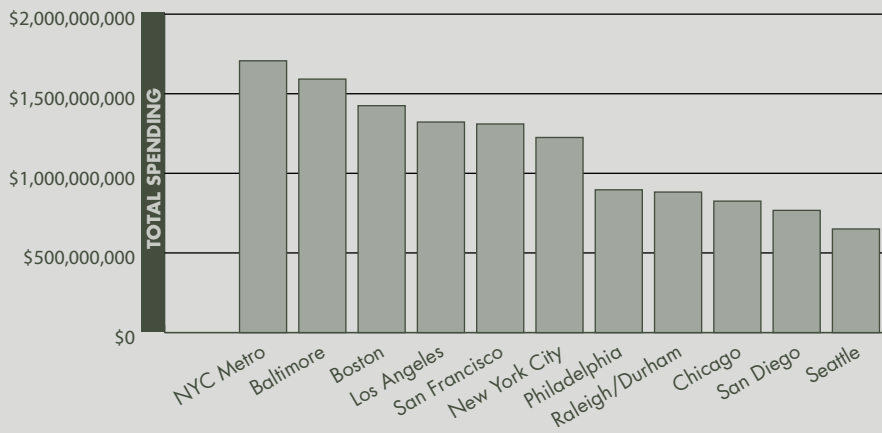
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



FEDERAL EXPENDITURES FOR R&D AT COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

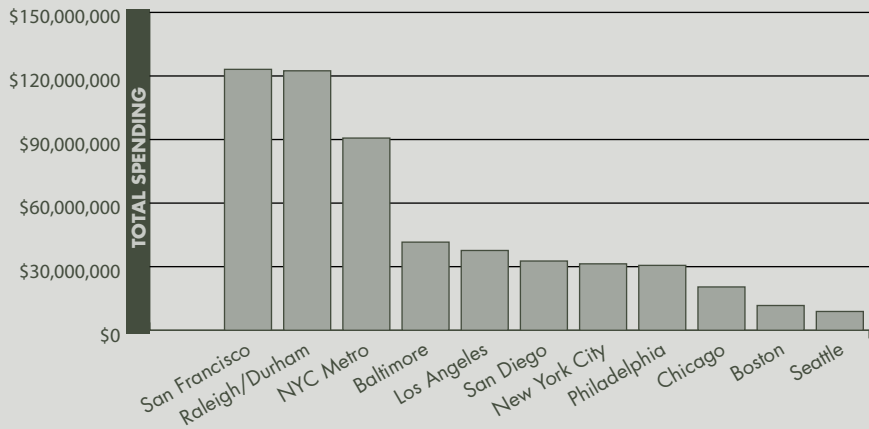
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



STATE AND LOCAL GOVERNMENT SPENDING ON R&D AT COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

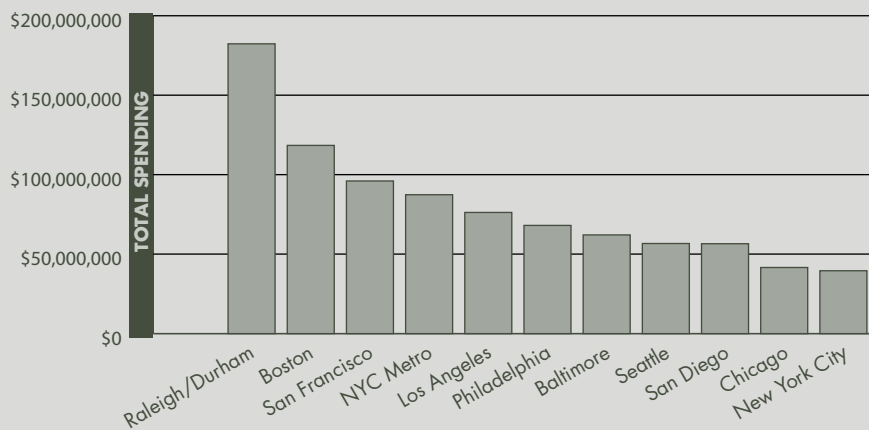
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



INDUSTRY-FINANCED R&D AT COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006.

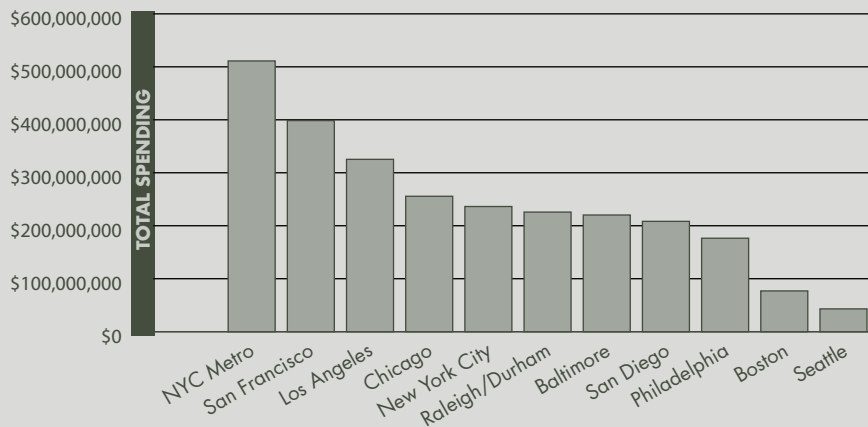
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



INSTITUTION-FINANCED R&D AT COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

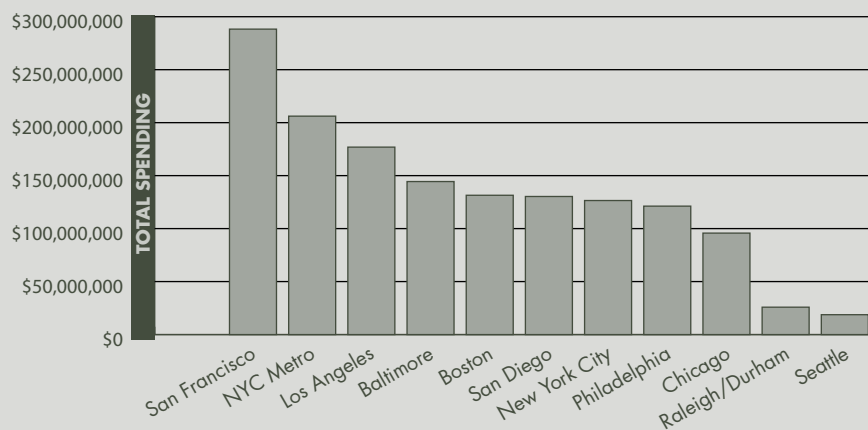
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



ALL OTHER SOURCES OF FINANCING FOR R&D AT COLLEGES AND UNIVERSITIES, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

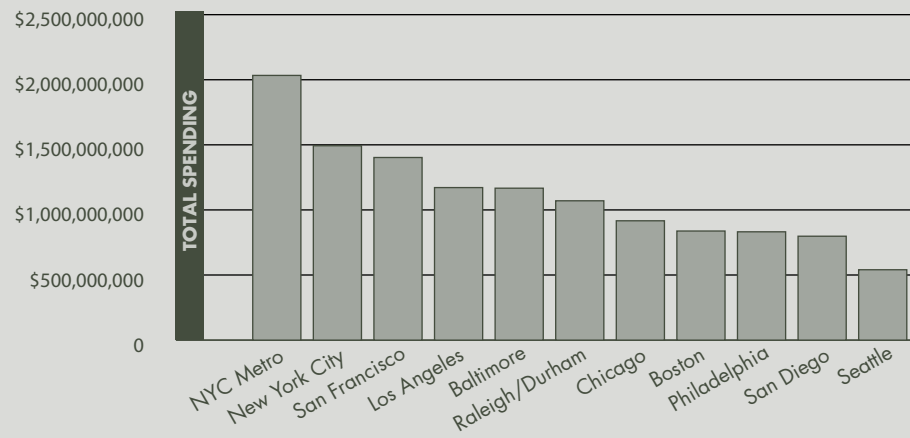
Note: For the NYC total, we allocated 60 percent of Cornell University's total expenditures to their Ithaca campus and 40 percent to their medical school in NYC.



SECTION 2: RESEARCH SPENDING BY SCIENTIFIC DISCIPLINE

9

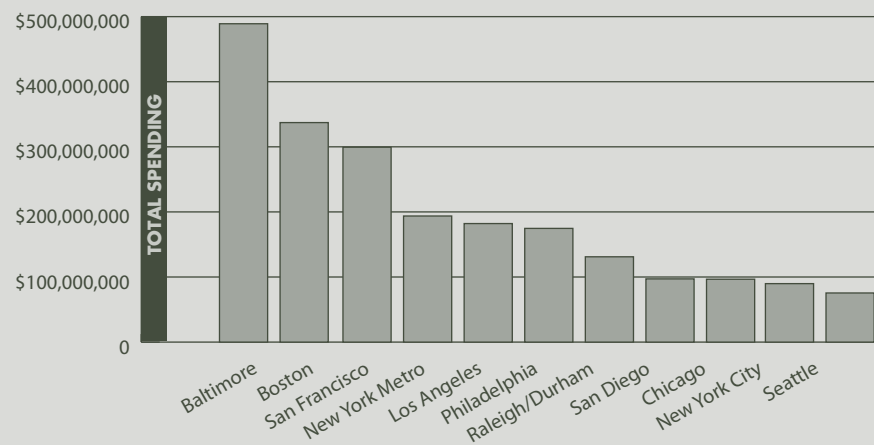
R&D SPENDING BY COLLEGES AND UNIVERSITIES IN LIFE SCIENCES, 2006



Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

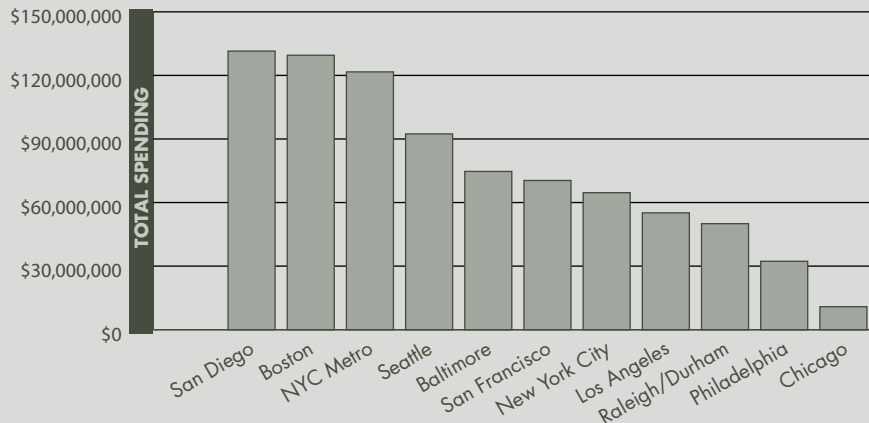
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R&D SPENDING BY COLLEGES AND UNIVERSITIES IN ENGINEERING



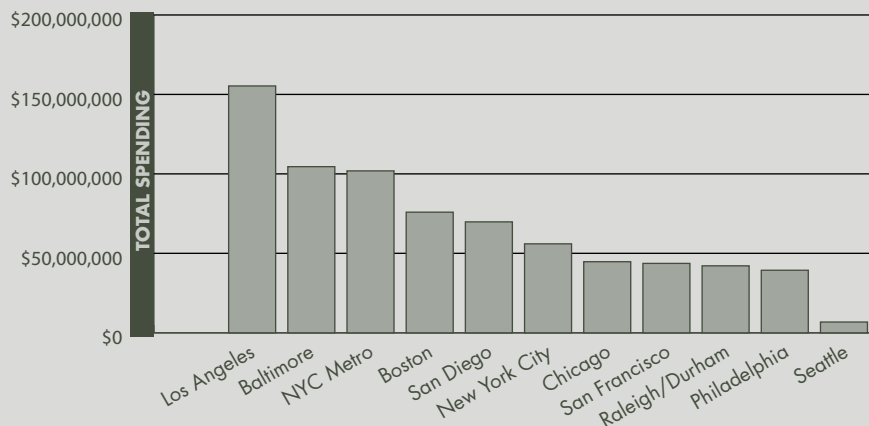
Source: National Science Foundation, FY 2006.
 Note: Our figure for NYC (\$90 million) includes \$31 million in spending by Cornell, which is 40 percent of the school's engineering R&D expenditures. We used the same 40-60 allocation for Cornell in all R&D calculations for this report, at the suggestion of school officials, since Cornell's medical school is in the city. This provides a decent estimate for some research areas, but not engineering; most of its engineering R&D occurs in Ithaca.

R&D SPENDING BY COLLEGES AND UNIVERSITIES IN ENVIRONMENTAL SCIENCES, 2006



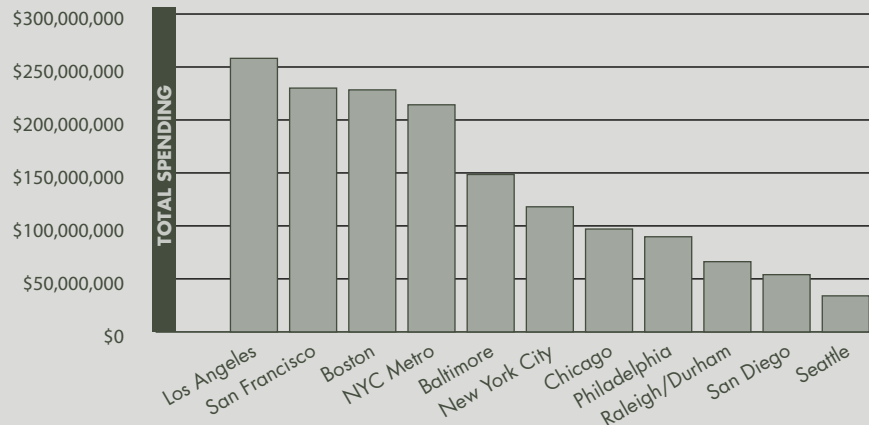
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

R&D SPENDING BY COLLEGES AND UNIVERSITIES IN MATH AND COMPUTER SCIENCE, 2006



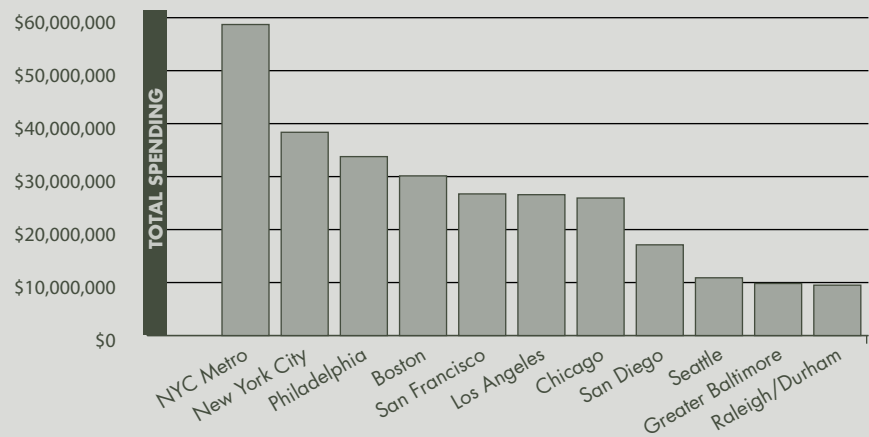
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

R&D SPENDING BY COLLEGES AND UNIVERSITIES IN PHYSICAL SCIENCES, 2006

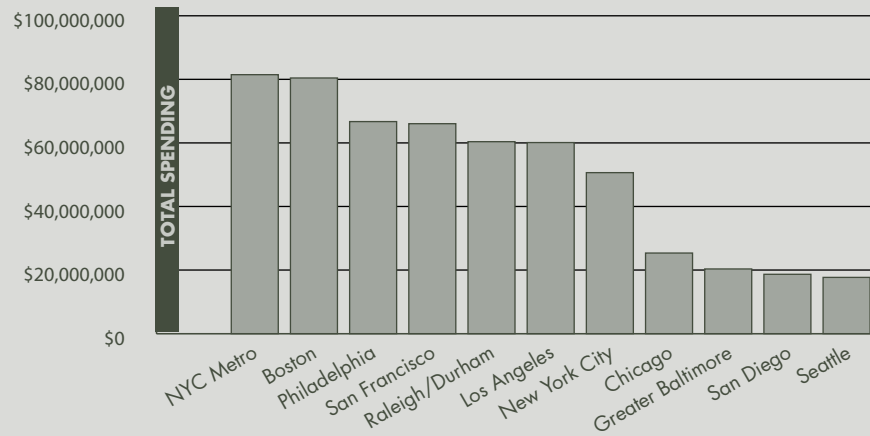


Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

R&D SPENDING BY COLLEGES AND UNIVERSITIES IN PSYCHOLOGY, 2006



Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

R&D SPENDING BY COLLEGES AND UNIVERSITIES IN SOCIAL SCIENCE, 2006

Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and science and engineering field: FY 2006

SECTION 3: STANDOUT INSTITUTIONS IN NYC

TOP 100 RECIPIENTS OF NIH SUPPORT FROM NEW YORK STATE AND NEW YORK CITY, 2008

INSTITUTION	LOCATION	RANKING	TOTAL NIH SUPPORT
Columbia University Health Sciences	New York City	16	\$275.4 million
Mount Sinai School of Medicine	New York City	29	\$171.5 million
University of Rochester	Rochester	33	\$168.3 million
Yeshiva University	New York City	43	\$130.7 million
NYU School of Medicine	New York City	47	\$122.0 million
Sloan-Kettering Institute for Cancer Research	New York City	53	\$110.0 million
Weill Medical College of Cornell University	New York City	54	\$108.3 million
Rockefeller University	New York City	78	\$63.7 million
Cornell University-Ithaca	Ithaca	84	\$59.4 million
SUNY Stony Brook	Stony Brook	90	\$51.8 million
New York State Psychiatric Institute	New York City	93	\$50.5 million
SUNY Buffalo	Buffalo	95	\$48.8 million

Source: <http://report.nih.gov/award/trends/AggregateData.cfm?Year=2008>

Note: The data we used for the ranking of institutions receiving NIH grants lists university's medical schools separately from their main campuses. If we had combined the totals for both Columbia University Health Sciences (# 16 on the list) and Columbia's main campus (#114), the university's overall ranking would be higher than 16. The same would be the case for NYU; its School of Medicine was ranked 47th and its main campus was ranked 139th.

**NEW YORK CITY AND NEW YORK STATE UNIVERSITIES
AND COLLEGES AMONG NATION'S TOP 200 IN TOTAL R&D
EXPENDITURES, 2006**

RANK	INSTITUTION	2006
12	Cornell University*	\$648.8 million
22	Columbia University	\$530.0 million
40	University of Rochester	\$366.7 million
58	SUNY Buffalo	\$298.0 million
61	New York University	\$284.2 million
62	SUNY Albany	\$274.4 million
63	Mt. Sinai School of Medicine	\$273.2 million
73	SUNY Stony Brook	\$234.6 million
76	Rockefeller University	\$215.4 million
88	Yeshiva University	\$189.4 million
146	Rensselaer Polytechnic Institute	\$70.6 million
182	SUNY Upstate Medical University	\$37.2 million
188	New York Medical College	\$34.4 million
198	CUNY - Hunter College	\$31.3 million
199	SUNY Health Science Center Brooklyn	\$31.1 million

Source: National Science Foundation/Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2006.

Note: Institutions based in NYC are in red.

**Cornell is based in Ithaca, but its medical college is in NYC*

**NEW YORK CITY AND NEW YORK STATE UNIVERSITIES
AND COLLEGES AMONG NATION'S TOP 200 IN FEDERALLY
FINANCED R&D EXPENDITURES, 2006**

RANK	INSTITUTION	2006
11	Columbia University	\$451.2 million
17	Cornell University	\$390.0 million
29	University of Rochester	\$278.4 million
42	Mt. Sinai School of Medicine	\$224.9 million
52	New York University	\$189.3 million
62	Yeshiva University	\$153.8 million
64	SUNY Buffalo - all campuses	\$153.2 million
85	SUNY Stony Brook	\$113.0 million
91	SUNY Albany	\$103.8 million
102	Rockefeller University	\$93.7 million
142	Rensselaer Polytechnic Institute	\$44.7 million
172	SUNY Upstate Medical University	\$27.2 million
173	New York Medical College	\$26.6 million
177	SUNY Health Science Center Brooklyn	\$25.2 million
187	CUNY - City College	\$21.4 million

Source:: National Science Foundation/Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2006.

Note: Institutions based in NYC are in red.

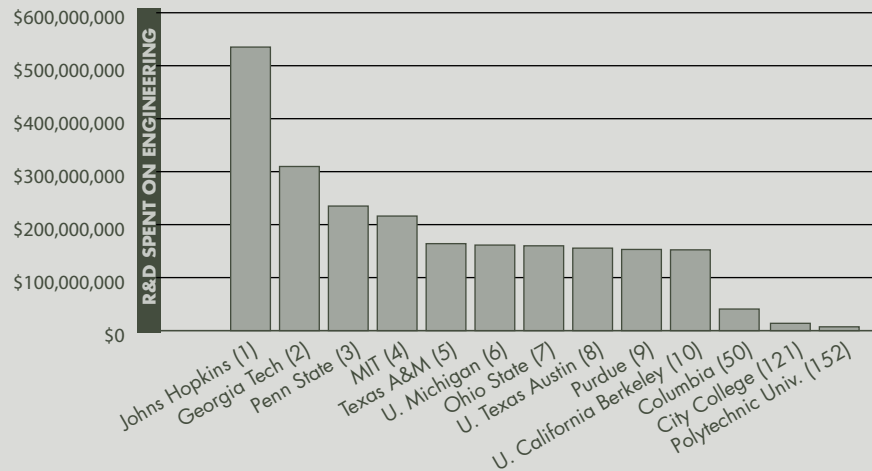
**Cornell is based in Ithaca, but its medical college is in NYC*

**NEW YORK CITY AND NEW YORK STATE NONPROFIT RE-
SEARCH INSTITUTIONS AMONG NATION'S TOP 200 RECIPI-
ENTS OF FEDERAL R&D FUNDS, 2006**

RANK	INSTITUTION	2006
12	Memorial Sloan-Kettering Cancer Center	\$107.0 million
14	Joint Oceanographic Institutions Inc.	\$96.7 million
21	Calspan-University of Buffalo Research Center	\$79.4 million
25	Syracuse Research Corporation	\$65.5 million
32	Roswell Park Cancer Institute	\$41.5 million
34	Cold Spring Harbor Laboratory of Quantitative Biology	\$40.7 million
75	Feinstein Institute for Medical Research	\$18.6 million
78	Montefiore Hospital and Medical Center	\$17.8 million
90	National Development and Research Institute	\$16.5 million
121	Hospital for Special Surgery	\$10.2 million
123	Trudeau Institute	\$9.9 million
127	Nathan S. Kline Institute for Psychiatric Research	\$9.4 million
147	Population Council	\$7.0 million
151	Aaron Diamond AIDS Research Center	\$6.6 million
161	New York Blood Center	\$5.8 million
167	Winifred Masterson Burke Medical Research	\$5.4 million
170	Hauptman-Woodward Medical Research Institute	\$5.2 million
178	American Museum of Natural History	\$4.6 million
179	United Negro College Fund	\$4.5 million
186	Ludwig Institute for Cancer Research	\$4.1 million
192	New York Structural Biology Center	\$3.9 million

Source: National Science Foundation. Federal obligations for science and engineering research and development and R&D plant to nonprofit institutions, FY 2006

NYC UNIVERSITIES VS TOP 10 U.S. INSTITUTIONS IN R&D SPENDING ON ENGINEERING, 2007



Source: National Science Foundation/ Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2007.

TOP U.S. UNIVERSITIES AND NONPROFIT RESEARCH INSTITUTIONS FOR SEEDING START-UPS, 2007

INSTITUTIONS	START-UPS CREATED
U. of California System	38
MIT	24
U. of Utah	18
Columbia	12
California Institute of Technology	11
U. of Washington	11
Northwestern	10
U. of Colorado	10
U. of Kentucky	10

OTHER NYC INSTITUTIONS

NYU	6
Albert Einstein College of Medicine	2
Mount Sinai School of Medicine	1
Sloan Kettering Institute for Cancer Research	0

Source: Association of University Technology Managers, U.S. Licensing Activity Survey: FY 2007.

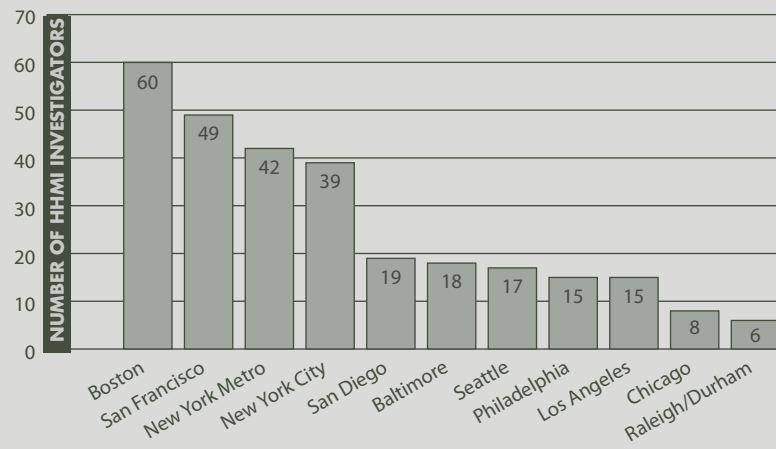
**TOP 15 U.S. UNIVERSITIES FOR
LICENSING INCOME, 2007**

INSTITUTION	LICENSING INCOME
NYU	\$791,200,000
Columbia	\$135,600,000
U. of California system	\$97,600,000
Northwestern	\$85,300,000
Wake Forest	\$71,200,000
U. of Minnesota	\$63,300,000
U. of Washington	\$63,300,000
MIT	\$61,600,000
U. of Rochester	\$53,300,000
Stanford	\$50,400,000
U. of Florida	\$48,000,000
U. of Wisconsin Madison	\$46,700,000
U. of Massachusetts	\$40,700,000
Mount Sinai School of Medicine	\$23,600,000
U. of Colorado	\$22,700,000

*Source: Association of University Technology Managers,
U.S. Licensing Activity Survey: FY 2007.*

23

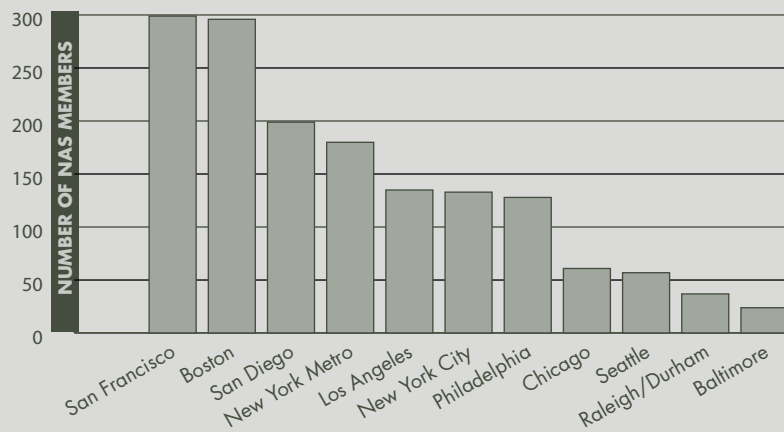
REGIONS WITH THE MOST HOWARD HUGHES MEDICAL INVESTIGATORS, FEBRUARY 2009



Source: Howard Hughes Medical Institute website, February 2009

24

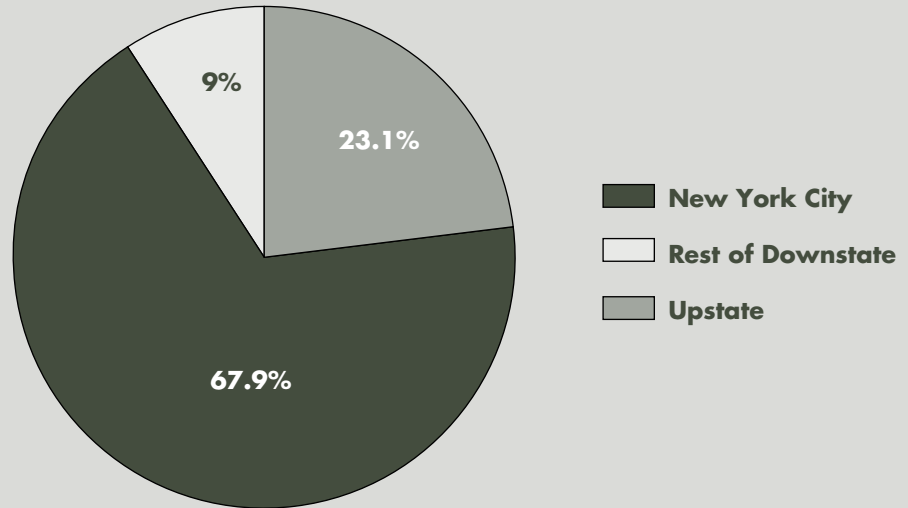
REGIONS WITH THE MOST NATIONAL ACADEMY OF SCIENCES MEMBERS, FEBRUARY 2009



Source: National Academy of Sciences Membership Directory

25

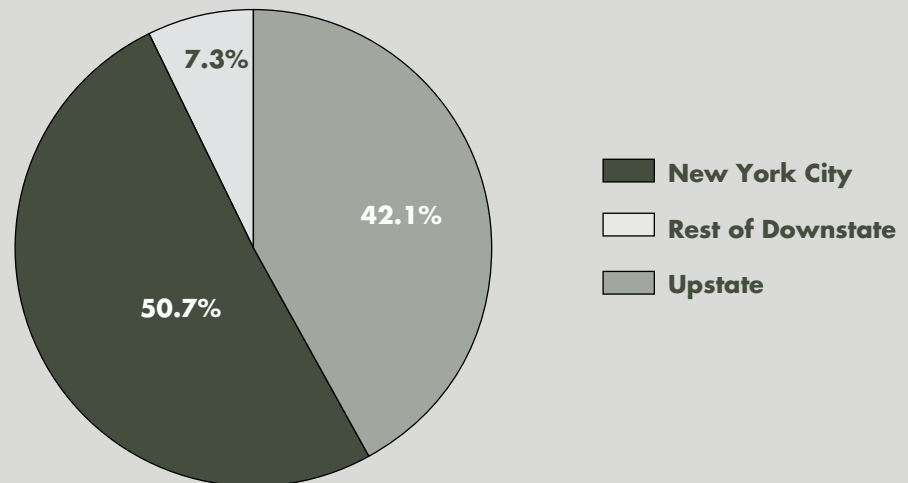
BREAKDOWN OF NIH FUNDING IN NEW YORK STATE, 2008



Source: NIH
Aggregate Data for All
Organizations, 2008

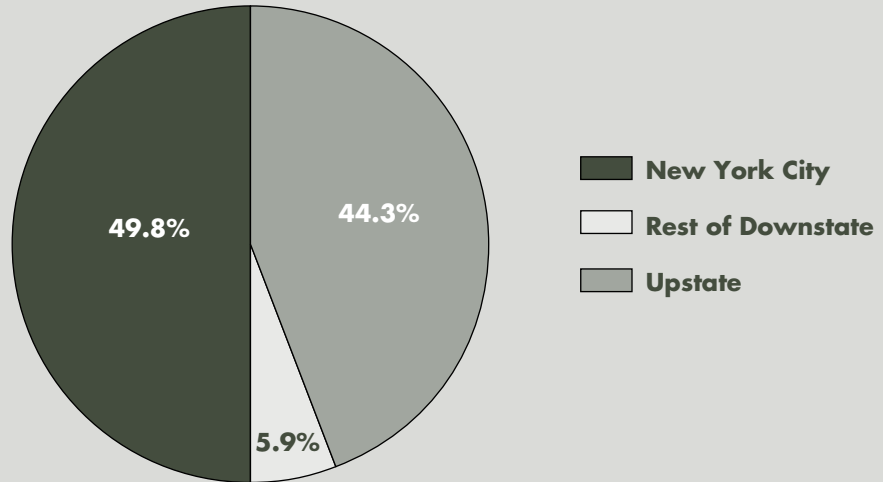
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BREAKDOWN OF TOTAL R&D SPENDING AT COLLEGES AND UNIVERSITIES IN NEW YORK STATE, 2006



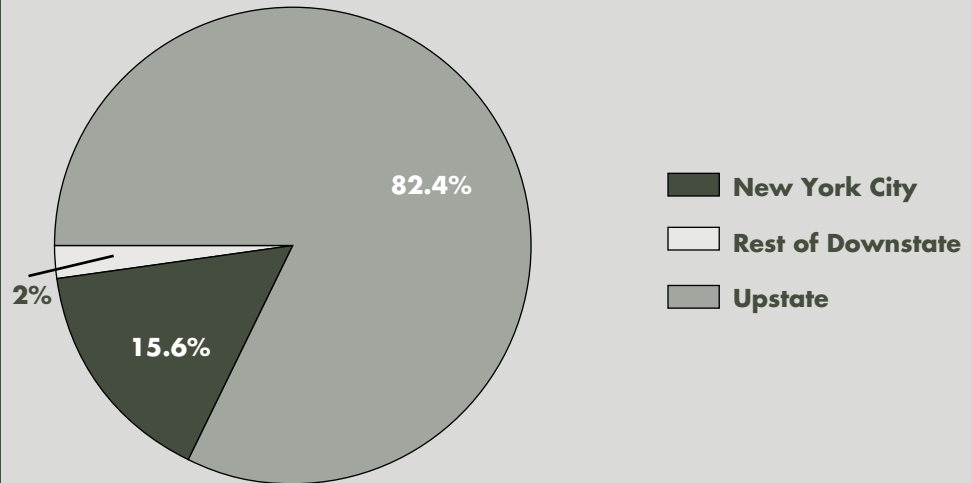
Source: National
Science Foundation,
R&D expenditures at
universities and colleges,
by state, control, and
source of funds, FY 2006

BREAKDOWN OF FEDERAL GOVERNMENT FINANCED R&D SPENDING AT COLLEGES AND UNIVERSITIES IN NEW YORK STATE, 2006



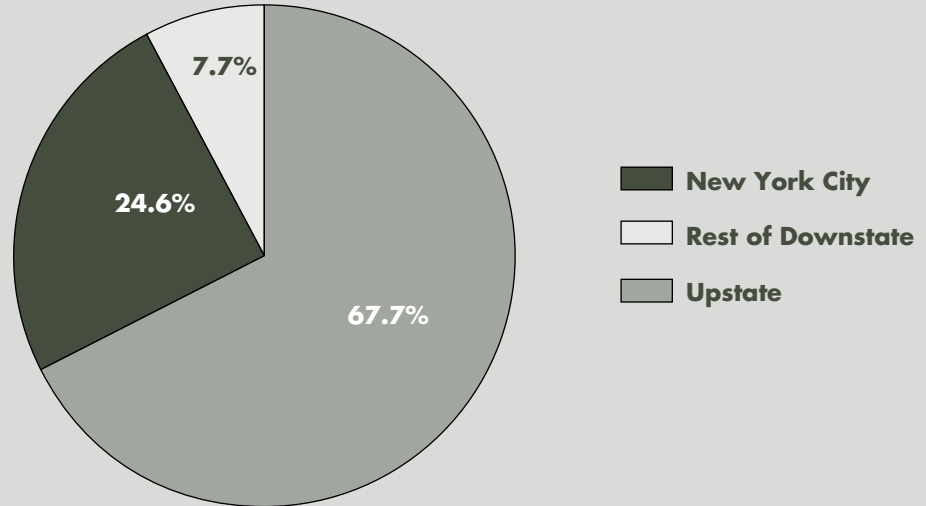
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

BREAKDOWN OF STATE AND LOCAL GOVERNMENT R&D SPENDING AT COLLEGES AND UNIVERSITIES IN NEW YORK STATE, 2006



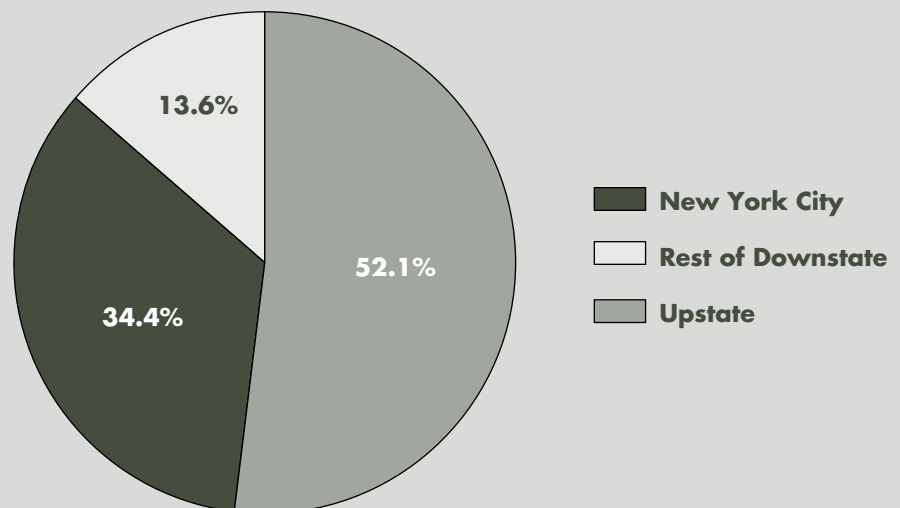
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

BREAKDOWN OF INDUSTRY SPENDING ON R&D AT UNIVERSITIES AND COLLEGES IN NEW YORK STATE, 2006



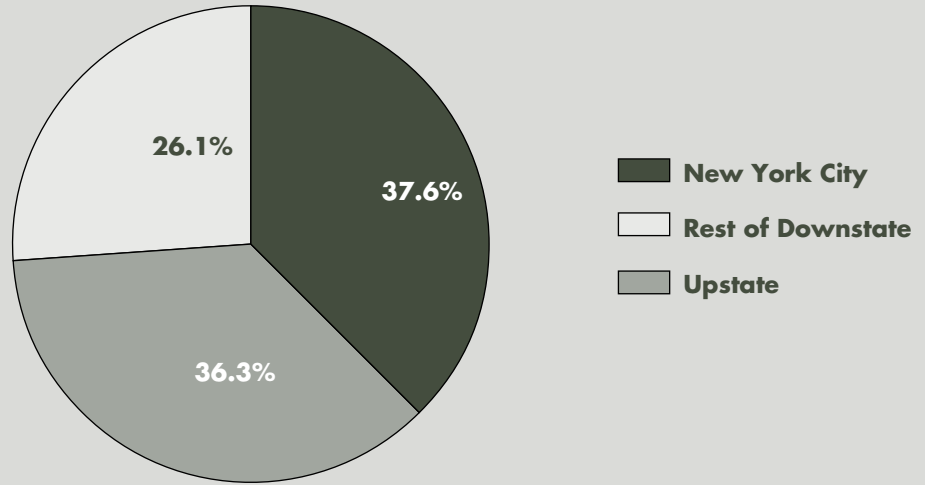
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

BREAKDOWN OF INSTITUTIONAL R&D SPENDING IN NEW YORK STATE, 2006



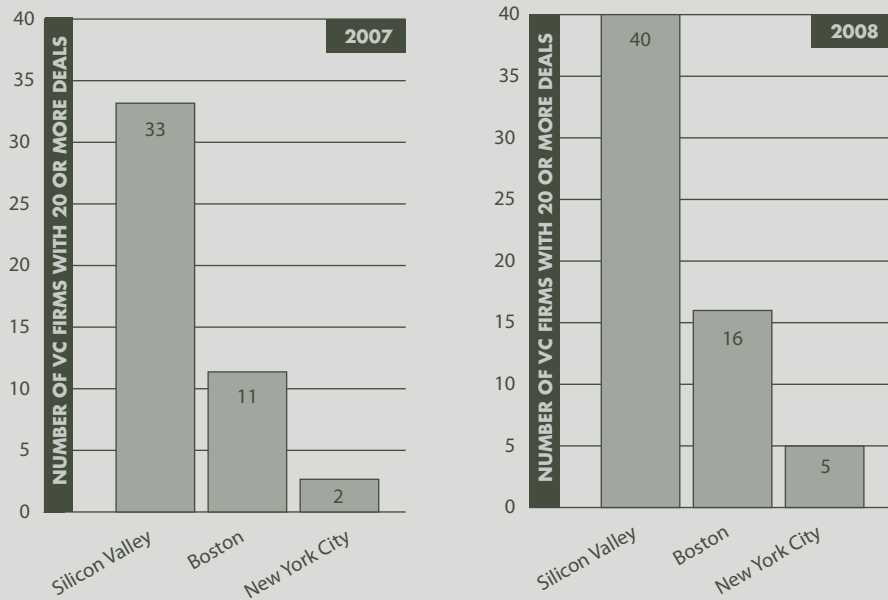
Source: National Science Foundation, R&D expenditures at universities and colleges, by state, control, and source of funds, FY 2006

BREAKDOWN OF FEDERAL FUNDING TO NONPROFIT RESEARCH INSTITUTIONS IN NYS, 2006



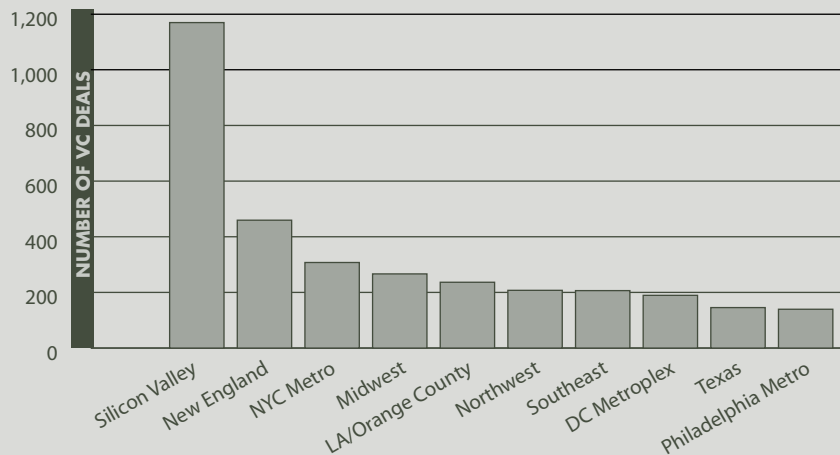
Source: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2006.

MOST ACTIVE VC FIRMS BY LOCATION, 2007 & 2008

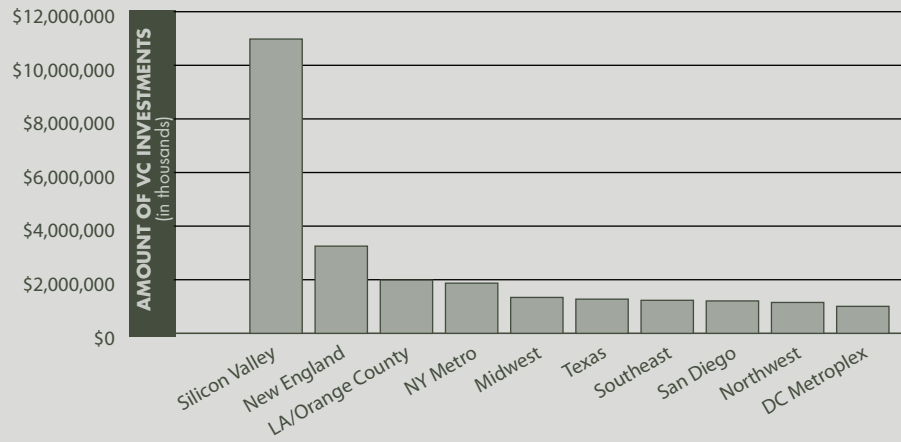


Source: PricewaterhouseCoopers and the National Venture Capital Association, "MoneyTree Report," 2007 and 2008.

TOP 10 REGIONS FOR ATTRACTING VENTURE CAPITAL INVESTMENT (NUMBER OF DEALS), 2008



Source: PricewaterhouseCoopers and the National Venture Capital Association, "MoneyTree Report," Q4 2008/Full-year 2008

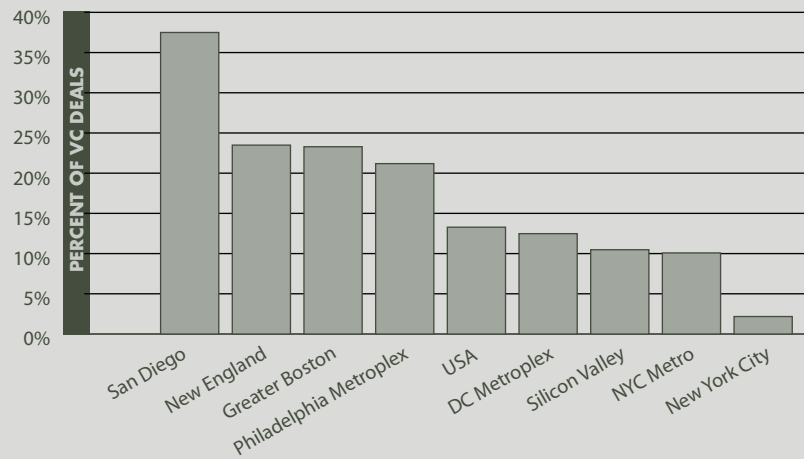
**TOP 10 REGIONS FOR ATTRACTING VENTURE CAPITAL INVESTMENT
(DOLLAR VALUE), 2008**

Source:
PricewaterhouseCoopers
and the National Venture
Capital Association,
"MoneyTree Report," Q4
2008/Full-year 2008

SECTION 7: VENTURE SUPPORT BY SECTOR

35

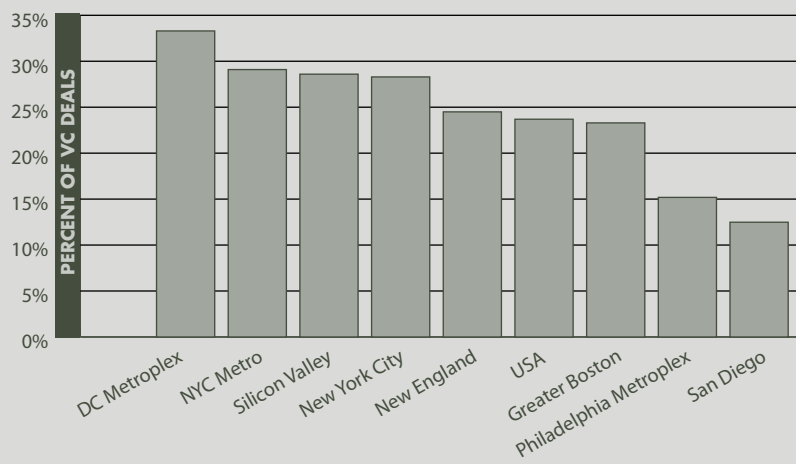
SHARE OF REGION'S VC DEALS GOING TO BIOTECH FIRMS, 4Q 2008



Source: :
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

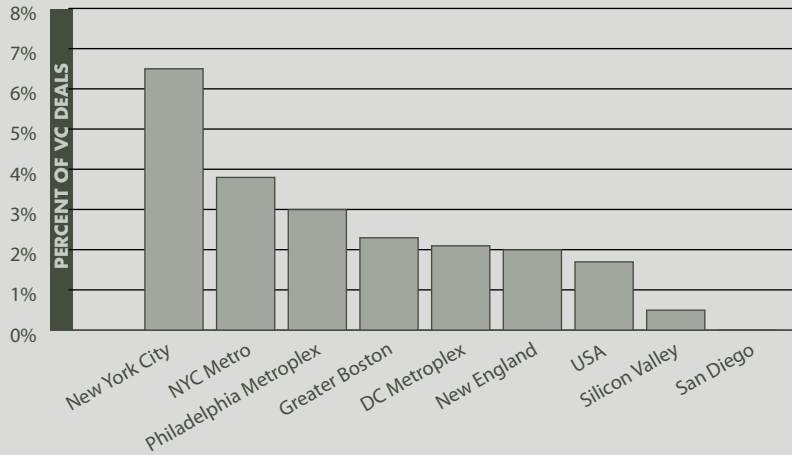
36

SHARE OF REGION'S VC DEALS GOING TO SOFTWARE FIRMS, 4Q 2008



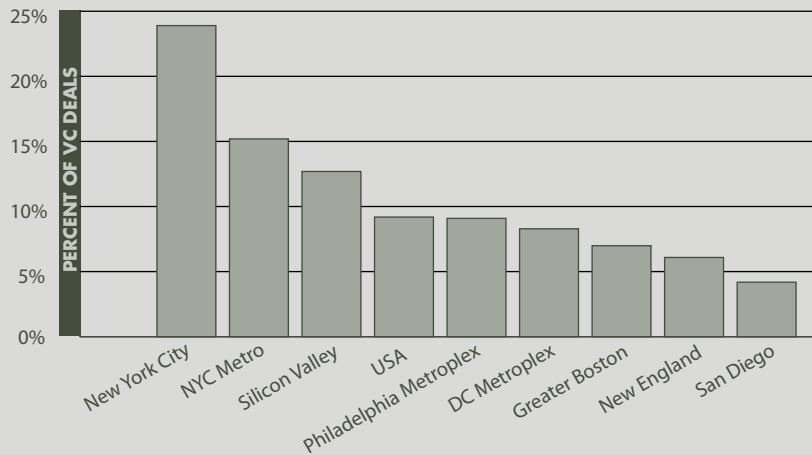
Source: :
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

SHARE OF REGION'S VC DEALS GOING TO FINANCIAL SERVICES FIRMS, 4Q 2008



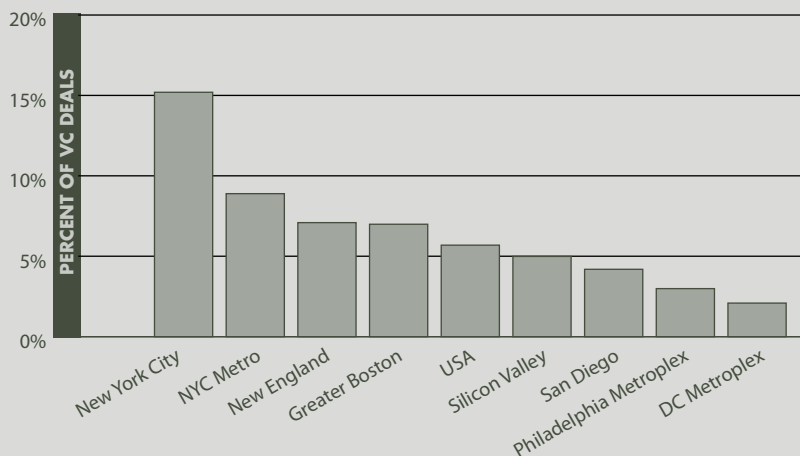
Source: :
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

SHARE OF REGION'S VC DEALS GOING TO MEDIA AND ENTERTAINMENT FIRMS, 4Q 2008



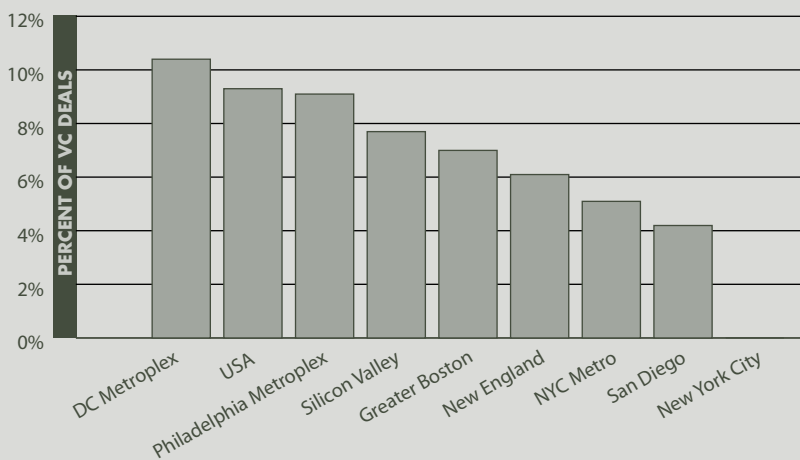
Source: :
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

SHARE OF REGION'S VC DEALS GOING TO IT SERVICE FIRMS, 4Q 2008

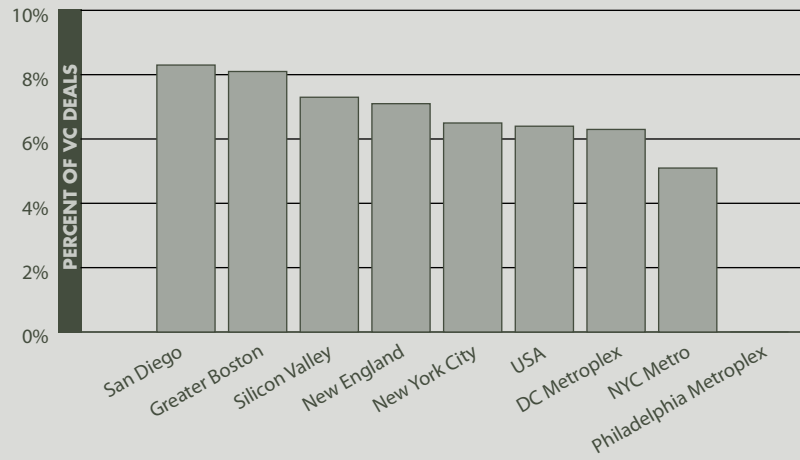


Source:
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

SHARE OF REGION'S VC DEALS GOING TO MEDICAL DEVICES AND EQUIPMENT FIRMS, 4Q 2008



Source:
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

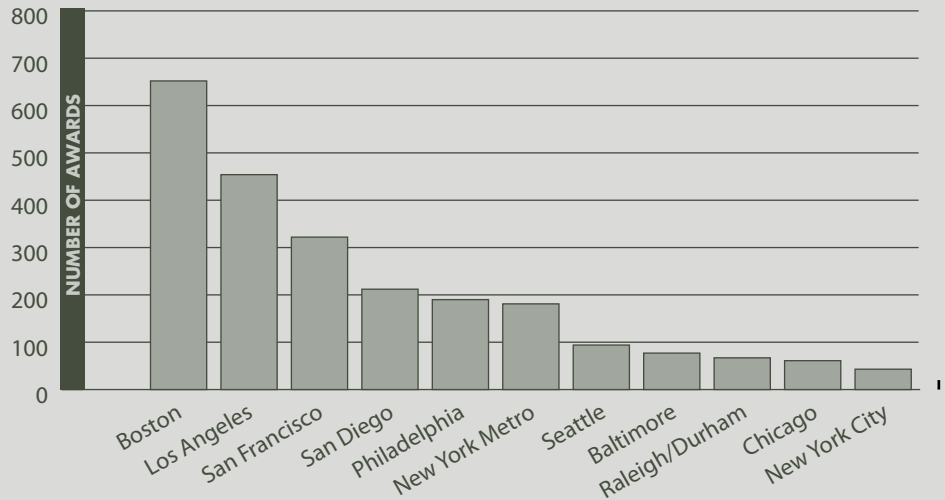
SHARE OF REGION'S VC DEALS GOING TO TELECOM SERVICES FIRMS, 4Q 2008

Source:
PriceWaterhouseCoopers
MoneyTree Report,
Investments by Industry,
4Q 2008

SECTION 8: SBIR/STTR WEAKNESSES

42

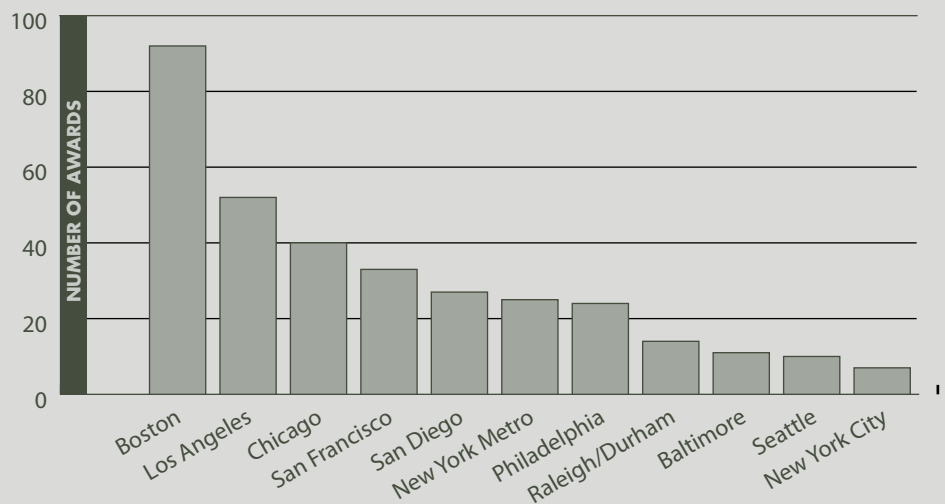
NUMBER OF SBIR AWARDS BY REGION, 2006



Source: U.S. Small Business Administration

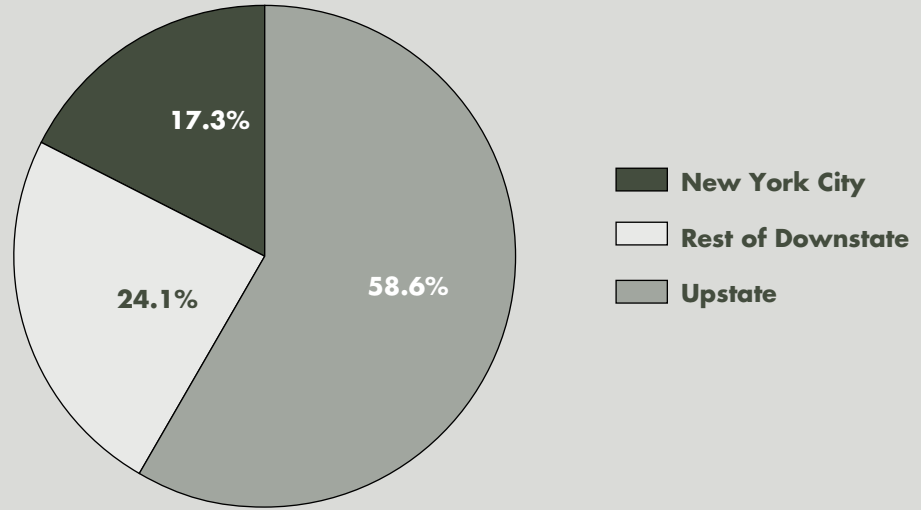
43

NUMBER OF STTR AWARDS BY REGION, 2006



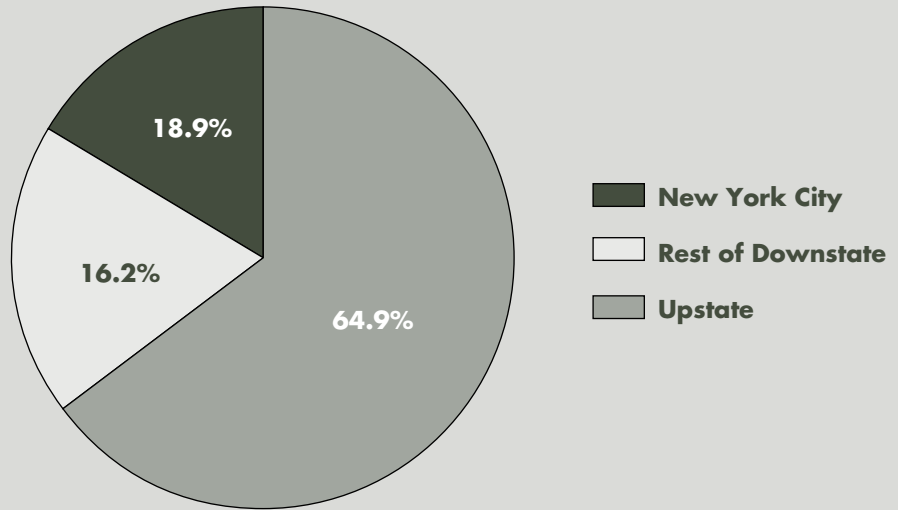
Source: U.S. Small Business Administration

BREAKDOWN OF SBIR AWARDS IN NEW YORK STATE, 2006



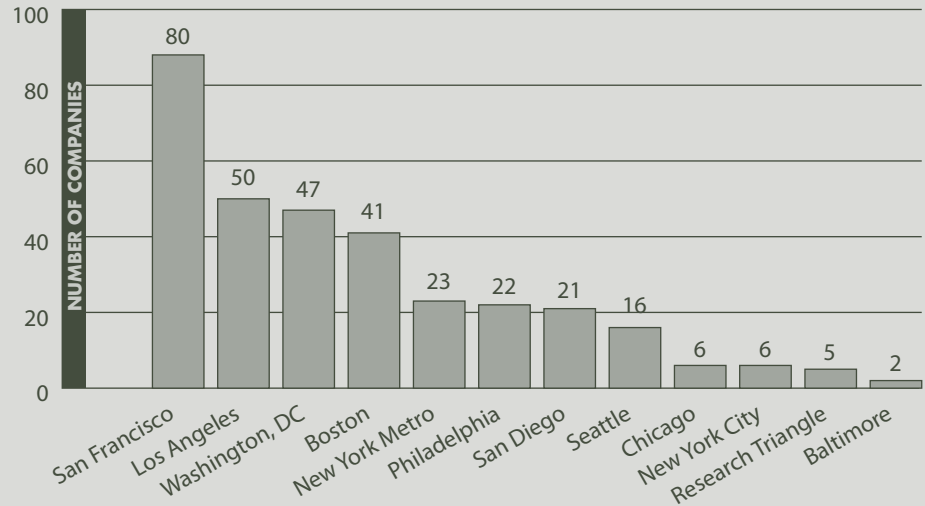
Source: U.S. Small Business Administration

BREAKDOWN OF STTR AWARDS IN NEW YORK STATE, 2006



Source: U.S. Small Business Administration

REGIONS WITH THE MOST COMPANIES ON THE 2008 DELOITTE TECHNOLOGY FAST 500 LIST



Source: Deloitte Technology Fast 500, November 2008.

The Deloitte Technology Fast 500 recognizes North America's fast-growing technology, media, telecommunications and life sciences companies in terms of percentage revenue growth over five years.

TOP METROPOLITAN AREA RANKED BY NUMBER OF INDIVIDUALS EMPLOYED IN SCIENCE AND ENGINEERING OCCUPATIONS, 2006

	METROPOLITAN AREA	NUMBER OF S&E EMPLOYEES	S&E EMPLOYEES AS A PERCENT OF TOTAL WORKFORCE
1	NYC	308,860	3.8
2	Washington, DC	297,670	10.5
3	Los Angeles	231,900	4.1
4	Boston	180,110	7.4
5	Chicago	179,560	4.1
6	Dallas-Fort Worth	140,140	5.0
7	San Francisco	137,150	6.9
8	Philadelphia	134,980	4.9
9	Detroit	128,430	6.4
10	Seattle	127,070	7.8
11	San Jose	126,090	14.1
12	Houston	117,310	4.9
13	Atlanta	100,560	4.3
14	Minneapolis	100,540	5.7
15	San Diego	76,830	5.9
16	Denver	75,690	6.3
17	Phoenix	70,070	3.8
18	Baltimore	67,930	5.3
19	Miami	65,940	2.8
20	St. Louis	56,520	4.3

47

Source: National Science Foundation, Science and Engineering Indicators 2008. Data comes from Bureau of Labor Statistics, Occupational Employment Statistics Survey, May 2006. Note: In the chart, metro area is defined as Metropolitan Statistical Area (MSA). Values for NYC are for 2005. For all other Metro areas, data is from 2006.

TOP METROPOLITAN AREA RANKED BY PERCENTAGES OF METRO AREA WORKFORCE EMPLOYED IN SCIENCE AND ENGINEERING OCCUPATIONS, 2006 (MINIMUM 25,000 PEOPLE EMPLOYED IN S&E OCCUPATIONS)

	METROPOLITAN AREA	S&E EMPLOYEES AS A PERCENT OF TOTAL WORKFORCE	NUMBER OF S&E EMPLOYEES
1	San Jose	14.1	126,090
2	Durham, NC	10.7	27,770
3	Washington	10.5	297,670
4	Austin	7.9	56,100
5	Seattle	7.8	127,070
6	Boston	7.4	180,110
7	Raleigh	6.9	32,920
8	San Francisco	6.9	137,150
9	Detroit	6.4	128,430
10	Denver	6.3	75,690
11	San Diego	5.9	76,830
12	Hartford	5.8	32,440
13	Minneapolis-St. Paul	5.7	100,540
14	Sacramento	5.4	48,270
15	Baltimore	5.3	67,930
16	Dallas-Fort Worth	5.0	140,140
17	Portland	5.0	49,060
18	Houston	4.9	117,310
19	Philadelphia	4.9	134,980
20	Richmond, VA	4.8	28,650
33	NYC	3.8	308,860

48

Source: National Science Foundation, Science and Engineering Indicators 2008. Data comes from Bureau of Labor Statistics, Occupational Employment Statistics Survey, May 2006.

Note: In this chart, metro area is defined as Metropolitan Statistical Area (MSA). Values for NYC are for 2005. For all other metro areas, data is from 2006.

TOP HIGH-TECH CENTERS IN NORTH AMERICA, RANKED BY MILKEN INSTITUTE, 2007

Source: Milken Institute, June 2009. Metros were ranked by their performance as "tech poles," or clusters of high-tech activity. This is based on jobs and wages, as well as the local tech concentration and each metro's relative share of North American activity. A location quotient (LQ) of 1.0 means the local high-tech concentration matches the average for North America; an LQ of 2.0 is twice that of North America.

Metro Area	Metro Area Employment (thousands)	Location Quotient	Share of N. American Wages	Tech Pole Scores
San Jose-Sunnyvale-Santa Clara	244.0	4.6	5.7%	100.0
Seattle-Bellevue-Everett	226.3	2.7	3.2%	46.4
Cambridge-Newton-Framingham	163.6	3.4	2.8%	45.2
Washington-Arlington-Alexandria	275.7	2.0	4.2%	41.8
Los Angeles-Long Beach-Glendale	376.4	1.6	4.2%	40.2
Dallas-Plano-Irving	187.7	1.5	2.4%	21.8
San Diego-Carlsbad-San Marcos	136.4	1.8	2.0%	19.3
Santa Ana-Anaheim-Irvine	147.0	1.7	1.6%	17.7
New York-White Plains-Wayne	262.0	0.9	3.9%	16.8
San Francisco-San Mateo-Redwood City	106.4	1.8	2.0%	16.1