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SOLUTIONS FOR NEW YORK THE ECONOMIC SIGNIFICANCE OF INDEPENDENT COLLEGES AND UNIVERSITIES IN NEW YORK STATE

Prepared for the:
Commission on Independent Colleges and Universities



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SOLUTIONS FOR NEW YORK

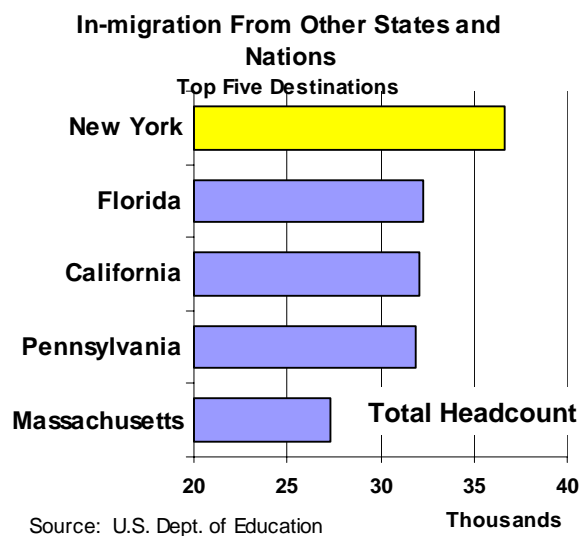
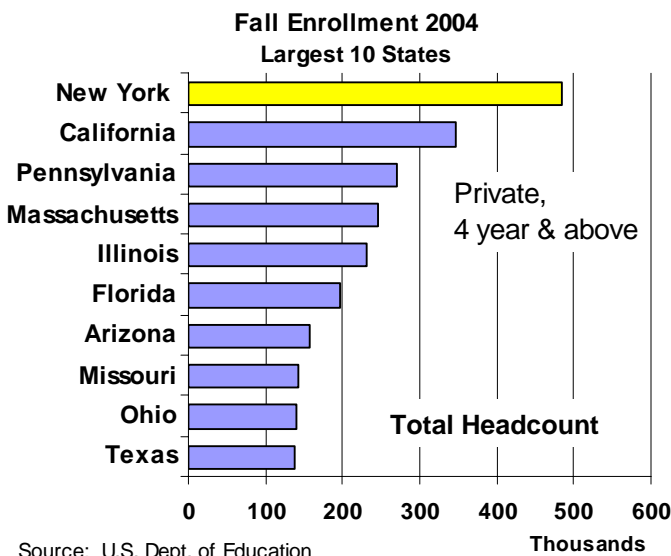
THE ECONOMIC SIGNIFICANCE OF INDEPENDENT COLLEGES AND UNIVERSITIES IN NEW YORK STATE

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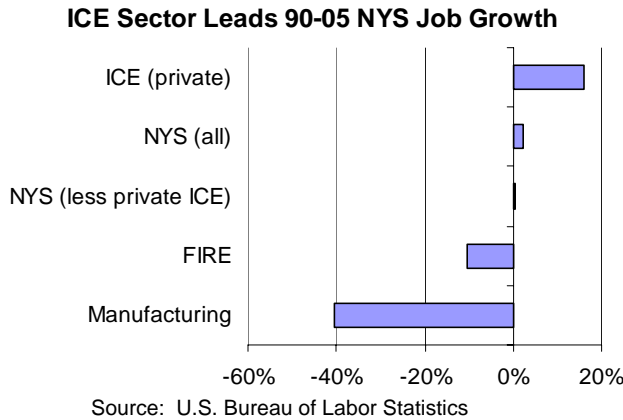
SUMMARY

With New York’s traditional economic engines—financial services and manufacturing—endangered and declining, the state’s strong foundation in scholarship has helped stabilize the economy. The cornerstone of the 21st century’s knowledge economy is the university; and the independent colleges and universities have led the expansion of enrollment and scholarship.

Independent higher education is particularly important to New York State, unlike states in the Midwest and West that rely very heavily on large public college and university systems. New York’s Independent Sector enrollment at the “four year and above” levels is the highest in the nation and comprises 55% of total “four year and above” enrollment in the state. New York’s Independent Sector enrollment is 83% larger than either California or Texas, states with substantially larger populations (89% and 21% larger,



respectively) Independent sector enrollment (4-year and above) has grown 12%, compared to 7% at New York State’s public institutions from 1995 to 2004.



Higher education is part of a larger category of economic activity dubbed the “Intellectual, Cultural and Educational” or ICE sector in a 2005 essay by John Sexton, President of New York University, and Abraham Lackman, President of the Commission on Independent Colleges and Universities. As seen in the adjacent chart, the ICE sector contributed significantly to the state’s economic expansion between 1990 and

2005—in fact, without the ICE sector the modest employment gains of the statewide economy virtually disappear.

Private Education Leads the Way

Private sector education grew dramatically from 1990 to 2005 in the number of jobs and payroll. In particular, payroll for this sector increased nearly two-thirds, with private ICE sector wages rising 36% in the same period. Independent colleges and universities are an important component of this overall growth.

Impact of ICE	Jobs			Payroll (thousands, '05)		
	1990	2005	% Growth	1990	2005	% Growth
<i>private sector only</i>						
NAICS 61 Educational services (includes higher ed.)	185,337	272,169	47%	\$6,378	\$10,473	64%
NAICS 54 Professional and technical services	436,374	521,549	20%	\$27,287	\$38,249	40%
NAICS 51 Information	288,075	265,525	-8%	\$17,117	\$20,581	20%
NAICS 71 Arts, entertainment, and recreation	109,769	123,605	13%	\$3,584	\$4,555	27%
TOTAL	1,019,555	1,182,848	16%	\$54,366	\$73,858	36%

Source: U.S. Bureau of Labor Statistics

Independent Higher Education: Major Contributor to NYS Economy

CGR conducted a study of the economic impact of independent higher education on the New York State economy, relying on several sources of information including statistical data gathered by the U.S. Department of Education and survey responses from a sample of Independent Sector institutions. As summarized in the adjacent table, the net output impact on the state economy totals about \$41.4 billion in direct and spillover effects.

NYS Independent Sector Economic Impact

Direct & Spillover Impact of Campus Spending	\$34,932
Student & Visitor Impact	\$3,371
Economic Impact of Academic Medical Centers	\$3,053
TOTAL (millions)	\$41,356

Totals may not sum due to rounding

NYS Independent Sector Employment Impact (thousands)

Campus Employment	139.0
Construction Employment	19.7
Total Direct Employment	158.7
Spillover Employment	169.8
TOTAL Employment	328.5

NYS Independent Sector Payroll Impact (millions)

Institutional Payroll	\$7,501
Construction Payroll	\$1,050
Total Direct Payroll	\$8,550
Indirect and Induced Payroll	\$6,732
TOTAL Payroll	\$15,282

Totals may not sum due to rounding

The employment effects are also substantial: 328,500 direct and “spillover” jobs exist because of the Independent Sector of higher education. Total labor income totals more than \$15 billion.

The total fiscal impact—NYS personal income tax and NYS and local sales revenues—are estimated to be about \$918 million.

Finally, the Independent Sector annually invests \$2.1 billion dollars in research, spurring the creation of as many as 10,000 new jobs in the private sector through the creation of new technology. The economic benefits of higher education have generated a new level of competition for the best researchers, faculty, and students. New York’s independent institutions are responsible for \$2.1 billion of the \$2.6 billion in research and

development attracted by academic institutions in New York State.* The Independent Sector is also an effective “importer” of

* National Science Foundation FY 2003. <http://www.nsf.gov/statistics/nsf05320/tables.htm>

students from other states and nations, with about 40% of total first-time students enrolled within these institutions coming from outside the State of New York*.

The construction and renovation of physical facilities is one significant way New York's colleges and universities are competing for the "stars" of academic research (and the federal and private research dollars they control) and the most promising student scholars from around the world. From 21st century laboratories to classrooms equipped with the latest educational technology and improved student living facilities, independent higher education has invested significantly in its physical plant. Capital construction averages about 12% of total spending each year, about \$1.9 billion dollars across all independent higher education.

* U.S. Department of Education IPEDS, Fall 2004 enrollment.

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We would also like to acknowledge the tremendous support and guidance provided to CGR staff by Abe Lackman and his staff at cIcu. This report is a far better product as a result. Particular thanks are due to Michael Wachowicz for his patient assistance with IPEDS and other sources of data.

Staff Team

Erika Rosenberg and Andries Hof contributed significantly to this report.

TRANSFORMATION OF NEW YORK'S ECONOMY

New York's Economic Diversity

New York State is a land of contrasts, boasting an economy of astonishing breadth and diversity. Its location, size and natural endowments, plus the industry and creativity of its residents, have established the state as a powerhouse in a number of industry sectors, particularly financial services, manufacturing and higher education.

The City that Banking Built

New York City has been a significant financial center from the earliest years of the republic: The progenitor of the New York Stock Exchange (NYSE) was founded in 1792, with the Exchange formally established in 1817. By 1877, the state's banks held 37% of the nation's deposits, more than three times the state's population share. In the same year, 63% of the nation's coin and currency was held in New York City banks alone. The expansion of major New York-based banking houses, particularly J.P. Morgan, National City (now Citibank) and Chase Manhattan, helped New York City take the mantle of "world's financial center" from London by the end of the second World War.

Watch for FIRE: New York's Dependence on Wall Street

New York State's reliance on the finance sector continues to this day. For the first half of 2005, the finance, insurance and real estate (FIRE) sector in New York City paid wages and salaries of \$42 billion, 84% of the total for the industry in all of New York State. In 2005, New York City's FIRE payroll was 19% of the state's total payroll across **all** industries.* As the average payroll in the industry is relatively high, and New York State's income tax is progressive, this sector accounts for more than its payroll share of personal income tax receipts.

Technological change and increasing competition from global money centers like London, Tokyo and Frankfurt, plus regional competition from New Jersey and Connecticut, have eroded New

* NYS Department of Labor. Note: Due to the timing of Wall Street's annual bonus, payroll in the FIRE sector is higher in the first quarter.

York State's FIRE employment. Jobs in the Finance and Insurance sector have dwindled 14% over the last 15 year; growth in the real estate sector, however, reduces the entire FIRE decline to 10%. Strength in the markets (stimulating a strong bonus payout) have kept real payroll rising, up 67% in 2004 from a relatively weak 1990.

To date, the FIRE sector has seen only modest restructuring. It is only a matter of time before this relative stability ends. Facilitated by precipitous declines in the cost of telecommunications and the increasing sophistication of offshore providers, global competition for a wide array of services will only accelerate. With back-office functions successfully outsourced to other countries (particularly India), investment banking firms such as J.P. Morgan and Morgan Stanley have quietly hired Indian firms or set up their own subsidiaries in India to handle more sophisticated work such as financial modeling and comparable analysis.*

Changes in U.S. exchanges provide further evidence of fundamental shifts that threaten FIRE in New York State. Financial transactions are rapidly relocating to virtual trading "floors" whose physical "homes" are farms of computer servers scattered around the globe. The NYSE already receives all customer orders electronically, and an increasing proportion of trades are automated. Its recent merger with all-electronic Archipelago in 2005 and the NYSE's conversion to a for-profit company in 2006 will accelerate the transition. The Chicago Mercantile Exchange, which went public in 2002, reports that 69% of its trades are now electronic†.

As New York City's global competitors continue to expand and cyberspace captures a majority of transaction volume from trading floors worldwide, the FIRE sector's contribution to the state and NYC economies is at risk. In the words of New York University

* <http://www.cfo.com/article.cfm/3011539?f=related>

† <http://informationweek.com/story/showArticle.jhtml?articleID=160911779>

President John Sexton and Commission on Independent Colleges and Universities President Abraham Lackman, “cyberspace will deny oxygen to New York’s FIRE sector.”

Sexton and Lackman further assert:

“ . . . a strategy for the New York of the 21st century must focus on the ICE [Intellectual, Cultural & Educational] sector—on the life of the mind that makes New York an interpersonal magnet that cannot be replicated in cyberspace, on the creativity that will keep commerce and those who engage in it here, and on educational institutions as the idea generators that will yield path-breaking and profitable research. ICE not only promises advances in the sciences and the arts, but also provides the advantages that will keep people in New York and draw in new talent and new energy.”*

Upstate Built by Manufacturing

New York became the nation’s leading manufacturing center during the 19th century. The Erie Canal, completed in 1825, and the parallel development of railroads prepared New York to benefit from the vast industrial expansion stimulated by the Civil War. New York nearly doubled its railroad mileage between 1865 and 1877, solidifying the industrial significance of the state’s Erie Canal cities from Buffalo to Albany. The state’s manufacturing prominence lasted until the industrialization of the South took hold in the 1960s and 1970s. As of 1950, New York employed 13% of the nation’s manufacturing workers even though it was home to 10% of its population. By the new century, the proportions had reversed with NYS employing merely 4.7% of manufacturing workers despite a population share of 6.5%.

Manufacturing More Productive; Moves Offshore

The loss of manufacturing jobs Upstate has continued for decades—the employment peak for the state’s manufacturing occurred in the late 1950s. Technological change leading to dramatic advances in labor productivity, and competition, triggered by globalization, has played an important role since the

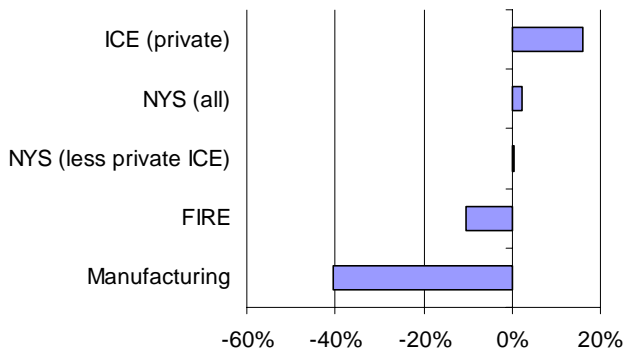
* J. Sexton and A. Lackman, *New York Observer*, February 14, 2005.

beginning of the 1990s, particularly triggered by the break up of the Soviet Union and a radical shift in economic policy in China. Policy changes in Latin America and India in the 1980s and 1990s, plus investments in education and infrastructure in Southeast Asia, have contributed to an explosion of global competition.

The transformation of Upstate’s economic base has been wrenching for individual communities as major employers close their doors or dramatically downsize. Buffalo, for example, faced its crisis with the near disappearance of the steel industry in the 1970s. In Schenectady it has been the shrinkage of General Electric. Rochester’s crisis has been the rapid loss of Eastman Kodak’s film business. Manufacturing employment in New York State fell 40% between 1990 and 2005, with real payroll declining by nearly one-third.

PRESERVE NEW YORK’S ECONOMY IN THE ICE SECTOR

ICE Sector Leads 90-05 NYS Job Growth



Source: U.S. Bureau of Labor Statistics

With manufacturing in free fall and FIRE endangered, what does New York’s economy depend on? Another of New York’s traditionally strong sectors is growing—culture and scholarship.

The state’s institutions of higher learning have a long and prestigious history. Columbia University was established as King’s College in 1754, the oldest higher education institution in the state and the fifth oldest in the nation. New York

University was founded in 1831, Fordham University in 1841, the University of Rochester in 1850, Cornell University in 1868 and Syracuse University in 1870. While acknowledged as a critical part of the state’s cultural and intellectual heritage, colleges and universities were not traditionally considered economic engines.

This perspective has changed. In four of Upstate New York’s leading cities (Binghamton, Buffalo, Rochester and Syracuse)

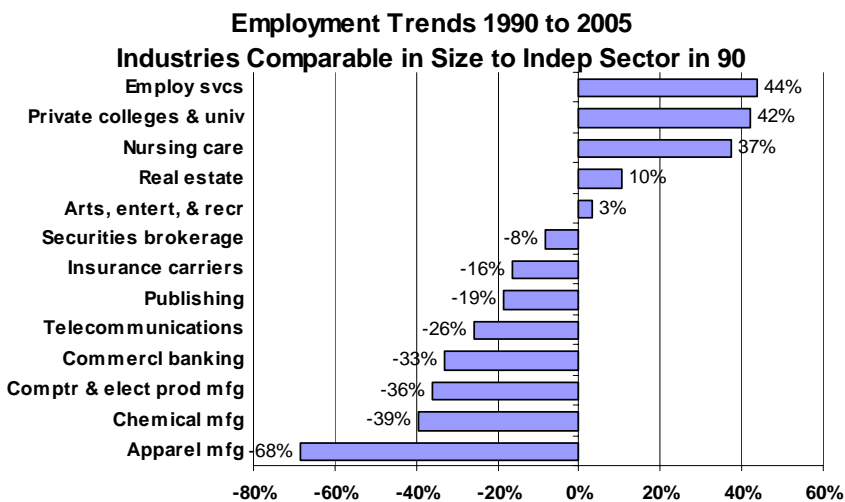
economies founded on manufacturing have evolved to a new economic reality in which a university is either the largest (Syracuse and Rochester) or one of the largest employers. The same dynamic has played out in the Albany metropolitan area, although to a lesser degree.

The knowledge economy of the 21st century makes its headquarters in the university. Together with cultural institutions, the knowledge sector is the growth force of the New York State economy. Collectively labeled the “Intellectual, Cultural & Educational” sector (ICE), private sector ICE employment grew by 16% from 1990 to 2005, while the rest of the economy

Impact of ICE	Jobs			Payroll (thousands, '05)		
	1990	2005	% Growth	1990	2005	% Growth
<i>Private sector only</i>						
NAICS 61 Educational services (includes higher education)	185,337	272,169	47%	\$6,378	\$10,473	64%
NAICS 54 Professional and technical services	436,374	521,549	20%	\$27,287	\$38,249	40%
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TOTAL	1,019,555	1,182,848	16%	\$54,366	\$73,858	36%

Source: U.S. Bureau of Labor Statistics

stagnated (see table below).



A similar story is told with respect to payroll: In real terms, manufacturing lost 31% while private ICE gained 36%, more than three times the 11% growth rate for the rest of the NYS economy.

Employment growth in the private higher education sector (four-year and above) outstripped that of many other industries comparably sized in 1990,

Source: U.S. Bureau of Labor Statistics
 NOTE: "Employ svces" includes temporary employment services

e.g. temporary employment services and nursing care.

ECONOMIC IMPACT OF INDEPENDENT HIGHER EDUCATION IN NEW YORK STATE

CGR's study of the economic impact of independent higher education on the New York State economy used several sources of information, including statistical data gathered by the U.S. Department of Education and survey responses from a sample of clcu member campuses.

Direct Expenditure The direct impact of New York's independent institutions of higher education totals about \$21 billion annually. The direct impact includes spending by the institutions (both on current account and average annual capital expenditures), students, visitors and the portion of medical center spending assumed to be unique to academic medical centers.

Spending by Colleges and Universities

Direct spending by New York's private not-for-profit institutions is estimated at \$17.6 billion in 2005, including \$1.9 billion in annual spending on capital construction, based on a sample of Independent Sector institutions. Averaged over five-years, surveyed institutions made capital expenditures equal to about 12% of total current expenditure (77 colleges and universities responded to the survey).

Direct employment at Independent Sector institutions totals 139,000 with annual construction activity generating about 19,700 jobs in the construction sector.

The construction and renovation of physical facilities is one significant way New York's academic institutions are competing for the "stars" of academic research (and the federal and private research dollars they control) and the promising student scholars from around the world. From 21st century laboratories to high tech classrooms and improved student living facilities, independent higher education has been rapidly investing in its physical plant.

Spending by Students

Market research firm Harris Interactive conducted a national poll of student spending and concluded that the average annual discretionary spending per undergraduate student was \$3,470. Graduate students were not surveyed; spending of graduate students is expected to be the same for purposes of this study. Actual student spending will vary markedly by campus, based on the average household income of student families and the location of the college (e.g., the opportunity for off-campus spending). This impact is assumed to be wholly captured by the State of New York, although the proximity and appeal of adjacent states will have an impact as well. Total discretionary spending by Independent Sector institutions' about 450,000 students (both full time and part time) is estimated at about \$1.6 billion annually.

Visitor Spending

Visitors bring their purchasing power with them regardless of whether they are alumni attending Homecoming, parents flocking to Parents Weekend or scientists participating in an academic conference. CGR requested information on total visitation from a sample of clcu institutions but did not receive sufficient consistent results to support the independent creation of an estimate.

Just as student spending is highly variable by campus, so is visitor spending. Some institutions are very active hosts for academic and nonacademic conferences; institutions with a student body largely drawn from the state will attract more frequent visits than those with a national market; conversely, visitors from greater distances spend more when they come.

CGR consulted three recent economic impact studies of individual campuses that compiled detailed information on visitation.* The study authors reported very similar findings with estimates ranging from \$551 to \$676 per student. CGR adopted the mean of the three estimates, \$580 per student. Using this assumption, visitor

* R. Ley and J. Totten, "Economic Impact of Bemidji State University on the Economy of the Bemidji Region," November 2001; L. Fowler and S. Fuller, "Economic Impact of George Mason University on the Northern Virginia Economy," November 2005; and K. Gardner and A. Raith, Center for Governmental Research, "Propelling Rochester's 21st Century Economy," July 2003.

Contribution of Academic Medical Centers

spending for the Independent Sector is estimated at \$0.3 billion annually.

New York's Independent Sector boasts some of the finest medical schools in the world: Albany Medical College, Albert Einstein College of Medicine of Yeshiva University, Columbia University College of Physicians and Surgeons, Weill Medical College of Cornell University, Mount Sinai School of Medicine of New York University, New York Medical College, New York University School of Medicine, and the University of Rochester School of Medicine and Dentistry.

While these hospitals perform routine procedures that are common to all major hospitals whether affiliated with a medical school or not, they also perform sophisticated procedures that are anything but routine (e.g., certain organ transplant surgeries and experimental therapies for particularly aggressive cancers). These prestigious institutions understandably attract patients from great distances. Clinical service revenue at hospitals affiliated with academic medical centers is partly attributable to the institution's academic mission.

Clearly, a portion of clinical care revenue from each of these affiliated hospitals should be attributed to the academic mission. CGR relied on a detailed study conducted in partnership with the University of Rochester Medical Center and assumed that 13% of clinical service revenue in hospitals associated with these medical schools be attributed to the academic mission.* This adds \$1.3 billion to the direct expenditure associated with the Independent Sector of higher education.

Finally, CGR drew on another study of Rochester's medical community to include the value of medical residents. New York State's Department of Health reports that hospitals affiliated with the Independent Sector's medical schools employed nearly 6,400

* K. Gardner, Center for Governmental Research, "Building a New Foundation: The University of Rochester Medical Center in the Regional Economy," September 2002.

residents. The CGR study* found that the annual benefit of a medical resident (in terms of the cost to the hospital of replacing the work of the resident with other health care workers) ranges from \$22,000 to \$64,000. For the purposes of this study the midpoint, \$43,000 was used to estimate an additional impact of \$0.3 billion annually. We are including this figure with the other calculations although it is qualitatively different, being a cost foregone rather than an actual expenditure, therefore, we do not attribute “spillover” benefits

Spillover Benefits

While indisputable that the impact of higher education institutions exceeds that of the direct expenditures, the size of these spillover benefits is more difficult to determine. CGR, building on the IMPLAN input-output modeling system,† developed output and employment multipliers for this study. Spillover benefits are denominated as indirect—the spillover benefits associated with the institution’s spending—and induced—spending stimulated by the spending of the institution’s employees.

Employment from direct spending (including spending from the institution, typical construction spending, student discretionary spending, visitor expenditures, and hospital staff stimulated by the medical schools) totals about 158,700. With indirect and induced employment impacts included, the total rises to about 328,500 jobs.

Total Impact

With spillover benefits included, the aggregate economic impact of New York’s independent higher education sector is estimated at \$41.4 billion. The largest contribution is made by academic institutions located in New York City—\$21.9 billion, 53% of the total. Tables summarizing CGR’s economic impact estimates for all regions of the state are found on pages 10 and 11.

* K. Gardner and S. Boyce, Center for Governmental Research, “Measuring Benefits of Graduate Medical Education on the Rochester Economy,” 1998.

† IMPLAN was originally developed in the 1970s for use by the U.S. Forest Service. See www.IMPLAN.com for more information.

2005 Economic Impact of New York's Independent Higher Education Sector

NOTE: Totals may not sum due to rounding.

	Statewide	Capital District	Central	Hudson Valley	Long Island	New York City	Northern New York	Rochester	Western
Institutional Spending (millions)									
Instruction	\$6,031	\$424	\$878	\$381	\$378	\$3,211	\$70	\$535	\$155
Research	\$2,106	\$83	\$403	\$30	\$13	\$1,320	\$9	\$240	\$8
Admin, Ancillary Services and Other	\$7,490	\$449	\$1,327	\$668	\$447	\$3,731	\$120	\$498	\$249
Total Nonhospital Spending	\$15,627	\$956	\$2,608	\$1,079	\$838	\$8,261	\$199	\$1,273	\$412
Annual Construction (estimated)	\$1,944	\$130	\$390	\$165	\$92	\$916	\$34	\$159	\$57
TOTAL Institutional Spending	\$17,571	\$1,086	\$2,999	\$1,244	\$930	\$9,178	\$233	\$1,432	\$469
Indirect and Induced Impacts	\$17,361	\$1,078	\$2,960	\$1,240	\$928	\$9,046	\$232	\$1,409	\$468
TOTAL Institutional Impact	\$34,932	\$2,164	\$5,959	\$2,484	\$1,858	\$18,223	\$466	\$2,841	\$938
Student & Visitor Spending (millions)									
Total Student Spending	\$1,577	\$94	\$195	\$176	\$174	\$710	\$21	\$119	\$88
Total Visitor Spending	\$264	\$16	\$33	\$29	\$29	\$119	\$4	\$20	\$15
TOTAL Student & Visitor Spending	\$1,841	\$110	\$227	\$206	\$203	\$829	\$25	\$138	\$103
Indirect and Induced Impacts	\$1,530	\$91	\$189	\$171	\$169	\$689	\$21	\$115	\$85
TOTAL Student & Visitor Impact	\$3,371	\$201	\$416	\$377	\$372	\$1,517	\$46	\$254	\$188
Academic Medical Centers (AMCs) (millions)									
Total Patient Revenue Attributable to AMCs	\$1,339	\$52	\$0	\$245	\$0	\$940	\$0	\$101	\$0
Indirect and Induced Impacts	\$1,442	\$56	\$0	\$264	\$0	\$1,013	\$0	\$109	\$0
Estimate Replacement Cost of Medical Residents Associated with AMCs	\$273	\$13	\$0	\$29	\$0	\$204	\$0	\$27	\$0
TOTAL AMC Impact	\$3,053	\$121	\$0	\$539	\$0	\$2,157	\$0	\$237	\$0
GRAND TOTAL (millions)	\$41,356	\$2,486	\$6,375	\$3,399	\$2,230	\$21,897	\$511	\$3,331	\$1,125
Employment Impacts (thousands)									
Institutional Employment	139.0	8.7	21.1	10.2	10.2	69.3	1.7	12.9	4.9
Construction Employment	19.7	1.3	3.9	1.7	0.9	9.3	0.3	1.6	0.6
Total Direct Employment	158.7	10.0	25.0	11.9	11.1	78.6	2.0	14.5	5.5
Indirect and Induced Employment	169.8	10.7	26.8	12.7	11.9	84.1	2.2	15.5	5.9
TOTAL Employment	328.5	20.6	51.8	24.6	23.0	162.7	4.2	30.0	11.3

NOTE: Totals may not sum due to rounding.

	Statewide	Capital District	Central	Hudson Valley	Long Island	New York City	Northern New York	Rochester	Western
Payroll Impacts (millions)									
Institutional Payroll	\$7,501	\$459	\$1,252	\$518	\$402	\$3,965	\$95	\$611	\$198
Construction Payroll	\$1,050	\$70	\$211	\$89	\$50	\$495	\$19	\$86	\$31
Total Direct Payroll	\$8,550	\$529	\$1,463	\$607	\$452	\$4,460	\$114	\$697	\$229
Indirect and Induced Payroll	\$6,732	\$419	\$1,148	\$483	\$361	\$3,503	\$90	\$545	\$182
TOTAL Payroll	\$15,282	\$948	\$2,610	\$1,090	\$813	\$7,964	\$205	\$1,242	\$411
Fiscal Impacts (millions)									
NYS Personal Income Tax*	\$653	\$40	\$112	\$47	\$35	\$340	\$9	\$53	\$18
NYS and Local Sales Tax*	\$265	\$16	\$45	\$19	\$14	\$138	\$4	\$22	\$7
TOTAL Fiscal Impact (millions)	\$918	\$57	\$157	\$65	\$49	\$478	\$12	\$75	\$25

*These estimates were derived from statewide average personal income tax and sales tax liability published by the NYS Department of Taxation and Finance, Office of Tax Policy Analysis.

Fiscal Impact

With significant employment and payroll, higher education's Independent Sector also contributes to the fiscal strength of the State of New York. Personal income tax proceeds are estimated using average tax liability as a share of total income, as published by the Department of Taxation and Finance's Office of Tax Policy Analysis. Similarly, the average taxable retail sales as a share of state personal income provides an approximation of total state and local sales tax liability.*

Impact Was \$29 B in 1995-96

Using the same methodology (although with less detailed information), CGR estimates the economic impact of independent higher education at about \$29 billion in 1995-96, indicating growth of about 42% in the ten-year period.

Spin-off Job Creation

Colleges and universities contribute to the national and state economy in a variety of ways. As discussed at length in this report, universities have moved to the center of many sectors, particularly those depending on innovation. While somewhat speculative, CGR has estimated job creation from ongoing research conducted at the state's independent colleges and universities.

In developing these estimates CGR has relied heavily on the Association of University Technology Managers (AUTM) regular report on the level of investment in technology transfer at the nation's universities and the degree to which university investments in research are rewarded with licenses, patents and, eventually, royalties.

The 2003 AUTM report shows that royalties received are about 2.4% of the research expenditure. This is only a rough approximation of the true relationship between an investment in research and the resulting license, patent and royalty payment. It

* These fiscal impacts are conservative estimates based on statewide averages, e.g. a statewide state and local sales tax rate of 8%. Employees of independent sector institutions and others indirectly employed by them contribute revenue to the state and local governments in many other ways. More precise estimates of the personal income tax and sales taxes plus estimates of other forms of revenue would require more information about the residence of these individuals and the distribution of payroll among them.

Estimating Job Creation from Spinoffs	
Research Spending	\$2.1 B
Royalty Conversion Rate	2.4%
Royalty	\$50 M
Average Royalty Rate	2.0%
Implied Total Output for Licensee	\$2.5 B
Output/Job (average of pharmaceutical manufacturing, and research and development)	\$254,000
Annual jobs creation	9,800
<i>Source: Assn of University Technology Managers, IMPLAN</i>	

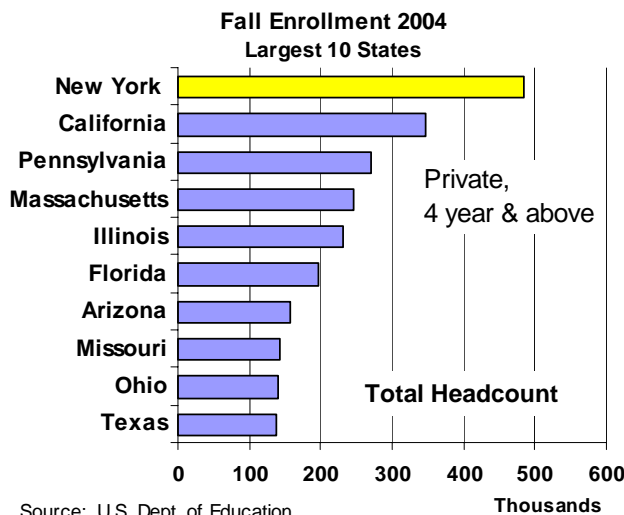
does not take account of changes in the trend of research spending or attempt to model the lag between the investment and the eventual royalty payments. Assuming that the lag is significant and recognizing that real spending on academic research rose substantially during the previous decade, it is possible that the royalty “outcome” associated with a given expenditure on research is actually stronger than this very simplistic association suggests.

Next we must connect royalty payments to actual industrial output. While the royalty payment varies by contract, a review of the literature suggests that 2% is a common royalty paid to the university owners of a patent, thus a \$1,000,000 stream of income to a licensee will spur a royalty payment of \$50,000.

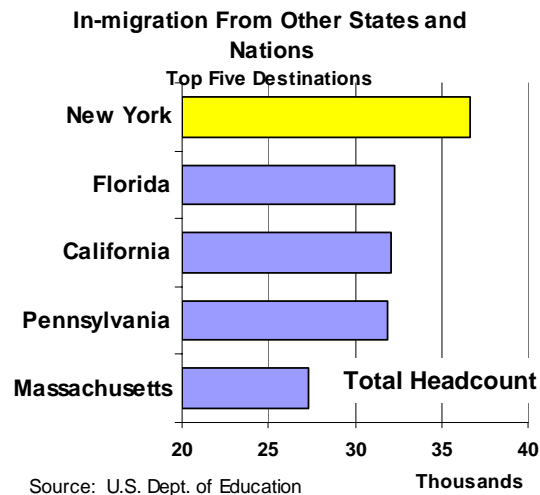
Finally, we must determine the relationship between industry revenue and employment. IMPLAN employment tables for New York State indicate that pharmaceutical firms employ one person for every \$400,000 in sales. Research and development firms are much more labor intensive, however, employing one person for every \$65,000 in sales. Based on these assumptions, the research spending of New York’s independent colleges and universities may stimulate the creation of 10,000 jobs per year in technology businesses (although these businesses may or may not be located in New York State).

Higher Education as "Export" Sector

New York has the third largest higher education system in the nation, ranked after California and Texas, and is the largest recipient of students from other states. Nearly 37,000 first-time, degree-seeking students come from other states or nations to New York to study at the state's colleges and universities. At the four-year and above level, 84% of students coming into the state attend schools in New York's Independent Sector.*



Source: U.S. Dept. of Education



Source: U.S. Dept. of Education

Students from New York State study in other states as well, of course. On balance, federal statistics show that New York State is the net recipient of nearly 6,000 students, most of whom, of course, attend schools in New York's prestigious Independent Sector. Not only do these students expand the size of New York's higher education sector, but also their spending while attending a New York institution increases payroll and employment across the economy.

Independent Sector's Share Increasing

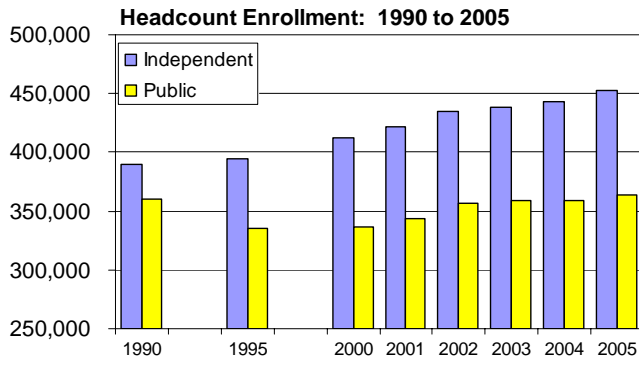
Private four year and above higher education is growing much faster than its public counterpart. Statistics reported by the NYS Department of Labor show that between 1990 and 2005 real

* The U.S. Department of Education (IPEDS) reports 30,755 non-NYS residents attended NYS institutions (four-year and above) in 2004. Of these, 25,918 attended independent sector institutions. This is limited to first-year, degree/certificate seeking students.

payroll in private higher education rose 57%; real payroll actually fell 9% for public higher education.* These figures are based on the NAICS federal industry classification 6113 titled “Colleges & Universities.”†

Similarly, total enrollment in the Independent Sector rose 12% from 1995 to 2004, compared to 7% in the public sector (four-year and graduate-degree awarding institutions).‡

Independent higher education is also disproportionately responsible for graduate and professional education in New York State, with two-thirds of these students educated by the Independent Sector.



Source: NYS Dept. of Education

Higher Education Makes Major Contribution to Economy

Independent higher education makes a larger contribution to the state’s economy than a number of prominent industries (e.g., building construction and telecommunications), and contributes nearly as much to the state’s personal income as the entire real estate sector.

Employment at private higher education (four year and above—not including community colleges) is also significant. Independent institutions of higher education issue more paychecks in NYS than the fast food industry, employment agencies, physician’s offices or nursing homes.

* This analysis is based on the NYS Department of Labor’s reported private sector higher education employment and payroll reporting (Q1 and Q2 2005 only). Private higher education includes both a for-profit segment (often termed “proprietary”) and a not-for-profit or “independent” segment. The proprietary market segment, as of 2003, was a relatively small part of the private higher education market in New York State. Data from the US Department of Education’s Integrated Postsecondary Education Data System show that the proprietary schools employed 6% of total private higher education staff. As 68% of enrollment in proprietary colleges is in two-year or less-than-two-year institutions, we believe that the payroll share of the proprietary schools is probably much smaller.

† Community colleges are captured in NAICS 6112 titled “Junior Colleges.” Community colleges in NAICS 6112 added 36% to real payroll between 1990 and 2005.

‡ NYS Department of Education. Figures exclude proprietary schools.

NEW YORK STATE'S FUTURE

The transformation of New York's economy, rapid in recent decades, has yet to run its course. Despite significant losses over previous decades, companies classified principally as manufacturers still contribute a large share of payroll and employment to Upstate cities. While some industries have stabilized, others are likely to continue to shrink. Although the FIRE sector in New York City remains the core of the downstate economy, technology has reduced headcount in many of the larger firms. Losses in the FIRE sector are likely to accelerate, however, as technology propels nearly all transactions to cyberspace and increasing competition from global money centers like London, Tokyo and Frankfurt erodes New York City's dominance.

New York State cannot expect continued prosperity from either the upstate manufacturing or downstate FIRE sectors. In contrast, however, the steady expansion of the intellectual, cultural and educational sector—particularly independent higher education—holds significant promise for New York's future. With universities serving as the headquarters of the knowledge economy, New York will be well served by the world-class institutions within its borders.

Steady growth among these institutions is testimony to their competitive position within the academic marketplace of the region, nation and world. New York's continued ability to serve the intellectual needs of the modern economy at all levels—from undergraduate through PhD instruction to world class research and development—will determine to a great degree the state's ability to maintain its position in the world economy.