



# **The Economic Impact**

*of the*

**University at Buffalo**

*on the*

**The Region and the State**

**Office of the Provost  
University at Buffalo  
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## A Sound Investment



Buffalo and Western New York are rich in history and traditions, built upon the achievements of generations of people who dreamed of a better tomorrow. Their commitment to excellence, hard work, and determination lives on today as the region—long dominated by the manufacturing sector—seeks economic revitalization by moving toward a high-tech, knowledge-intensive, global economy.

The Buffalo-Niagara region is well positioned to make this bold, exciting move; the region already ranks 20th among America's top 50 metropolitan areas in its number of knowledge and information-based jobs. Even more impressive, the region ranks fourth among U.S. metropolitan areas in the percentage of workers with degrees in science and engineering--a key factor in the growth of technology companies that are vital to this new economy. Clearly, the region possesses the seeds for promising economic growth if it is willing to embrace change.

The University at Buffalo—a major educational and research institution with enormous intellectual capital and a leading employer in our region—is playing a critical role in this economic transformation. The university, with its two main campuses in Buffalo and Amherst, makes a significant contribution to the economic vitality of both the Western New York region and the state, as this report demonstrates. Each year, UB generates over a billion dollars in economic activity in Western New York alone.

Bioinformatics, the merger of biomedical research and supercomputing, is one key area of future growth; UB also has redoubled its technology transfer efforts by creating an Office of Science, Technology Transfer, and Economic Outreach. This office ensures that inventions developed by UB researchers can be translated into commercial products—thus creating more jobs locally. We are educating another generation of employees and leaders to support these emerging businesses and to work in a wide variety of fields.

Prepared by UB's Office of the Provost, this report evaluates the economic benefits of UB to the region and state—but it is difficult if not impossible to measure the university's other, intangible benefits. For example, every medical breakthrough achieved through the five schools that comprise UB's Health Sciences Center offers countless benefits to those whose health is affected. UB's excellence in the humanities, social sciences, and in the professions—as well as its cutting-edge discovery in the latest scientific research—ensure that the people of the Buffalo-Niagara region and New York State have affordable access to the highest quality education possible. Likewise, UB enhances the quality of life for all citizens of the state by providing access to libraries, noncredit courses, and cultural and athletic events, and through a host of public service programs in the community.

All of this activity indicates that the University at Buffalo, the State University of New York's largest institution, is wisely leveraging its state funding for the betterment of the people of New York State. It is a sound investment in New York's future—and we will continue to take those responsibilities seriously.

William R. Greiner, President, University at Buffalo

## Excellence in Academic Research



In the next five years, UB's aim is to be recognized as a national and international leader among public research universities. UB's focus in the next period of development will be on graduate education and research and on improving quality. As specified in our memorandum of understanding with the SUNY system, we will expand our graduate programs, particularly at the master's level, and increase our sponsored research dollars by hiring and retaining excellent faculty in areas where we have the demonstrated potential for world class excellence.

The primary drivers of research are faculty. They write the research proposals, manage the grants, develop the ideas, and apply the technology. A comparison of the University at Buffalo to its national competitors indicates we are too small in terms of number of faculty to compete effectively and produce the research needed. In the next five years UB hopes to hire hundreds of new faculty. We want to hire active young researchers, researchers who bring grants with them. This leads to an immediate increase in research dollars in the state, producing economic benefit right away. Each principal investigator of a grant is in essence a small business owner, bringing employees and a research project that expends dollars. Overall, research is a major engine of economic development. Each dollar of research funding produces \$3 in economic impact to the community; each \$1 million of research and development spending produces just over 29 jobs.

UB's intellectual property holds great promise as the foundation for Western New York's "New Economy" – a knowledge-intensive, global economy that is built upon the brilliant ideas and inventions of university researchers.

Elizabeth D. Capaldi  
Provost, University at Buffalo

## The University at Buffalo at a Glance

A major public research university, the University at Buffalo traces its roots to 1846, when the institution was founded as a private medical school, the University of Buffalo, with Millard Fillmore as its first chancellor. By 1900, the university had added schools of pharmacy, law, and dentistry, followed in 1919 by the creation of its College of Arts and Sciences. UB expanded still further in the twenties and thirties, adding schools of business administration (now management), education, social work, nursing, an evening division, and a graduate school. A school of engineering opened in 1946.

UB was incorporated into the State University of New York system in 1962. Since then, the University at Buffalo has grown dramatically to become the flagship institution of the State University of New York, the largest and most comprehensive of the 64 SUNY campuses. It opened schools of information and library studies (now informatics), health related professions, and architecture and environmental design (now architecture and planning) in the mid-sixties.

Today, UB comprises a College of Arts and Sciences and 12 schools, including the State University of New York's only schools in law, architecture and planning, and pharmacy, and offers more than 300 undergraduate and graduate degree programs. The university enrolls a total of 25,838 students, including 17,290 undergraduate and 8,548 graduate and professional

***As a major research university, the University at Buffalo is a vital economic engine for both the Western New York region and upstate New York.***

students.<sup>1</sup> Its 166,765 living alumni reside in all 50 states and more than 110 foreign countries.<sup>2</sup>

Since World War II, more than half of America's economic growth has been based on new technologies, much of it a result of basic research conducted at the nation's universities.<sup>3</sup> The University at Buffalo is a major public research university, one of only 63 public and private universities in the Association of American Universities—the association of premier research universities in the United States—and one of only two public AAU institutions in New York and New England.

Research universities such as the University at Buffalo play a vital role in the economic development of their regions and states. In 2000, American colleges and universities performed an estimated 11 percent of the nation's total R&D—some \$30 billion of the total \$265 billion. University-administered Federally Funded Research and Development Centers (FFRDCs) performed an additional two percent, or \$5.8 billion of total R&D in 2000. That same year, U.S. colleges and universities performed 44 percent of the nation's basic research (approximately \$21 billion out of \$48 billion total), and more than 13 percent of America's applied research—\$7.3

<sup>1</sup> "Fall 2001 Headcount Enrollment by Level," University at Buffalo Office of Institutional Analysis, September 2001, available online at: <http://www.provost.buffalo.edu/oia>.

<sup>2</sup> Information on UB alumni provided by the University at Buffalo Office of Alumni Relations.

<sup>3</sup> "AAU Research Policy Issues: Strengthening the University-Federal Government Research Partnership," The Association of American Universities, available online at <http://www.aau.edu/sheets/RschPolicy.html>.

billion of the total \$55 billion.<sup>4</sup> The Buffalo-Niagara metropolitan region ranks 14th in the nation in academic research and development funding—an impressive showing credited in large part to the presence of the University at Buffalo, according to a 2001 study from the Progressive Policy Institute.<sup>5</sup>

As a major research university, the University at Buffalo is a vital economic engine for both the Western New York region and upstate New York. Its research initiatives encompass such diverse fields as lasers and photonics, oral health, hearing and deafness, earthquake engineering, document analysis, and the environment. Inventions developed by UB faculty members include the implantable cardiac pacemaker, a vaccine for middle ear infections in infants and children, computer software for character recognition by the U.S. Postal Service, and new medications to treat cancer and AIDS. The university is home to more than 80 organized research centers and institutes. UB expended \$187.7 million in funds from federal and state agencies, foundations, industrial research partners, and institutional resources in 1999-2000.

UB is poised to become a leader in post-genomic research, particularly bioinformatics and drug discovery, with its strengths in the life sciences, medicine, pharmaceutical sciences, engineering, computer science, and information technology. The university's research in these fields and many others is bolstered by outstanding high-performance computing and visualization facilities, the Center for Computational Research—one of America's top ten academic high-performance computing sites—and the New York State Center for Engineering Design and Industrial Innovation, which offers state-of-the-art, high-end visualization and virtual-reality technologies.

***The University at Buffalo is poised to become a leader in post-genomic research, particularly bioinformatics and drug discovery.***

The University at Buffalo and its research partners, Roswell Park Cancer Institute and Hauptman-Woodward Medical Research Institute, are collaborating on an exciting new

initiative, the ***Buffalo Center of Excellence in Bioinformatics***—which is expected to create thousands of jobs and become a mainstay of the upstate New York economy over the next five years. Over \$200 million in funding has been committed to the center, which was designated as a Center of Excellence by Governor George Pataki in his 2001 State of the State Address. Governor Pataki has announced an initial state investment of \$50 million, contingent on legislative approval, and the Center's state request is for an additional \$25 million. Funding received already for the Center includes \$3.1 million from federal sources and over \$150 million from corporate partners.

<sup>4</sup> "University Research: Facts and Figures," The Association of American Universities, May 2001. The publication is available online at <http://www.aau.edu/resuniv/RschFacts.html>.

<sup>5</sup> Robert D. Atkinson and Paul D. Gottlieb, *The Metropolitan New Economy* (Washington, DC: The Progressive Policy Institute, April 2001), available online at: <http://neweconomyindex.org/metro/index.html>.

## Revenues

Like other major universities, the University at Buffalo is only partially funded by the state. In addition to state tax support, UB has several sources of operating revenue, including sponsored program funding, tuition and fees, clinical practice plans, and private support, among others. In fiscal year 2000-2001, the University at Buffalo had total revenues of \$868.9 million.<sup>6</sup> A total of 33.2 percent, or \$288.6 million, was in the form of *direct appropriations from the state of New York*. *Sponsored program support*, including grants and contracts from the federal government and its agencies, state grant support, and industrial support, comprised \$138.8 million, or 16.0 percent, while *tuition and fees* of \$120.2 million accounted for another 13.8 percent of revenues. *Clinical and hospital activities* comprised \$115.4 million, or 13.3 percent, and *grants, donations, and private support* totaled \$84 million, or 9.7 percent. *Auxiliaries*—including FSA food and vending, residence halls, intercollegiate athletics, parking, and student health services—accounted for \$64.6 million, or 7.4 percent, while *construction funding* from the State University of New York Construction Fund and campus-initiated borrowings totaled \$54.5 million, or 6.3 percent. *Other revenues*—the interest on state cash balances—provided \$2.8 million, or 0.3 percent.

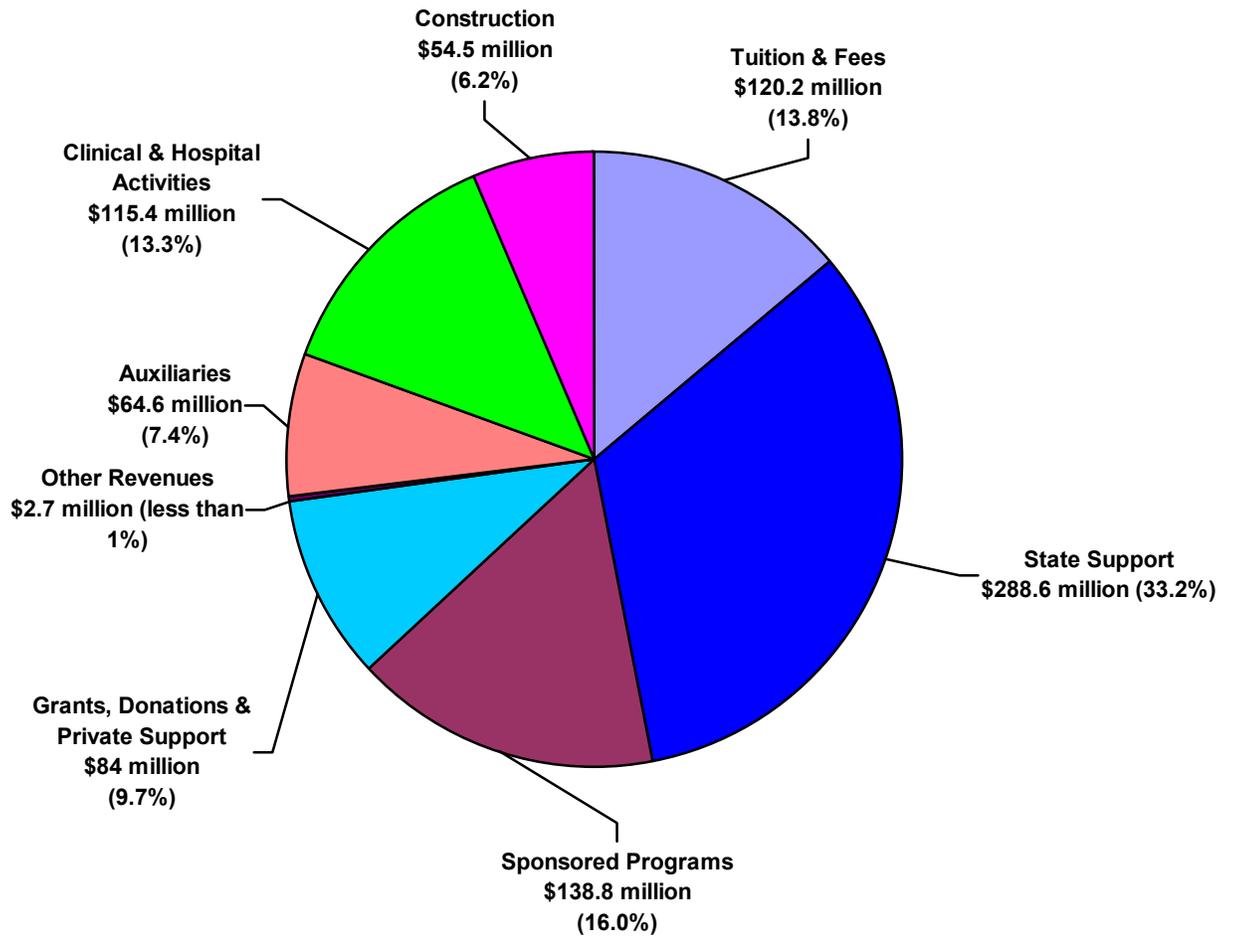
To give some indication of its size, UB would rank second after National Fuel Gas when its total revenues are compared to the revenues of the top public companies in Western New York.<sup>7</sup> This ranking places UB ahead of such companies as M&T Bank, Columbus McKinnon Corp., Gibraltar Steel Corporation, and Moog, Inc.

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<sup>6</sup> Entities included are University at Buffalo state funds (Operating Budget, Income Fund Reimbursable, Dorm Income Fund Reimbursable, Endowment income), Faculty Student Association, Research Foundation, University at Buffalo Foundation, practice plans and some activities handled by the University at Buffalo Foundation such as hospital resident payroll and central radiopharmacy services, State University of New York Construction Fund, and other fiscal agents (sponsored activity run through hospital accounts, Calspan-University at Buffalo Research Center, etc.).

<sup>7</sup> This ranking is based on fiscal year 2000 revenues of public companies in Western New York listed in “Public Companies,” *Business First*, October 15, 2001, p. 14.

## University at Buffalo Revenue Sources 2000-2001



The University at Buffalo's Total Revenues Compared to  
Top Public Companies Headquartered in Western New York, 2000-2001

<b>Rank</b>	<b>Company</b>	<b>Total Revenues</b>
1	National Fuel Gas Co.	\$1.4 billion
2	<b>University at Buffalo</b>	<b>\$868.9 million</b>
3	M&T Bank Corp.	\$854.2 million (net interest income)
4	Columbus McKinnon Corp.	\$728 million (net sales)
5	Gibraltar Steel Corp.	\$677.5 million (net sales)
6	Moog Inc.	\$644 million (net sales)
7	Bush Industries Inc.	\$451.2 million
8	Computer Task Group (CTG)	\$345.7 million
9	Sevenson Environmental Services Inc.	\$126.5 million
10	Wilson Greatbatch Technologies Inc.	\$97.8 million

*The total annual economic impact of the University at Buffalo was \$1.25 billion in 2000-2001—more than four times the state's investment of \$288.6 million.*

## Expenditures

In fiscal year 2000-2001, expenditures by the University at Buffalo and its support organizations for salaries, operating expenditures, and capital outlays totaled nearly \$900 million.

### Expenditures for Current Operations

Salaries and Fringe Benefits	\$465,435,400
Operating Expenditures	\$231,624,200
Expenditures from Other Fiscal Agents <sup>8</sup>	\$51,218,300
Special Categories, Debt Service and Other	\$79,415,500
Construction	\$54,500,000
<hr/>	
<b>TOTAL</b>	<b>\$882,193,400</b>

Source: University at Buffalo Office of Financial Services

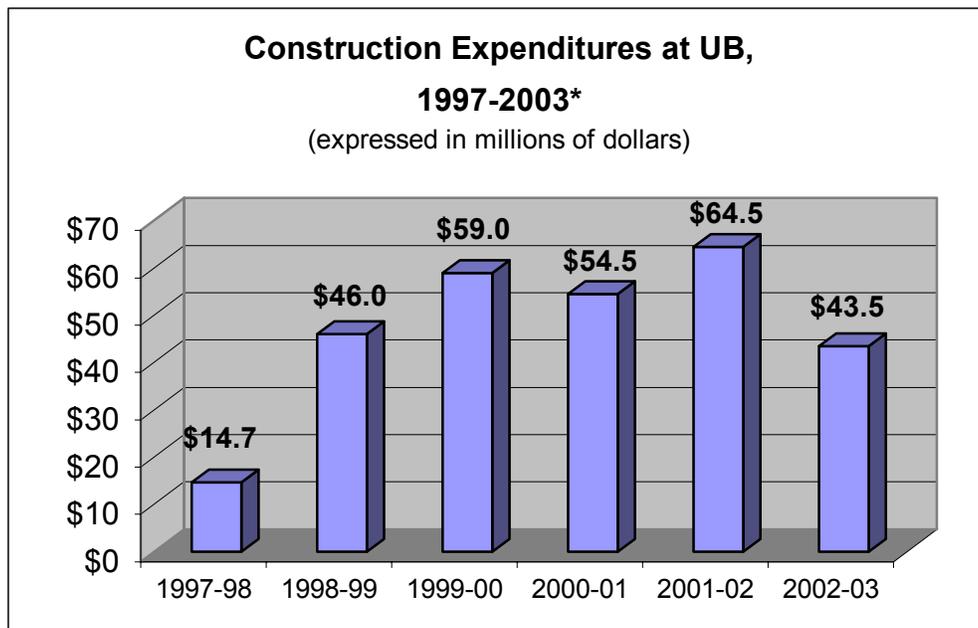
As might be expected at a university, the largest category of spending involved salaries for UB's employees. In fiscal year 2000-2001, employee compensation, including salaries and fringe benefits, amounted to \$465.4 million, or 53 percent, of the university's total spending of \$882.2 million. Of this amount, an estimated \$291 million represents spendable income used by university employees for food, housing, entertainment, transportation, and other living expenses. The resulting expenditures and purchases of homes yield sales and property tax revenues for state and local governments.

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<sup>8</sup> "Other fiscal agents" includes affiliated hospitals and Calspan-University at Buffalo Research Center.

## Capital Improvements

The University at Buffalo is committed to meeting the needs of its students, faculty, and staff through the construction of new academic buildings and on-campus student housing as well as the rehabilitation of existing buildings—a commitment which also has a significant economic impact on upstate New York’s construction industry. For example, in fiscal year 2000-2001, the University at Buffalo spent \$54.5 million on construction projects, approximately 6 percent of its current operations. Construction costs for the most recent five-year period are given below; these figures include all construction project costs as well as all design and equipment purchases related to these projects.



\*Expenditures for 2001-02 and 2002-03 were projected.

Source: UB Office of the Associate Vice President for University Facilities.

## Direct Purchases

Direct purchases include all expenditures except salaries, benefits, and capital improvements. In 2000-2001, the University at Buffalo spent \$231.6 million on direct purchases, about 27 percent of the university’s total expenditures. An estimated 73 percent of UB’s purchases were made within New York State, or approximately \$170 million.

## Tuition and Other University Fees

University at Buffalo students pay tuition and fees such as an activity fee and a comprehensive fee that includes funding for technology, transportation, campus life, athletics, and health services. The total amount paid by students for tuition and fees in 2000-2001 was \$122.8 million. Of this total, students residing in New York State paid \$98.9 million and out-of-state students paid \$23.9 million.

## Student Non-Tuition Spending

Average non-tuition spending by University at Buffalo students varies, depending on their status as undergraduate or graduate students and whether they choose to live on or off campus. In 2000-01, an undergraduate student living on the UB campus is estimated to have spent \$7,974. For a graduate student living off campus, the average non-tuition expenditure is estimated at \$10,338.<sup>9</sup>

During the 2000-2001 academic year, University at Buffalo undergraduate and graduate students spent an estimated \$164.9 million off campus for housing, food, transportation, clothing, health services, books, and supplies. Of the total, in-state students accounted for \$141.8 million and out-of-state students for \$23.1 million. In addition, students provided revenue to UB in the form of tuition and fees, campus housing and board contracts, and purchases at campus bookstores. These expenditures totaled \$168.9 million, including \$145.3 million from in-state students and \$23.6 million from out-of-state students.

*In 2000-2001, University at Buffalo undergraduate and graduate students spent an estimated \$164.9 million off campus for such items as housing, food, transportation, clothing, health services, books, and supplies.*

## Non-Tuition Spending by All UB Students, 2000-2001

Budget Category	Total Spending	On-Campus Spending	Off-Campus Spending
Housing	\$94,394,788	\$25,700,383	\$68,694,405
Board Allowance	\$62,653,656	\$11,447,838	\$51,205,818
Books/Supplies	\$11,000,000	\$9,000,000	\$2,000,000
Personal	\$22,953,504		\$22,953,504
Transportation	\$19,996,341		\$19,996,341
<b>TOTAL</b>	<b>\$210,998,289</b>	<b>\$46,148,221</b>	<b>\$164,850,068</b>

Sources: UB Office of Financial Aid, UB University Bookstore, and National Association of College Stores.

<sup>9</sup> Non-tuition spending by professional students is slightly higher, largely because of additional expenses for transportation, books, and supplies. Their non-tuition expenses are as follows: Law (\$11,125), Medicine (\$15,844), Dental Medicine (\$16,019) and Pharm.D. (\$11,459).

## Visitor Spending

Each year, the University at Buffalo attracts thousands of visitors from outside Western New York who bring “new” money to the local economy through their spending. Some visit the campus for business meetings, academic conferences, seminars, or workshops, while others attend cultural events, athletic events, or commencement ceremonies. A third group consists of prospective students and their families touring the campus, while still others are families and friends of current UB students. During the 2000-2001 academic year, the total impact on the Western New York economy generated by visitors to UB is estimated at \$12.1 million.<sup>10</sup> This does not include attendance at university-sponsored events at other locations in the state, such as alumni gatherings, or patient visits to university clinics on both campuses.

## Out-of-State Revenues

In 2000-2001, the University at Buffalo received \$171.2 million in out-of-state revenues. Federal funds for research and financial aid totaled \$118.7 million. Out-of-state student spending accounted for \$67.6 million.

### Summary of Out-of-State Revenues

<i>Category</i>	<i>Revenues</i>
Federal Research & Other Sponsored Program Support	\$104,941,203
Out-of-State Student Spending on Tuition & Fees	\$23,900,000
Out-of-State Student Non-Tuition Spending	\$27,636,000
Federal Financial Aid*	\$14,775,163
<b>TOTAL</b>	<b>\$171,252,366</b>

\*Does not include loans such as Perkins and direct loan programs.

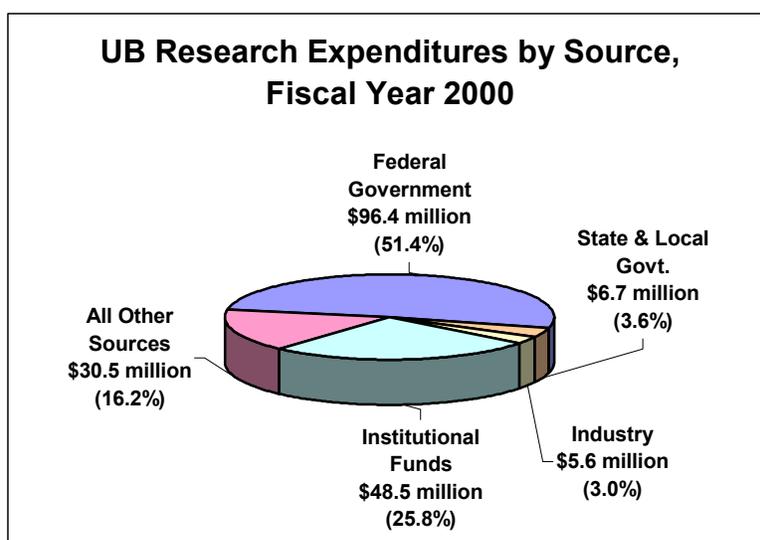
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<sup>10</sup> The total impact of UB visitors on New York State’s economy was approximately \$12.5 million for 2000-2001. Visitor expenditures were based on data provided by the Division of Athletics, Center for the Arts, Slee Hall Concert Office, Office of Admissions, Office of Special Events, and Office of Student Life. This visitor spending figure is conservative, assuming two visitors per student and one visitor per faculty member per year. Older published studies on visitor spending assume anywhere from 2.7 to 15.5 visitors per student or faculty member annually. The U.S. Commerce Department’s Regional Input-Output Modeling System (RIMS) multipliers for Western New York were utilized to estimate total economic impact.

## Research Support

The University at Buffalo is one of 154 U.S. major research universities—defined as universities that spend at least \$20 million of federal research dollars annually. Competition for federal research funds from the National Science Foundation, National Institutes of Health, and other federal agencies is intense; receiving these grants is both a measure of research activity and quality. UB's expenditures from federal research awards have increased from \$87.8 million in fiscal year 1996 to \$96.4 million in fiscal year 2000, when it ranked 36<sup>th</sup> among public research universities for federal research expenditures.<sup>11</sup>

The university ranks in the top third of America's public research universities in total research dollars, with total research expenditures of nearly \$187.7 million in fiscal year 2000.<sup>12</sup> Of this total, federal grants and contracts exceeded \$96 million, state and local governments provided \$6.7 million, and grants from industry totaled nearly \$5.6 million.



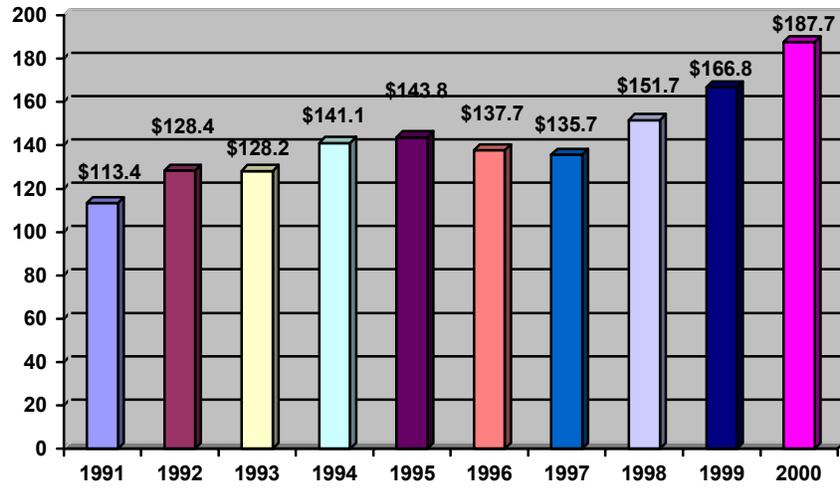
Source: University at Buffalo Office of Financial Services

<sup>11</sup> Source: *Survey of Research and Development Expenditures at Universities and Colleges: Fiscal Year 2000*, National Science Foundation, January 2002. This report uses research expenditures rather than research award figures. Awards indicate funds available for use, but expenditures represent the actual spending of funds awarded. There is a time lag between the commitment of dollars (awards) and the actual expenditure of those funds.

<sup>12</sup> *Survey of Research and Development Expenditures at Universities and Colleges: Fiscal Year 1999* (Arlington, VA: National Science Foundation, January 2001) as included in *The Top American Research Universities*, TheCenter, University of Florida, August 2001, available online at: <http://thecenter.ufl.edu>.

### UB Total Research Expenditures, Fiscal Years 1991-2000

(in millions of dollars)



Source: University at Buffalo Office of Financial Services

## Out-of-State Student Expenditures<sup>13</sup>

In the fall of 2001, a total of 3,627 students attended the University at Buffalo from outside New York State, including 767 from 47 other states and 2,860 from more than 100 countries. Of this total, 1,209 were undergraduates and 2,418 were graduate students.

Students who are not New York State residents pay out-of-state tuition, which is higher than in-state tuition, as well as fees paid by all students. During 2000-2001, the total amount of tuition and fees paid by out-of-state students was \$23.9 million.

Out-of-state students spent an additional \$27.6 million on housing, meals, transportation, clothing, personal expenses, and books or supplies. All together, tuition and non-tuition expenditures by out-of-state students totaled approximately \$67.6 million for the 2000-2001 academic year.

## Student Financial Aid

Students at the University at Buffalo received nearly \$134.5 million in financial aid during the 2000-2001 academic year. Federal financial aid totaled \$110.2 million, including \$106.1 million to in-state students and \$4.0 million to out-of-state students.

### Financial Aid by Source of Funds<sup>14</sup>

<b>Source</b>	<b>\$ Received by In-State Students</b>	<b>\$ Received by Out-of-State Students</b>	<b>Total \$ Received by Students</b>
<b>Federal</b>	\$106,122,786	\$4,032,320	\$110,155,106
<b>Private/Institutional</b>	\$7,035,334	\$1,728,706	\$8,764,040
<b>State</b>	\$15,548,484	-	\$15,548,484
<b>Total</b>	\$128,706,604	\$5,761,026	\$134,467,630

Source: University at Buffalo Office of Financial Aid

<sup>13</sup> Estimates for out-of-state student spending were calculated on average cost of attendance as determined by the University at Buffalo Office of Financial Aid, total number of out-of-state students per semester (classified as undergraduate or graduate), and housing arrangements.

<sup>14</sup> Estimates based on New York State residency status from Institutional Studies Information System and awards from Student Aid Management System. Some students were not matched; they were assumed to be New York State residents.

## Total Expenditures

The University at Buffalo, its related organizations, employees, students, and visitors spent an estimated \$1 billion in 2000-2001. Of the total, approximately \$935 million, or 93.4 percent, was spent within New York State.

	<b>Total Expenditures</b>	<b>Total In-State Spending</b>
University Salaries & Benefits	\$465,435,400	\$465,435,400
Operating Expenditures	\$231,624,200	\$170,000,000
Construction	\$54,500,000	\$54,500,000
Direct Support Organizations	\$51,218,300	\$46,654,000
Off-Campus Student Spending	\$185,969,719	\$185,969,719
Visitor Spending	\$12,465,079	\$12,465,079
<b>TOTAL</b>	<b>\$1,001,212,698</b>	<b>\$935,024,198</b>

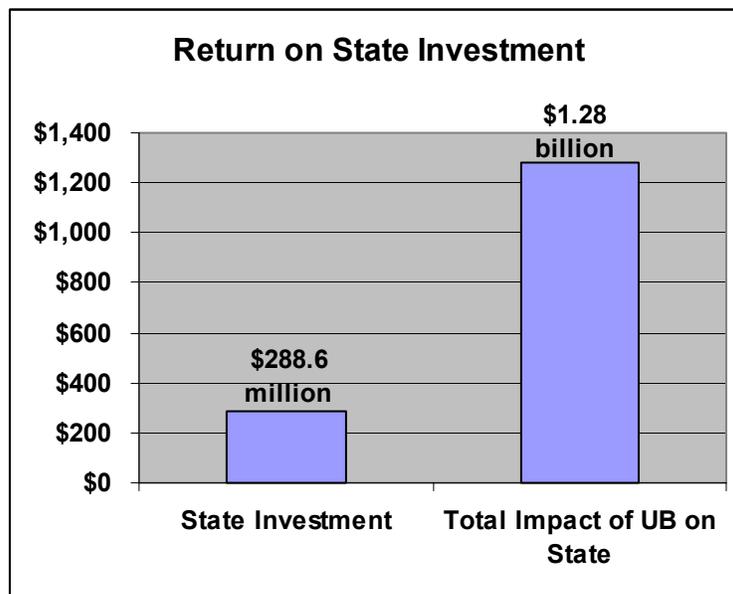
## UB's Impact on the Regional and State Economies

The impact of the University at Buffalo on the Western New York and New York State economies is significant. A spending multiplier of approximately 2.0 (1.9992) was used to conservatively estimate the impact of expenditures from out-of-state revenues in the Western New York region; a spending multiplier of approximately 2.2 (2.1657) was used to estimate the impact on the entire state.<sup>15</sup> In other words, every \$1 dollar spent by UB from out-of-state sources generates an additional \$1 of spending in Western New York or \$1.20 in the entire state. Multiplier values are not assigned to expenditures made from in-state revenue sources, as this study assumes that these resources would otherwise remain within the state if they were not allocated to UB. However, it is very likely that many of these resources would, in fact, be lost to other states if UB did not exist and students went elsewhere for the unique programs and services that are offered.

***The University at Buffalo has a total annual economic impact of \$1.25 billion on Western New York.***

The University at Buffalo spent an estimated \$877.6 million in New York State during 2000-01. When the induced economic impacts of new dollars are added to the direct spending of the university, the total annual impact in Western New York is \$1,252,183,950 and the total impact on the state is \$1,283,378,119.

This reflects an impact for the Western New York economy of more than four times the state's investment of \$288.6 million.



<sup>15</sup> These spending multipliers are from the U.S. Commerce Department's Regional Input-Output Modeling System (RIMS). In 1992, the University at Buffalo reported a total economic impact of \$1.5 billion; the larger number for 1992 was due to the fact that the total impact reported in 1992 was for a five-year period rather than one year, as in the current study. In addition, the 1992 report calculated a multiplier effect for total university revenues. The 2002 report assumes that in-state money would stay in New York State and be used for other purposes; i.e., that tax dollars would be spent in this state anyway. The 2002 report calculates a multiplier effect for new money coming into the state as a result of the university only.

## Impact on the State Economy

<b><u>In-State Spending</u></b>	<b><u>Amount</u></b>
University Salaries & Benefits	\$465,435,400
In-State Operating Expenditures*	\$170,000,000
Construction	\$54,500,000
Other Fiscal Agents	\$46,654,000
Off-Campus Student Expenditures	\$185,969,719
Visitor Spending	\$12,465,079
<hr/>	
<b>TOTAL IN-STATE SPENDING</b>	<b>\$935,024,198</b>
Multiplier Effects	\$348,353,921
<b>TOTAL IMPACT</b>	<b>\$1,283,378,119</b>

\*Direct expenditures made within the state; 73 percent of total expenditures

## Employment

The University at Buffalo is one of Western New York's largest employers. In a recent survey, it ranked fifth in full-time employees, just behind the State of New York, the federal government, Erie County, and the Buffalo City School District.<sup>16</sup>

During the 2000-2001 academic year, the University at Buffalo employed 12,676 people, including 5,421 full-time faculty, librarians, professionals, and classified service staff, and 7,255 part-time faculty, librarians, professionals, classified service, and student employees.<sup>17</sup>

### University at Buffalo Employment, 2000-2001

Category	Full-Time	Part-Time
Faculty*	1,452	880
Classified	1,285	156
Professional	1,182	82
Librarians	51	13
Other UB Employees**	1,451	0
Student GA/TA***	0	1,800
Other Student Employees	0	3,700
Total	5,421	7,255
<b>GRAND TOTAL</b>		<b>12,676</b>

Source: UB Office of Human Resource Services

\*This includes 205 full-time faculty, largely in the medical and dental schools, designated as Geographic Full-Time faculty. UB's 427 adjunct faculty are included with other part-time faculty.

\*\*Includes union, Research Foundation, UB Foundation, and Faculty Student Association employees.

\*\*\*GA - graduate assistants; TA - teaching assistants

## Indirect Employment

The University at Buffalo generates economic activity which is indirectly responsible for a large number of jobs in companies around New York State that provide goods and services to the university, its faculty, and its students. For each \$1 million spent by UB on research and

***In 2000-2001, the total number of jobs attributable to the University at Buffalo was 18,286.***

development (R&D), an estimated 29.89 jobs are generated in Western New York.<sup>18</sup> Using UB's expenditures for research and development, the University at Buffalo

<sup>16</sup> Mark Webster, "Western New York's Largest Employers," Business First, October 22, 2001, p. 14.

<sup>17</sup> Report from University at Buffalo Office of Human Resource Services, November 2001.

<sup>18</sup> This multiplier, which is specific to Western New York, is derived from a set of state multipliers developed by the U.S. Commerce Department's Bureau of Economic Analysis for the "Colleges, Universities, and Professional Schools" sector. For details on the multipliers, see the March 1997 edition of the Bureau of Economic Analysis publication, Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II).

generates an additional 5,610 jobs in Western New York. For 2000-2001, the total number of jobs attributable to the University at Buffalo was 18,286. This includes 5,421 full-time faculty, professional staff, librarians, and classified service staff; 7,255 part-time faculty, staff, and student employees; and the 5,610 jobs created by multiplier effects.

## The University's Broad Economic Influence

As a major public research university, the University at Buffalo provides several long-term benefits to New York State's economy in addition to its direct economic impact already discussed. The university offers an excellent education at an affordable price, producing highly educated citizens and future leaders; many of them remain in New York State, forming the backbone of its professional workforce. UB also fosters the development of new technology, products and businesses; encourages public service programs throughout Western New York and New York State; and supports a wide range of research projects that benefit people around the world.

### Education and Workforce Development

The University at Buffalo plays a major role in the development of a highly educated workforce for New York State and the world. It prepares students for careers in the "New Economy": a knowledge-intensive, global economy that must respond to rapid changes in communications and technology. New York ranks sixth among U.S. states in the number of knowledge and information-based jobs that are driving the New Economy; Buffalo ranks 18<sup>th</sup> among the top 50 U.S. metropolitan areas in workforce education, and 20<sup>th</sup> in the number of knowledge jobs.<sup>19</sup> Knowledge workers are important to a region's economy for two reasons: 1.) High-tech firms locate in regions that have a good supply of skilled labor; and 2.) The presence of knowledge workers boosts incomes in a region.<sup>20</sup> A scientific and engineering workforce is particularly important to the growth of technology and research-based companies that are key to the New Economy. On this measure, the Buffalo-Niagara region ranks fourth among America's top 50 metropolitan areas in terms of the percentage of workers with degrees in science and engineering; the University at Buffalo is credited in large part for the region's impressive showing.<sup>21</sup>

***Largely because of the University at Buffalo, the Buffalo-Niagara region ranks fourth among America's top 50 metropolitan areas in terms of the percentage of workers with degrees in science and engineering.***

UB offers the widest range of academic programs of any college or university in New York or New England, with more than 300 undergraduate and graduate degree programs. Each year, the University at

<sup>19</sup> Robert D. Atkinson, Randolph H. Court, and Joseph M. Ward, *The State New Economy Index* (Washington, DC: The Progressive Policy Institute, July 1999); available online at <http://neweconomyindex.org/states/index.html>; and Robert D. Atkinson and Paul D. Gottlieb, *The Metropolitan New Economy Index* (Washington, DC: The Progressive Policy Institute, April 2001); available online at <http://neweconomyindex.org/metro/index.html>.

<sup>20</sup> Atkinson and Gottlieb, "Workforce Education," *The Metropolitan New Economy Index*, available online at: [http://neweconomyindex.org/metro/part1\\_page2.html](http://neweconomyindex.org/metro/part1_page2.html).

<sup>21</sup> Ibid.

Buffalo confers more than 5,000 academic degrees. This total includes approximately 3,000 bachelor's degrees, 1,500 master's degrees, 300 doctoral degrees, and 500 professional degrees.

The economic value of a college degree is well documented; according to the U.S. Census Bureau, in 1999 high school graduates earned an average annual salary of \$24,572.<sup>22</sup> In contrast, individuals with bachelor's degrees earned an average annual salary of \$42,600, those with master's degrees earned an average of \$59,900 per year, and those with doctoral degrees had an annual average salary of \$64,100.<sup>23</sup> Over a 40-year working lifetime, this converts to additional earnings of \$721,120 for those with bachelor's degrees, \$1,413,120 for those with master's degrees, and \$1,581,120 for those with doctoral degrees.

In addition to better jobs and higher incomes for college graduates, studies have shown that other benefits of attending college include the development of critical thinking skills, new social relationships, greater participation in civic and volunteer activities, greater awareness of current events, better academic performance of their children in school, and increased awareness of health issues.<sup>24</sup>

### Total Degrees Awarded, 2000-2001

Discipline/School	ASSOC	BACH	MAST	DOCT	1st PROF	GRAD CERT	TOTAL
<b>Architecture &amp; Planning</b>	-	81	58	-	-	-	139
<b>Arts &amp; Sciences</b>	16	1624	287	124	-	6	2057
<b>Education</b>	-	-	261	65	-	25	351
<b>Engineering</b>	-	450	268	52	-	-	770
<b>Dental Medicine</b>	-	-	7	4	77	-	88
<b>Medicine</b>	-	34	10	26	123	-	193
<b>Pharmacy</b>	-	39	-	4	82	-	125
<b>Other Health Sciences</b>	-	278	94	13	-	-	385
<b>Informatics</b>	-	159	114	3	-	-	276
<b>Law</b>	-	-	4	-	220	-	224
<b>Management</b>	-	515	331	2	-	-	848
<b>Social Work</b>	-	-	116	1	-	-	117
<b>TOTALS</b>	<b>16</b>	<b>3,180</b>	<b>1,550</b>	<b>294</b>	<b>502</b>	<b>31</b>	<b>5,573</b>

Degrees include Sept. '00, Feb. '01 and June '01.  
Source: UB Office of Institutional Analysis

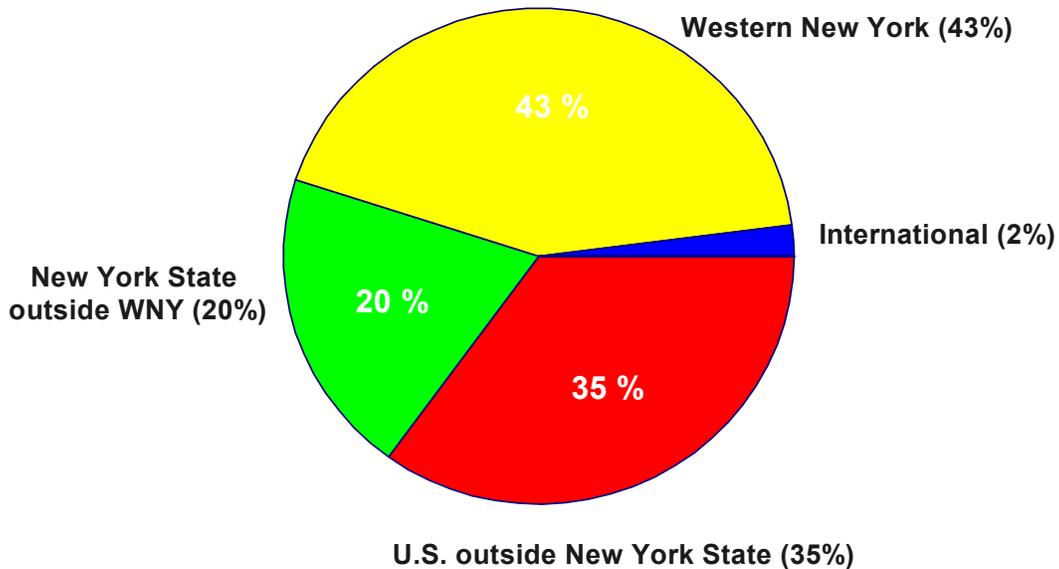
<sup>22</sup> "Mean Earnings of Workers 18 Years Old and Over, by Educational Attainment, Race, Hispanic Origin, and Sex: 1975 to 1999," Current Population Survey, U.S. Census Bureau, December 2000; available online at: <http://www.census.gov/population/socdemo/education/tableA-3.txt>.

<sup>23</sup> Data from Salary Survey of College Graduates, National Association of Colleges & Employers, Fall 2001.

<sup>24</sup> Thomas G. Mortenson, "Why College? Private Correlates of Educational Attainment," Postsecondary Education Opportunity (Oskaloosa, Iowa: The University of Iowa, March 1999), pp. 1-3.

More than half of UB's 166,765 living alumni remain in New York State; of the total, 94,928, or 63 percent, reside in Western New York or elsewhere in the state. Another 35 percent reside in other states, while 2 percent live in more than 120 countries around the world.

## Known Residence of UB Alumni



Source: University at Buffalo Office of Alumni Relations

University at Buffalo graduates comprise a large percentage of the licensed professionals in Erie County. A total of 3,300 (81.9 percent) of the county's 4,031 attorneys are UB Law School graduates.<sup>25</sup> Of Erie County's 806 dentists, 746, or 92.6 percent, are graduates of UB's School of Dental Medicine.<sup>26</sup> Among pharmacists, 675, or 67.5 percent, of Erie County's 1,000 practicing, licensed pharmacists are graduates of UB's School of Pharmacy and Pharmaceutical Sciences.<sup>27</sup> Of the county's 2,500 licensed physicians, 706 (28 percent) are graduates of UB's School of Medicine and Biomedical Sciences.<sup>28</sup>

<sup>25</sup> Information provided by the University at Buffalo Law School and the Bar Association of Erie County.

<sup>26</sup> Information supplied by the UB Office of Alumni Relations and UB's School of Dental Medicine.

<sup>27</sup> Information supplied by the UB School of Pharmacy and Pharmaceutical Sciences and the New York State Education Department's Office of the Professions.

<sup>28</sup> Data supplied by the UB School of Medicine and Biomedical Sciences and the Medical Society of the County of Erie.

## Technology Transfer: Patents and Invention Disclosures

The development of new technology—as reflected in the number of invention disclosures, patent applications and patents issued—is an important outcome of UB’s research mission. The university recently bolstered its efforts in technology transfer and economic outreach by creating a new **Office of Science, Technology Transfer and Economic Outreach** (STOR), which replaced the UB Business Alliance. The office will strengthen the university’s existing partnerships in the business community, and foster the creation of new businesses and commercialization of UB’s intellectual property—which will position UB and Western New York for economic growth.

STOR’s *Intellectual Property Division* (formerly the Office of Technology Transfer and Licensing) specializes in identifying, patenting and licensing inventions developed at UB to the private sector. Since 1996-97, there have been 340 invention disclosures by UB faculty and staff, 102 U.S. patents have been awarded and 201 license agreements have been entered with businesses throughout the United States. UB has entered 19 licenses with companies in New York, including licenses to three new business enterprises started with UB inventions.<sup>29</sup>

STOR also has two other divisions. Its *Services and Commercialization Division*, which includes an industrial partners program, consults with industry, helps commercialize intellectual property, assists faculty in starting businesses, and helps develop spin-off companies in general. STOR also has a new *Research and Venture Funding Division*, consisting of the UB Technology Transfer Funding Office and the Center for Advanced Technology.

*Since 1996-97, there have been 340 invention disclosures by UB faculty and staff, 102 U.S. patents have been awarded, and 201 license agreements have been entered with businesses throughout the United States.*

UB earns royalties from patents that are issued—funds that are channeled back into research and development. Since fiscal year 1997, the University at Buffalo has received \$1.6 million in royalty and licensing income.

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<sup>29</sup>Information from the UB Office of the Vice President for Special Projects and Programs, January 2002.

## Spin-Off Companies

The University at Buffalo Technology Incubator serves as a resource for transferring technology into the private sector in New York State. The incubator supports the creation of new technology-intensive businesses by providing affordable business services to entrepreneurs. Since its inception in 1988, the program has assisted 60 tenants and graduates, boasting a 93 percent survival rate. Total employment by those companies is 455 people, with annual revenues in excess of \$61 million. The incubator provides flexible rental terms for office and wet laboratory space, office support services, general business assistance including business plan development, consulting and workshops, and facilitates access to UB resources.

### Entrepreneurs at the Incubator

Entrepreneurs with high hopes are turning dreams into reality at the UB Technology Incubator, as indicated through a review of the incubator's list of tenants, both past and present. **Therex Technologies, Inc.**, a graduate of the Incubator, is one example. Scientists at Therex and UB are investigating Trifluorosal, an antibacterial compound with anti-inflammatory properties, as a potential topical treatment for acne and gingivitis and as a preventive agent for skin cancer. It was developed and patented by researchers in UB's School of Pharmacy and Pharmaceutical Sciences and the School of Dental Medicine. Therex is a subsidiary of OmniPharm, Inc., another graduate of the Incubator.

Another Incubator graduate, **Vocal Technologies Ltd.**, is developing the technology to bring video and other advanced wireless services to cell phones. Now located on Audobon Parkway in Amherst, the software company is working with a Swedish technology company, Ericsson, on a "gateway" system to translate the Internet into language understood by wireless devices. The new technology is expected to be available in the U.S. within two or three years.

**ONY, Inc.**, an Incubator tenant since 1989, is a leader in the manufacture of an FDA-approved drug, Infasurf, for the prevention and treatment of respiratory distress syndrome in newborn infants. The drug has 29% of the U.S. surfactant market; ONY, Inc. is pursuing marketing approval for Infasurf outside the U.S. and is conducting clinical research on its use for respiratory failure in older children.

Another current Incubator tenant, **Laser Photonics Technology, Inc. (LPT)**, has deep roots in UB. Its president, Dr. Paras N. Prasad, is a UB professor of chemistry and director of UB's Institute for Lasers, Photonics and Biophotonics. LPT has made major strides in the field of laser/optical technology. Among its successes is a high capacity, holographic data storage material, MEMPLEX™, developed for and funded by the U.S. Air Force. MEMPLEX™ meets the needs of archival storage for medical records, satellite imagery and other large databases. LPT's business manager, Martin Casstevens, says the Incubator has greatly helped LPT: "Lab space in Western New York is very hard to find. Here, you can add room, subtract room and not pay a fortune doing it—and the management assistance also has been helpful."

## Public Service

University at Buffalo faculty, staff, and students volunteer and serve on a multitude of public service, educational, cultural, and community programs and projects. These activities directly contribute to the quality of life in Western New York and New York State.

Community members also take advantage of many cultural and educational resources at UB, such as the University at Buffalo Libraries, WBFO 88.7 FM, the university's Distinguished Speakers Series, other lectures, concerts, art exhibits, dance and theater performances, poetry readings, and film seminars, as well as a wide variety of athletic events. The UB Health Sciences Center—which includes the Schools of Medicine and Biomedical Sciences, Dental Medicine, Nursing, Health Related Professions, and Pharmacy and Pharmaceutical Sciences—makes a significant contribution to the health care needs of the community's under-served and economically disadvantaged population by donating over \$5.4 million in health, wellness, and preventive services through more than 16 community clinics and programs each year.

*The UB Health Sciences Center makes a significant contribution to the health care needs of the community's economically disadvantaged population by donating over \$5.4 million in health, wellness, and preventive services through more than 16 community clinics and programs each year.*

Many UB faculty and other technical experts donate countless hours of professional consulting services to municipalities, boards and task forces, lending their expertise to a wide range of critical issues facing Buffalo, Western New York, and New York State. Numerous outreach programs sponsored by the University at Buffalo provide access to health care and legal services, assistance to local social agencies, schools, and students in grades K-12.



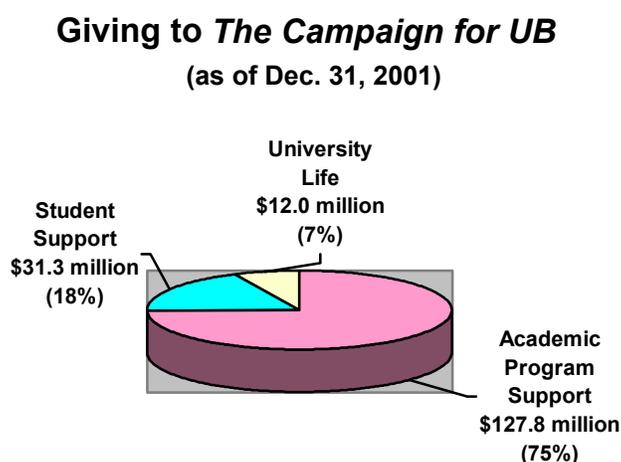
Student and staff volunteers tutor public school students, collect winter clothing and nonperishable food items for the poor, and raise money for community non-profit organizations. One such activity is UB's annual State Employees Federated Appeal (SEFA), the fundraising campaign to benefit the United Way of Buffalo and Erie County. It raises approximately \$750,000 per year—the most employee dollars in Western New York. Approximately 160 UB employees volunteer each August for United Way's Day of Caring.

## Private Support

The University at Buffalo receives significant support from private sources in the form of gifts and grants. Corporations, foundations, and individual donors provided approximately \$84 million, or nearly 10 percent, of UB's revenues in 2000-2001. The growth of private support at the University at Buffalo is a key and enduring university priority central to the university's capacity to grow its facilities, programs, faculty, and student populations.

The university's first-ever nationwide and comprehensive campaign, *The Campaign for UB: Generation to Generation*, is currently underway with a goal of \$250 million. The

campaign, which is scheduled to conclude in 2003, will increase commitments made to the University at Buffalo on an annual basis, augment endowments, and generate capital support for equipment and facilities. Many alumni and friends of the university have already contributed gifts to create new programs, improve facilities, provide scholarship funds, and promote research.



As of the end of December 2001, the campaign had surpassed the halfway point with commitments totaling nearly \$171.2 million. The breakdown includes

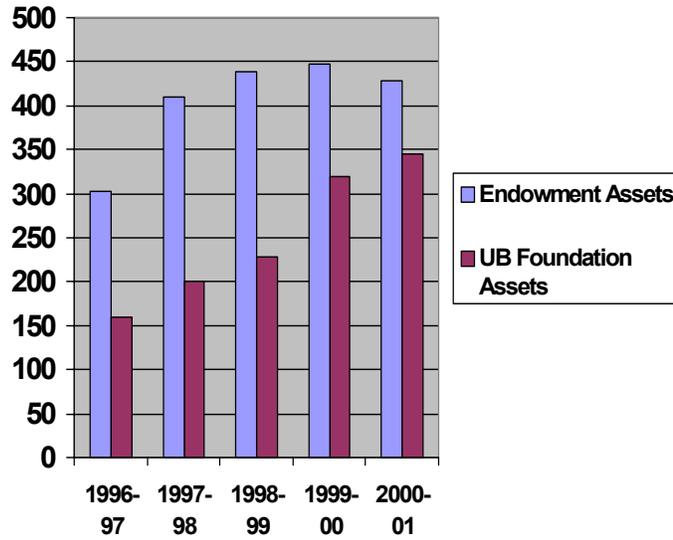
approximately \$127.8 million for *academic program support* (chairs and professorships, equipment, facilities, libraries, academic programs); \$31.3 million for *student support* (including scholarships and fellowships); and \$12.0 million for *university life* (including projects such as Alumni House, student life programs, and athletics).

Gifts from donors to UB's endowment have contributed to its ranking among the top 100 U.S. public and private research universities for endowment assets. In 2000, the university's endowment assets totaled \$447.3 million, placing it 95<sup>th</sup> among public and private universities in the 2001 edition of *The Top American Research Universities*.<sup>30</sup> From the end of fiscal year 1997 to the end of fiscal year 2001, total endowment assets have grown from \$302.2 million to \$428.1 million, or 41.7 percent. During the same period, total University at Buffalo Foundation assets have increased from \$160.6 million to \$345.5 million, or 115.1 percent.

<sup>30</sup> *The Top American Research Universities* (*TheCenter*, University of Florida), August 2001, p. 58; available online at <http://thecenter.ufl.edu>.

Gift commitments to UB totaled more than \$162.0 million over the past five years ending June 30, 2001, with \$39.2 million in commitments in fiscal year 2001. Gift collections totaled more than \$110.7 million during the same period, with \$30.2 million received in fiscal year 2001.

**Endowment and UB Foundation Assets,  
1996-2001**



Source: University at Buffalo Foundation

## **Conclusion**

As a major public research university, UB plays an important role in laying the foundation for a new, 21<sup>st</sup> century economy in the state—one based on the knowledge and discoveries that result from scholarly and scientific research. These innovative ideas and new technologies are shaping the economy, driving it in exciting, new directions that hold great promise for New York State’s citizens.

The University at Buffalo has a profound, positive impact on the long-term economic health of Western New York and New York State. It is preparing the next generation of “knowledge” workers and leaders for a technological, global society; conducting cutting-edge research that will yield discoveries in diverse fields; providing public service programs that enhance the quality of life for Western New York’s residents; creating new jobs and attracting outside revenue sources; and nurturing new technologies that will launch successful companies in years to come. The University at Buffalo is pleased to be a dynamic economic partner for Western New York and New York State—one that is essential to the region’s economic well-being.

## **Methodology and Acknowledgments**

Information about revenues and expenditures was obtained from University at Buffalo financial records, while expenditures by students and visitors were estimated from several different sources, as noted in the report. Out-of-state revenues (e.g., federal research funds, federal student financial aid) were given special emphasis because these represent new dollars in New York State’s economy. Indirect and induced impacts were calculated using U.S. Bureau of Economic Analysis multipliers for the Western New York or New York State economy, as appropriate.

The University at Buffalo has a direct impact on the regional and state economies in terms of faculty, staff, and student employment, revenues from out-of-state sources, university expenditures within the state for current operations and capital improvements, and spending by faculty, staff, students and visitors for goods and services. Our study assumed that all student and visitor expenditures occur within the state. According to UB staff estimates, approximately 73 percent of UB expenditures for direct purchases and all expenditures for construction are made within New York State. It should be noted that all estimates given in this report—for example, visitor spending—are conservative in nature.

This report could not have been completed without the cooperation and assistance of many people at the University at Buffalo and elsewhere. Special thanks go to the report’s authors, Dr. Deborah A. Silverman, Executive Assistant to the Provost, and Rebecca K. Malchow, Director for State Relations; to the Office of Institutional Analysis (especially Jeffrey Dutton, Michael Randall, Mark Molnar, and Michele Sedor) and the Office of Financial Services (John Bell), for their extensive data collection efforts; and to the University at Florida, whose earlier economic impact studies served as a model for this report.