

DURHAM AND DUKE

AN ANALYSIS OF DUKE UNIVERSITY'S
ESTIMATED TOTAL ANNUAL ECONOMIC IMPACT
ON THE CITY AND COUNTY OF DURHAM

\$3.4 BILLION

Duke University Economic Report
Year 2006–2007 Report
Office of Public Affairs

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INTRODUCTION

I am pleased to present the latest information on Duke's economic impact on the city and county of Durham. A document like this can never hope to represent fully the many aspects of Duke's close relationship with Durham. Still, it helps illustrate how closely intertwined we have been since Washington Duke and other Durham business leaders brought Trinity College here in 1892.

This report estimates that Duke's economic impact in 2006-2007 was \$3.4 billion, based on an analysis of all Duke's expenditures and the proportion that affected the city and county. Once again, wages and benefits paid to Durham residents represent the most substantial portion of this amount, with 19,755 Durham residents — more than half of Duke's total workforce — earning \$931.7 million. Duke University, including the Duke University Health System, spent nearly \$280 million purchasing goods and services from vendors in Durham.

This year's study of Duke's economic impact on the city and county of Durham comes 10 years after the first such study was issued. In that time, Duke's economic impact has increased substantially — Duke's total impact has increased by 62 percent during the past 10 years, while its institutional budget has more than doubled to \$3.5 billion. This study, like others since 1997, continues to validate some key conclusions: Duke, like other major research institutions, has a dramatic economic impact on its home community, as well as the culture, education, and recreational opportunities.

In the university's five-year strategic plan, "Making a Difference," Duke identified revitalization of downtown Durham and areas adjacent to campus, as well as the extension of local and regional partnerships in education and quality health care, as among the highest institutional priorities. The plan, adopted by the university's Board of Trustees in 2006, also calls for continued commitment to the Duke-Durham Neighborhood Partnership, a collaboration among Duke and 12 local neighborhoods, seven public schools and one charter school that emphasizes K-12 education and youth development, neighborhood stabilization, support for our non-profit partners, and engagement of Duke students in the life of Durham. I am especially pleased that Phail Wynn, the retiring president of Durham Technical Community College, is joining Duke's leadership team full time in 2008 in the newly created position of Vice President for Durham and Regional Affairs to help accomplish these goals. He will play a leadership role in Duke's interactions with local partners such as the Durham Public Schools, North Carolina Central University and Durham Tech, as well as with the city, citizens and developers of projects such as American Tobacco, in which Duke has been an anchor tenant.

In closing, I continue to believe that a strong town-gown partnership is key to the success of both the university and the community we call home, and to improving the quality of life we all enjoy. This report illustrates some of the many ways in which Duke and Durham are moving forward together.

Richard H. Brodhead



President

ECONOMIC IMPACT HIGHLIGHTS

TOTAL ESTIMATED ECONOMIC IMPACT: \$3.4 BILLION FOR 2006-2007

This figure is a conservative estimate, based on similar economic impact studies prepared by federal and state agencies and other organizations. Such impact models use a “multiplier” of direct expenditures to account for the recirculation of money before it leaves the economy being studied. This report uses a 1:1 multiplier, which falls at the low end of the range of multipliers commonly used. The report thus assumes that every dollar spent by Duke in Durham is spent at least once more by others before leaving the Durham economy. For example, Duke’s direct expenditure of almost \$280 million to purchase local goods and services has a total impact of nearly \$560 million annually on the Durham economy. A chart detailing direct and total impact of Duke expenditures appears on page 6.

EMPLOYMENT: \$1.86 BILLION

Duke University is the largest employer in Durham County by number of employees; even if the university and the Duke University Health System were considered separately, the university would be in first place and DUHS would be 12th largest.¹ Duke is also the second largest private employer in the state.² About half of Duke employees (19,755 of 39,982) are Durham residents.

However, Duke’s impact on employment extends beyond the number of people actually on the Duke payroll. Like all large research institutions, Duke also creates jobs off campus through its expenditures on research. In 2006-2007, Duke’s \$589.4 million in research funding — the largest of any university in North Carolina or the Southeast — created more than 21,200 jobs, using generally accepted estimates by the U.S. Department of Commerce Bureau of Economic Analysis, which project that 36 jobs are created for every million dollars in research and development expenditures.

STUDENT AND VISITOR SPENDING: \$853.1 MILLION

Duke’s 12,824 students, plus visitors to the university campus, spent an estimated \$426.6 million off campus in 2006-2007. This includes \$113 million by Duke students, and \$313.6 million by visitors to Duke or Duke-sponsored events.

PURCHASING: \$560 MILLION

Purchases in Durham County totaled almost \$280 million in 2006-2007, with 698 individual non-government Durham vendors selling at least \$10,000 worth of goods and services to Duke. In addition, even after Duke’s investment of more than \$850 million in construction of new campus facilities over the past five years, the university continues to lease nearly 30 percent of the office space in Durham, which generated at least \$1.5 million in property taxes.³

¹Employment Security Commission of North Carolina, <http://jobs.esc.state.nc.us/imi/largest/pdf>. September 2006 figures.

²Employment Security Commission of North Carolina, <http://jobs.esc.state.nc.us/imi/largest/list1.pdf>, first quarter 2006.

³Jeffrey Potter, Director of Real Estate Administration.

DONATIONS: \$102 MILLION

Duke and the Duke community provided at least \$51 million in donations of various kinds in 2006-2007, including more than \$40 million in uncompensated medical care provided by the Duke University Health System, primarily to county residents.

SERVICES, TAXES, AND FEES: \$52.6 MILLION

Duke spent nearly \$19 million providing its own municipal-type services such as the Duke Police Department, bus services, street maintenance, and water and sewer plant operations. If Duke had not provided these services itself, the city would have had to assume at least a significant portion of the responsibility of providing such services. In addition, Duke paid more than \$7.3 million in taxes and fees to the city and county.

TOTAL ESTIMATED ECONOMIC IMPACT, 2006-2007		
Expenditure	Direct	Total Impact
Employment ⁴	\$ 931,707,540	\$ 1.86 billion
Purchasing	\$ 279,804,566	\$ 560 million
Services/Taxes/Fees	\$ 26,290,664	\$ 52.6 million
Duke-Provided Services	\$ 18,942,586	\$ 37.8 million
Taxes and Fees	\$ 7,348,078	\$ 14.6 million
Donations ⁵	\$ 51,086,582	\$ 102 million
Uncompensated Care ⁶	\$ 40,447,003	\$ 80.8 million
Other Medical Support ⁷	\$ 6,900,000	\$ 13.8 million
Recurring Contributions	\$ 3,739,579	\$ 7.4 million
Student and Visitor Spending	\$ 426,554,608	\$ 853.1 million
Student	\$ 113,000,000	\$ 226 million
Visitor	\$ 313,554,608	\$ 627.1 million
Total	\$ 1,712,752,655	\$ 3.4 billion

⁴Data pertain to Durham residents, and were compiled by Duke Payroll Services.

⁵Estimated donations of funds, services, and/or goods from Duke organizations and individuals.

⁶Duke University Health System care, at cost, for which Duke was not compensated.

⁷In-kind service contributions and direct support to Lincoln Community Health Center and Durham County Emergency Medical Services (EMS).

**TEN YEARS OF GROWTH:
SELECTED INDICATORS OF ECONOMIC IMPACT, 1997-2007**

	1997	2007
Employment	\$ 1.01 billion	\$ 1.86 billion
Purchasing	\$ 131 million	\$ 560 million
Donations	\$ 88 million	\$ 102 million
Services/Taxes/Fees	\$ 31 million	\$ 52.6 million
Construction	\$ 123.2 million	\$ 226.5 million
Duke Corporate Budget	\$ 1.7 billion	\$ 3.5 billion
Durham County Vendors	260	698
Undergraduates from Durham Receiving Financial Aid	38	42
Total Economic Impact	\$ 1.94 billion	\$ 3.1 billion

DUKE UNIVERSITY'S ESTIMATED TOTAL ECONOMIC IMPACT ON THE CITY AND COUNTY OF DURHAM, 2006-2007

This report concludes that Duke University's total economic impact on the city and county of Durham was \$3.4 billion in fiscal year 2006-2007.

The university's total annual economic impact on Durham is calculated based on an economic model that considers certain direct and indirect effects. Durham benefits from direct university spending for employment, goods and services purchased from local vendors, taxes and fees, donations, and uncompensated medical care provided by the Duke University Health System for Durham and Durham County residents. Indirect benefits result from spending in the city and county by others such as Duke students and visitors to the campus.

Duke's fiscal year 2006-2007 budget of \$3.5 billion directly affected Durham. The 19,755 Durham residents who worked that year at Duke earned more than \$931 million in wages and benefits. Duke purchased more than \$260 million in goods and services from Durham businesses and individuals. Duke paid the city/county more than \$7.3 million for taxes and fees, including nearly \$1.9 million in sales taxes. Duke University Health System contributed more than \$40.4 million in uncompensated health care to Durham County and area residents. The university spent nearly \$19 million to provide municipal-type services that otherwise would have had to be supplied by city or county government. In addition, Duke donated more than \$7 million to Durham community organizations and charities.

Duke's indirect economic impact also was striking. Duke students, their families, and campus visitors spent an estimated \$423.8 million in Durham for food, lodging, and other local goods and services.

EMPLOYMENT

Duke is the largest employer in Durham County and the largest private employer in the Research Triangle; it is also the second largest private employer in North Carolina, after Wal-Mart, in terms of total employees, according to the N.C. Employment Security Commission. In 2006-2007, Duke employed a total staff of 39,782, with 29,068 working full-time and 10,714 part-time and temporary. Duke paid \$1.789 billion in wages and benefits to these employees. Almost half of Duke employees (49.6 percent, or 19,755) were Durham residents, who constituted almost 15 percent of the county's total work force of 134,038.⁸ Durham residents on the Duke payroll earned more than \$931 million in wages and benefits. For the 2006-2007 fiscal year, the mean salary for Durham residents working at Duke was \$74,662 for employees paid monthly and \$42,436 for employees paid at an hourly rate.

It is also worth noting here that since the release of the last report, the university raised the minimum wage for all Duke employees to at least \$10 an hour. It also required contracted food-service vendors to offer full-time employees at least \$10 per hour and basic health care coverage similar to the extensive fringe benefits Duke offers its own employees.

⁸Employment Security Commission of North Carolina, June 2007.

PURCHASING

Duke purchased more than \$1.65 billion in goods and services during the 2006-2007 fiscal year. Durham County businesses provided \$279.8 million of that total. Transactions with small firms and individual business people represent most of Duke's purchasing of goods and services in Durham. Duke did at least \$10,000 in business with 698 different non-governmental vendors in Durham during the year.

Duke has made several special purchasing arrangements that benefit Durham vendors. The Minority/Women-Owned Business Program has directed about 12 percent of university business to minority and women-owned vendors. Vehicle purchasing is done with several Durham dealers through an arrangement with the manufacturers. Duke's motor vehicle fleet includes 683 licensed vehicles, including 32 buses that consumed 184,911 gallons of fuel in 2006-2007. Duke's purchases of light cars and trucks totaled \$903,199.

Duke currently leases 210,000 square feet of space at the American Tobacco Campus, accounting for approximately one-quarter of the total project. Throughout the Triangle, Duke leases approximately 1.9 million square feet of office, clinic, lab, and warehouse space, with about 75 percent of that space in Durham County. Space leased by Duke University and the Duke University Health System make Duke the county's largest tenant, accounting for almost 30 percent of the office market. Duke continues to plan its use of off-campus office and clinical space in ways that will support Durham's revitalization.

Construction

Construction is a major and ongoing purchasing category at Duke and has been particularly significant in recent years as a number of major new buildings were added to the inventory of 220 facilities on the total 8,610 acres owned by the university. The direct impact included wages paid to construction workers, purchase of equipment and supplies, and fees for architects and other professional services. Duke spent nearly \$227 million for construction in 2006-2007, including \$161 million in new construction contracts and nearly \$26 million for architecture and design services. The total impact of Duke construction projects on Durham cannot be fully calculated since some vendors may hire employees or purchase supplies from outside Durham. However, the amount expended for construction at Duke is expected to increase in coming years as work begins on Central Campus and other major construction projects planned by the university leadership. Therefore, the economic impact of this construction on Durham will continue to increase as well, even if it cannot be precisely quantified.

DONATIONS

Duke and the Duke community provided at least \$51 million in donations of various kinds in 2006-2007.*

*This amount does not include the \$5.5 million that Duke has committed to support the construction of the new downtown theatre or the \$2 million Duke paid the City of Durham in exchange for the right to have some control over the section of Anderson Street that runs through Central Campus, both of which will appear in the next economic impact report.

Uncompensated Care

In fiscal year 2006-2007, the Duke University Health System provided subsidized care to low-income patients at a cost of more than \$40 million, as well as \$6.9 million of in-kind service contributions and direct support to Lincoln Community Health Center (LCHC) and Durham County Emergency Medical Services (EMS). LCHC provides primary care to Durham residents on a sliding fee scale and also operates a number of outreach programs, including a clinic for the homeless. EMS serves as the primary provider of emergency ambulance service in Durham County.

Recurring Contributions

Through voluntary support and contributions, both monetary and in-kind, Duke contributed more than \$3.7 million to the Durham community in 2006-2007. The chart below notes recurring contributions, some of which are estimated.

RECURRING CONTRIBUTIONS	
Institutional	
Financial Aid to Duke Undergraduates from Durham	\$ 617,544
2006-2007 support from The Duke Endowment for the Duke-Durham Neighborhood Partnership	\$ 777,500
Community Service Center	\$ 444,000
Auxiliary Services — Duke Stores	\$ 25,000
Office of Information Technology	\$ 60,000
Project Share — Partnership with the Volunteer Center of Durham	\$ 18,000
Individuals	
Student Donations	\$ 80,000
Duke-Durham Campaign ⁹	\$ 730,882
United Way	\$ 986,653
Total	\$ 3,739,579

THE DUKE-DURHAM NEIGHBORHOOD PARTNERSHIP

Some of Duke's contributions to the community are made as part of special initiatives that are meant to have a sustained impact on the Durham community. Duke's most visible such effort is the Duke-Durham Neighborhood Partnership. Through it, Duke is providing youth programming, boosting student achievement in the public schools, stabilizing neighborhoods by encouraging home ownership, supporting grassroots community leadership and encouraging more service engagement in Durham by Duke students. The Neighborhood Partnership, launched in 1996 and endorsed twice by the Duke Board of Trustees, creates partnerships designed to improve the quality of life in 12 neighborhoods and seven public schools and a charter school near the Duke campus. Duke has raised more than \$16 million to support this effort, which concentrates on priorities identified by community residents. In response to community requests, in 1996 Duke created the Office of

⁹Local business people solicit their colleagues for donations to the Duke-Durham Neighborhood Partnership.

Community Affairs, which coordinates the Neighborhood Partnership and long-term interactions among Duke, the Durham Public Schools, Durham neighborhoods, and local government.

Duke's engagement in Durham has benefited from the consistent and sustained support of The Duke Endowment, the Charlotte-based charitable trust. The foundation underwrites ongoing affordable housing programs, leadership training opportunities for local nonprofits, and after-school tutoring and enrichment programs aimed at closing the achievement gap among K-12 students. The Endowment's 2006-2007 grants mean the foundation has invested almost \$5 million in the Duke-Durham Neighborhood Partnership in the last nine years.

The Duke-Durham Campaign, an annual appeal by local community leaders and volunteers, supports the Duke-Durham Neighborhood Partnership. Donations in 2006-2007 totaled more than \$720,000 (double the amount from two years ago, when Duke's last economic impact study was conducted), and included \$10,000 raised by a student-run class on philanthropy that supports Durham nonprofits. The money helped support neighborhood projects, including landscaping Proud Shoes Park and construction of a footbridge over Gattis Creek in Pauli Murray Place in the West End. More than 1,600 reconstructed computers were donated to Durham Public Schools. Duke contractors and facilities personnel donated a public announcement system for Carter Community School. These are but a few examples of the impact of the Duke-Durham Neighborhood Partnership.

Affordable Housing

To help stabilize Durham neighborhoods, Duke has a current investment of \$4 million in an affordable housing loan with the nonprofit Self-Help Community Development Corporation. The results of that initiative continue to be felt by low-income citizens who have become first-time homeowners in the Walltown and Southwest Central Durham neighborhoods and by borrowers of lower-rate mortgage loans. By July 1, 2007, Self-Help had built and sold 77 houses in Walltown and Southwest Central Durham. Thanks largely to support from Duke, Self-Help, with assistance from other local affordable housing organizations, has also been able to landbank more than 80 houses for rehabilitation and sale to low-income citizens in partner neighborhoods. Moreover, about \$1 million of the Duke investment supported Self-Help's efforts to provide affordable mortgage financing for Walltown and other Durham neighborhoods and has helped leverage about 300 low and moderate income families with \$22.8 million in financing.

A Partner for Health

Duke is also committed to providing accessible, quality health care in the partnership neighborhoods. Duke's Community and Family Medicine Division operates wellness centers at two partnership schools to help keep students healthy and in school: George Watts Montessori Elementary and E.K. Powe Elementary. Both school clinics recorded increased patient visits this year. The number of patients visiting Watts doubled to 1,500 while Powe had about 1,200 visits. Duke has also located two clinics in partnership neighborhoods: The Lyon Park Clinic and the Walltown Clinic on Broad Street, which are operated by Lincoln Community Health Center and Duke's Community Family Medicine Division. Each of the neighborhood clinics had about 5,000 visits during the year and more than three-quarters of the patients (primarily low-income) have indicated that they are making the clinics their medical homes—a major sign that Duke is providing a needed and accessible service.

Other Partnership Initiatives

Duke has helped five partner neighborhood centers provide after-school programming to 750 at-risk students through a \$2.25 million, five year grant (HOPE) from the W.K. Kellogg Foundation and \$500,000 from the Wachovia Foundation.

Duke supports the Southwest Central Durham Quality of Life Project which brings together residents, nonprofits and businesses to jointly address community issues in six neighborhoods. The grassroots organization partnered with the City of Durham, Self-Help, Durham Habitat for Humanity, the Durham Community Land Trustees, and the Home Builders Association to build 14 homes in a new development in SouthWest Central Durham called Pauli Murray Place. Duke contractors helped build a park and footbridge for the community.

Duke's Facilities Management Department has secured more than \$1.7 million in pro bono goods and services for partner schools and community centers from Duke subcontractors over a six-year period. Projects have ranged from a new soccer field at Forest View Elementary School, to a playground at Carter Community School, to a science resource center at E.K. Powe Elementary.

STUDENT AND VISITOR SPENDING

Duke's programs and activities provide a variety of indirect benefits to Durham, but the most tangible is probably the off-campus spending of Duke students and visitors to the Duke campus. This amount was estimated to exceed \$426.6 million in 2006-2007.

Student Spending

Duke's 12,824 undergraduate and graduate/professional students spent, by conservative estimate, \$113 million. This estimate is based on budgets established by financial aid officers and heads of schools at Duke for the 6,197 undergraduate and 6,627 graduate and professional students and is adjusted to reflect non-university housing and other spending factors. About 18 percent of undergraduate students and the great majority of graduate and professional students (about 96 percent) live off-campus and pay rent for non-university housing.

Visitor Spending

Visitors to Durham who were attracted by Duke University or Duke-sponsored events spent \$313,554,608. Duke is responsible for 38.8 percent of spending on conventions, meetings, and special events; 18.4 percent of spending by other transient or business visitors; 76.1 percent of spending from personal visits such as health care; and 41.6 percent of spending by leisure visitors.¹⁰

¹⁰Data provided by the Durham Convention and Visitors Bureau, September 2007.

SERVICES, TAXES, AND FEES

Duke paid taxes and provided municipal-type services (such as a campus-based police department and maintenance of 15 miles of streets and roads) that totaled nearly \$26.3 million in fiscal year 2006-2007. Duke also contributed \$300,000 as a voluntary contribution toward the cost of fire services received. The city was thereby relieved of a substantial financial burden — if Duke did not provide such services, the city would have had to assume responsibility for at least a significant portion of the cost, as is the case for other municipalities that host major universities.

Duke-Provided Services

While Durham serves Duke in many ways, the university annually provides for itself a number of municipal-type services that in 2006-2007 cost the university more than \$18.9 million. The university paid \$9 million for its police department and staff of 176, including 65 sworn officers, to protect and serve students, employees, and visitors, including Durham residents. Duke police traveled 584,166 miles on patrol and wrote 7,083 incident reports.

In addition to providing police protection, Duke also operates and maintains its own water and sewer system and a campus bus system. Duke also maintained 15 miles of private roads that are generally open to the public. Through an agreement with the City of Durham, the Duke Police Department also supports the Durham Police Department in addressing crime and safety issues in neighborhoods adjacent to campus.

DUKE-PROVIDED SERVICES	
Police protection	\$ 9,000,000
Road maintenance	\$ 108,740
Water/sewer operation and maintenance	\$ 2,193,446
Mass transit	\$ 6,100,000
Trash collection and recycling	\$ 1,540,400
TOTAL	\$ 18,942,586

Taxes and Fees

Although Duke is a nonprofit organization, that does not mean it is exempt from all taxes. Direct taxes and fees paid to Durham in 2006-2007 totaled more than \$7.3 million in property taxes, water and sewer fees, landfill tipping fees, storm water fees, privilege licenses, motor vehicle taxes, and city sales taxes. That figure includes a \$300,000 voluntary contribution to the city for fire services. Duke paid \$611,000 in property taxes for facilities including the Washington Duke Inn, a hotel owned by the university. Indirectly, Duke also contributes to increasing Durham's tax base. For example, the Trinity Heights homesites, 40 homes and townhouses built on Duke property for faculty and staff in 2001, add at least \$140,000 a year in property taxes. This property could have been developed for tax-free institutional use.

ACTUAL TAXES AND FEES	
Property taxes	\$ 611,000
Water and sewer fees	\$ 3,900,000
Landfill fees	\$ 404,647
Storm water fees	\$ 276,735
Voluntary contribution for fire services	\$ 300,000
Sales taxes	\$ 1,855,696
TOTAL	\$ 7,348,078

ECONOMIC IMPACTS ... AND MORE

Duke, like other major research universities, is an economic engine; its activities and its strength have a dramatic impact on the local economy. Yet while the previous sections of this report look at some measurable economic impacts of Duke on Durham, there are clearly additional effects that, while significant, simply cannot be quantified. Duke is one of the world's leading research universities, known internationally for the quality of its programs in research, education, and patient care. Durham — and for that matter, the Research Triangle and the State of North Carolina — benefit greatly from the university's presence and its continued institutional health.

For example, consider the role of Duke graduates and students. While we know that some 5,700 Duke graduates — holders of bachelor, master, professional, and doctoral degrees — live in Durham, there is no way to measure their impact on the community: their contributions and support of local schools, churches, social and cultural organizations, and charitable activities. Yet surely their contributions are partly attributable, at least indirectly, to Duke.

Similarly, while surveys consistently show that an estimated 75 percent of Duke students do volunteer work in Durham during the course of their time at Duke, there is no reliable estimate of the total hours of work they perform, except for the 26,000 hours donated by the 450 students tutoring in partnership schools. Nor has anyone calculated the economic value of their free labor as community volunteers.

Community and Culture

The Duke-Durham Neighborhood Partnership described earlier in this report is one major and visible way in which the university has provided leadership that is benefiting both Duke and Durham. But other quality-of-life factors — including social, cultural, and recreational — are also important, although difficult to describe or measure. For example, the Nasher Museum of Art, which opened in 2005, is one of the most successful recent examples of Duke's cultural impact on the community. The museum boasts an impressive core collection of medieval and Renaissance art, African art, ancient American (pre-Columbian) art and Classical sculpture, and with an ambitious schedule of traveling exhibitions, it has established itself as one of the university's top attractions, averaging some 1,500 visitors per week. Durham residents enjoyed free admission to the museum, courtesy of *The Herald-Sun* newspaper ... another example of community cooperation.

Business and Industry: Enabling Commercialization of New Technologies

Nationally, it is clear that research universities such as Duke are increasingly important to the evolving economy. Expenditures from sponsored research at Duke cycle through the Durham and state economies, transferring federal funds into revenue for local residents and businesses. The U.S. Commerce Department's Bureau of Economic Analysis says that 36 jobs are created for every \$1 million spent in academic research. These jobs are created on and off campus and include both full and part-time positions.

More and more, industries and firms that are successful competitors here and abroad for business and jobs are knowledge-based, high-tech, and engaged in cutting-edge research. Duke's presence in the Triangle, beyond its role in establishing the Research Triangle Park, helps sustain the area's leadership drive and entrepreneurial spirit.

Duke's Office of Licensing and Ventures helps faculty researchers who are exploring commercial applications of their discoveries, with a goal of accelerating the pace of technology transfer across the campus.

Medical Care and Research

In the City of Medicine, nearly a third of Durham employees work in a health or medical-related business such as the Duke University Health System or other major employers such as GlaxoSmith Kline and Blue Cross/Blue Shield of North Carolina.¹¹ DUHS, the largest health-related employer, has 18,200 employees, including 1,500 faculty physicians, 830 house staff, 460 medical students, and 440 nursing students. Durham residents have only to drive across town for access to Duke's internationally renowned programs of medical care and research — programs that each year attract thousands of patients from across the world.

Much of the research conducted at Duke has far-reaching implications. Anil Potti, assistant professor of medicine at the Institute for Genome Sciences and Policy, and Joseph Nevins, director of the IGSP Center for Applied Genomics and Technology and professor of molecular genetics, for instance, have developed the first-ever genomic test to predict which patients with early-stage lung cancer will need chemotherapy to live and which patients can avoid the toxic regimen of drugs. The test, which theoretically can apply to any cancer, scans thousands of genes to identify patterns of gene activity in individual tumors that indicate a patient is likely to suffer a recurrence of disease.

Some Duke research directly benefits members of the Durham community. Researchers from Duke's Sanford Institute of Public Policy are partnering with about a dozen African-American churches in Durham on the African-American Health Improvement Project. In Durham County, the death rate for minorities with diabetes is nearly three times that of non-Hispanic whites. Through the study, which is funded by \$1.5 million from the National Institutes of Health, Sherman James, Susan B. King Professor of Public Policy Studies, is developing community-based and culturally appropriate techniques for helping diabetics manage their health.

¹¹Durham Chamber of Commerce, http://durhamchamber.org/business/economic_profile/

In the winter of 2007 when water samples with high lead levels from a number of Durham residences raised public concern about the safety of the county's drinking water, members of Duke University's Children's Environmental Health Initiative, community advocates, city officials and county public health officials formed the Durham Environmental Lead Collaborative (DELC). Marie Lynn Miranda, director of the Children's Environmental Health Initiative and associate research professor at Duke's Nicholas School of the Environment and Earth Sciences, became the facilitator. Her research for many years has included especially vulnerable populations in Durham, such as pregnant women and children, as well as identifying and testing houses that are considered at risk of exposure from household plumbing and lead paint. The Nicholas School and the Duke University Medical Center are also teaming up to assess the effects of environmental factors on human health in Durham and North Carolina. The effort merges medical records with house-to-house surveys and the latest tools such as geographic information systems to gain a better understanding of how, why and where people get sick.

CONCLUSION

Duke has a tremendous impact on both the city and county of Durham. As its largest employer, its largest health care provider, and the state's largest research university, Duke plays a significant role in Durham's economic life. A conservative estimate, considering only the most significant elements, indicates that Duke's total economic impact on Durham was \$3.4 billion in 2006-2007. During the decade in which Duke's economic impact has been tracked, it has increased steadily. Implementation of the university's strategic five-year plan, including the development of Central Campus, makes it seem likely that this economic impact on Durham will continue to grow for the foreseeable future.

As this report observes, a university like Duke is also a source of benefits that may be widely appreciated but which are difficult, if not impossible, to quantify. The intellectual, cultural, entertainment and recreational opportunities available to Durham residents because of Duke's presence are significant, and surely make a major contribution to the quality of life in Durham. Measuring that contribution, however, is a task beyond the reach of spreadsheets. Any analysis of the economic impact of Duke on Durham has serious limitations...but can at least provide an approximate measure of some of the benefit that Duke brings.

And the fact that Duke brings significant economic benefit to Durham indicates another important point: Duke's continued strength and preservation of its enviable position as an international leader in higher education, in wide-ranging research, and groundbreaking medical care will continue to be important to the future of Durham. Both Durham and Duke have strong interests in safeguarding that future. The best approach to such a task lies in sustaining the partnership between Duke and Durham that, as this report shows, pays rich dividends.

Duke enjoys excellent economic health today, and the university's leaders are carefully making strategic plans to ensure that continued good health in the years ahead. The ongoing partnership between Duke and Durham is a vital element of their shared interest in making Durham an attractive place to live and work.

ACKNOWLEDGMENTS

The first study of Duke's economic impact on Durham, conducted in 1997, traced its origins to the work of students in a master's class at Duke's Terry Sanford Institute of Public Policy, directed by the late Professor of the Practice Richard A. Stubbing. The design, methodology, and format of the original document were further shaped by the assistance of three economists in addition to Professor Stubbing: Professor Charles Clotfelter and Professor Helen F. Ladd, both of the Sanford Institute; and Michael Walden, professor of economics at North Carolina State University, who is the author of a number of highly regarded impact studies. All Duke economic impact studies since 1997, including this one, have benefited from the insights and expertise of these scholars.

Reyn Bowman, president of the Durham Convention and Visitors Bureau, provided invaluable assistance and information about the role and impact of student and visitor spending on Duke and Durham.

A number of offices at Duke University contributed data that is used in this report. Special thanks are due to John Clements, director of the university's Office of Budgets and Analysis, who gathered information from many sources; John F. Burness, senior vice president for public affairs and government relations, who commissioned this study; and Susan Kauffman in Duke's Office of Public Affairs, who edited the report written by consultant David H. Roberson.

METHODOLOGY

Duke University's annual total economic impact on the city and county of Durham may be significantly greater than the total estimated in this report. There are two principal reasons for this: First, this study, like its predecessors, generally incorporates conservative methodologies and estimates. Second, this study, like others since 1997, incorporates a "multiplier" at the low end of the range of ratios used in mathematical models to measure economic impact of a university on a city or region. (This multiplier is based on the fact that dollars put into an economy by an institution do not then immediately leave the area. For example, each dollar in salary paid to an employee is spent by that employee and then again by the first recipient of that employee's dollar.) Impact models often use a multiplier of 2:1 or greater, thus assuming that every dollar spent by a university is then spent twice more by others before leaving the area under study, thus tripling the impact of the original dollar. The 1:1 multiplier used in this study simply doubles the value of the initial dollar entering the Durham economy. This is done to avoid overstating certain impacts.

Regarding job creation, this study also uses a multiplier commonly adopted to estimate the impact of expenditures on employment outside the university. State-specific multipliers developed by the U.S. Commerce Department's Bureau of Economic Analysis calculate the employment impacts of academic research and development at 36:1, meaning that 36 jobs are created for each \$1 million spent in research and development.

For purposes of this study, university spending within Durham includes estimated purchases and the salaries and benefits of employees who are Durham residents. It does not attempt to estimate a major secondary economic impact — spending by university employees who live in Wake or Orange counties or other areas outside Durham County. Such spending does start a second round of expenditures initiated by the university’s payroll. The multiplier most commonly used doubles this spending to estimate its economic impact.¹²

Estimations of Duke student spending beyond the university are likely low because they do not include spending in the summer months by undergraduates, and they do not include entertainment expenditures.

¹²Elliot, Donald S., Stanford L. Levin, and John B. Meisel. “Measuring the Economic Impact of Institutions of Higher Education,” *Research in Higher Education*: 28.1. 1988: 17-33.

SOURCES

Information on 2006-2007 operations of Duke University was collected by Duke University Financial Services and Duke Treasury and Cash Management

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INQUIRIES AND COMMENTS

For questions, call the Office of Public Affairs and Government Relations at (919) 681-3788.