

The Economic Impact of Norfolk State University and RISE

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Executive Summary

This report takes spending figures by Norfolk State University, its employees, students, and an important community outreach program to calculate the annual economic impact of NSU on the Hampton Roads regional economy. The report shows that for the 2002-2003 academic year, NSU generated an economic impact of \$527.8 million in final demand or output, \$257.1 million in additional household income, and 8,865 additional jobs in the region.

In addition, the report identified a separate impact of NSU's operations that is related to the spill-over benefits of university research. The university's research program in 2002-03 is found to have generated \$115.8 million in additional household income throughout the Commonwealth of Virginia.

The study also examined the increased economic activity attributable to the construction and operation of the first two phases of the Research and Innovations to Support Empowerment (RISE) Center. When completed, the RISE Center will bridge the gap between university research and business development. The construction of RISE One and RISE Two is expected to generate \$221.8 million in final demand, \$113.6 million in additional household income, and 2,263 additional jobs. In the first year of operations, RISE One and RISE Two are expected to generate \$122.6 million in final demand, \$53.6 million in additional household income, and 872 additional jobs in the 2006-2007 academic year.

“The U.S. is entering a new economy, one in which the capacity to innovate will play a dominant role in determining which countries prosper in the global marketplace... Universities, as a source of educated people and basic research, are playing a catalytic role in the new economy.” Richard C. Atkinson, then President of the University of California, in the *Los Angeles Times*, September 1998.

1. Introduction

The American economy is in the midst of a historic transformation from an industrial economy focused on manufacturing to a post-industrial economy focused on services. Industries that prospered for years are being replaced by new industries and new business models. At the same time, the economic security that Americans used to take for granted is being transformed. The 30-year employee of a single company is largely an icon of the past; workers change jobs every few years, and occasionally they change careers altogether.

Both of these developments have increased the emphasis on the human capital of skills and experience and decreased the role of the physical capital of factories and machinery. Businesses need to cultivate workers’ skills in order to compete successfully. Workers need to enhance their own skills in order to reclaim a degree of economic security in an ever-changing world. The people who populate knowledge-intensive industries have been called “symbolic analysts”¹ and the “creative class,”² but regardless of the terminology used to describe such people, the role of colleges and universities in developing their skills will only increase as brains continue to replace brawn in the workforce.

Colleges and universities are engines of economic growth in ways that go beyond human capital. University research spills over into the business world. University

¹ Robert Reich, 1991, *The Work of Nations* (Alfred A. Knopf, Inc., New York, NY).

² Richard Florida, 2002, *The Rise of the Creative Class* (Basic Books, New York, NY).

cultural and athletic programs enrich the lives of people in the community. University community-development programs address issues facing the community, from housing to education to child care.

Urban universities play an even more intimate economic role in their communities. They incubate companies, revitalize neighborhoods, create housing opportunities, and participate in the urban economy by purchasing goods and services and employing large numbers of people. According to a recent study of urban universities, “in many respects, the bell towers of academic institutions have replaced smokestacks as the drivers of the American urban economy.”³ The primary purpose of this report is to quantify the economic impact of Norfolk State University on its regional economy.

2. Norfolk State University and RISE

Norfolk State University (NSU) was founded in 1935 as the Norfolk Unit of Virginia Union University. Its enrollment that year was 85 students. Within a few years the Norfolk Unit became the independent Norfolk Polytechnic College, but it was soon redesignated as the Norfolk Division of Virginia State College (now Virginia State University). In 1969 the school was made independent for good and named Norfolk State College. It achieved its current university status in 1979.

Located in the heart of the Hampton Roads metropolitan area in southeast Virginia, NSU is the largest public historically black college or university (HBCU) in Virginia and the seventh largest HBCU in the country. As of the fall of 2003, NSU’s

³ “Leveraging Colleges and Universities for Urban Economic Revitalization,” Initiative for a Competitive Inner City and CEOs for Cities, 2002.

enrollment of 6,846 students included 6,039 undergraduate and 807 graduate students. It employs 314 full-time faculty members, 126 administrators, and 462 full-time staff members (as well as 193 part-time employees). NSU offers 37 undergraduate degree programs, 14 master's degree program, and two doctoral degree programs. The university comprises five schools: Liberal Arts, Science and Technology, Business, Education, and Social Work. In addition to its main campus in Norfolk, NSU operates two satellite centers in Portsmouth and Virginia Beach.

Increasingly, universities around the country have come to understand the importance of research in educating students, broadening faculty perspectives, expanding the knowledge base, and connecting to local communities. At NSU, research funding has increased over the years, reaching an all-time high of over \$17 million in 2002-2003. NSU has determined to build on its research mission and take it in a new and exciting direction. In 2002, NSU received funding to begin construction on the Research and Innovations to Support Empowerment (RISE) Center. The Center will be built on 25 acres of land adjacent to the school's campus in Norfolk, which were obtained through a variety of local, state, and federal grants.

The RISE Center will initially include two buildings but may be expanded to six. The first building, dubbed RISE One, will house the university's applied research and workforce development programs, including the Center for Entrepreneurship and the Center for Materials Research (which studies light and energy applications). The second building in the RISE complex, called RISE Two, will serve as a business incubator, providing start-up businesses with office space, administrative resources, a guaranteed back-up energy source, and very high-speed Internet access (via Internet3, the next

generation of Internet). The second purpose of this report is to assess the projected economic impact of the RISE Center on the Hampton Roads regional economy.

3. The Study Area

For purposes of this study, the “Hampton Roads region” is defined as follows:

Table 3.1: The Hampton Roads region

Category	Included in study
Cities	Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg
Counties	James City, York

This definition approximates the Hampton Roads metropolitan statistical area but excludes the Virginia counties of Gloucester, Mathews, and Isle of Wight and the North Carolina county of Currituck.

Hampton Roads is a large and diversified regional economy in the southeastern corner of Virginia. The region’s employment is more dependent on shipping and government (particularly at the region’s numerous military installations) than the rest of the state. Manufacturing’s share of employment is about the same as in the rest of Virginia, but over a third of manufacturing employment in the Hampton Roads region is in transportation equipment (primarily shipbuilding), as compared to only about a tenth throughout Virginia as a whole. Cuts in defense spending in the 1990s led to reductions in employment in shipbuilding in the region, but the industry continues to be an important engine for growth in the region. The Port of Hampton Roads is the second-busiest cargo port on the East coast, handling an average of 55 million tons of cargo annually.

The following table provides some vital statistics for the Hampton Roads region in 2000, the last year for which detailed regional data are available:

Table 3.2: Hampton Roads summary indicators

Indicator	Value
Area (square miles)	1,469
Population	1,477,636
Employment	937,852
Number of Households	542,524
Total Personal Income (thousands)	\$38,796,850
Average Income per Household	\$71,512

The unemployment rate in the Virginia portion of the Hampton Roads MSA was fairly high during the early 1990s, reaching 5.8% in 1994. But the rate fell steadily after that and has generally been well under the national rate. After falling as low as 2.6% in 2000, the unemployment rate has stabilized in 2002 and 2003 at 4.2%. Within the study area, unemployment rates in December 2003 ranged from 2.0% in James City County and 2.5% in York County to 5.7% in Norfolk and 6.5% in Williamsburg.

4. Economic-Impact Analysis

This economic-impact analysis will account for different types of spending attributable to NSU, and for other effects the university has on the Hampton Roads economy. In principle, one could simply add up the amounts spent directly and be done with it. But stopping with the direct impacts would ignore the second- and third-round (and etc.) impacts of that spending. Those additional impacts can be divided into two categories: indirect and induced. The indirect impact is increased spending by businesses that serve those directly involved with NSU's activities. The induced impact is increased spending by businesses that serve the households of employees of those

businesses. The total economic impact is the sum of the direct, indirect, and induced effects. Hence we multiply each type of direct spending by a factor, called a “multiplier,” that captures the indirect and induced impacts of the expenditure as it circulates through the Hampton Roads economy. The sum of the indirect and induced impacts is often referred to as the *multiplier effect*.

For example, if a household spends a dollar on some local product or service, we assume that the recipient of that dollar will spend a portion of it and save the rest. For this report, we are only interested in the portion she spends in the Hampton Roads regional economy. If the recipient of that dollar spends 50% of her receipts, she will spend 50 cents. The recipient of that 50 cents will spend half of that, or 25 cents. The next recipient spends 12.5 cents, and so on. The multiplier that reflects this entire chain of spending can be expressed as $1/(1-0.5)$, which equals 2. Therefore, in this extremely simple example, every new dollar spent in the economy generates a total impact of two dollars, the original dollar spent plus one additional dollar of economic impact.

The final demand, or output, multiplier described above is the most comprehensive measure of economic impact. It is possible to obtain additional multipliers that relate direct expenditures to employment and household income (or “value-added”). As that original dollar is spent from person to person, some of what is kept is used to hire workers and some is taken as income. Finally, this report makes use of a direct-effect employment multiplier, which translates the number of jobs into the same set of multiplier effects.

The multipliers used in this report are more complex than in the above example but they work on the same principle. Each multiplier is determined by the type of

spending and the nature of the economic relationships among industries and between industries and households within the region in question. The multipliers are derived from the IMPLAN Pro software produced by the Minnesota IMPLAN Group, Inc.

5. The Economic Impact of NSU: 2002-03

The direct spending associated with NSU falls into the following categories:

Table 5.1: Economic activities associated with NSU

Category	Specific activities
University spending	Purchasing, wages and salaries
Student spending	Books and supplies, room, board
Housing impact	Increased value of nearby housing
Human-capital impact	Increased incomes of NSU alumni
Research impact	Technology transfer

These results are summarized in Table 8.1. Whenever possible, this report makes conservative assumptions regarding direct spending. Consequently, the true economic impact of NSU is *at least* as much as the following.

University spending: The total expenditure budget for NSU in 2002-03 was approximately \$103 million. A break-down of those expenditures appears in Table 8.1. No adjustments were made to the salary and wage data because virtually all NSU employees live in the Hampton Roads region. This category of expenditure led to an impact on output of \$222.4 million, an impact on household income of \$113.7 million, and an employment impact of 3,324 jobs.

Student spending: One of the challenges of economic-impact analysis is identifying *new* spending in a regional economy. This is important when considering the economic impact of student expenditures (net of tuition and fees paid to the university). If not for the presence of NSU, some of its current students would have attended college

outside of the Hampton Roads region. If *all* of its students would have attended elsewhere, then all student spending could be treated as new and hence part of the university's economic impact. The extent to which some students would have remained in Hampton Roads to attend, say, Hampton University reduces the proportion of student spending that can be construed as new.

Currently, approximately 60% of NSU students come from within the Hampton Roads region, and 40% from out of state or elsewhere in Virginia. In lieu of survey data that addresses this issue, this report makes the assumption that (i) three-quarters of those from outside the region (30% of the whole) would attend college elsewhere if not for NSU; and (ii) half of those from within the region (also 30% of the whole) would do so. This implies that 60% of student spending can be treated as new spending.

Based on these assumptions and data from the NSU Financial Aid Office, NSU students spent \$21,066,180 of new money in the regional economy.⁴ This expenditure leads to an output impact of \$47.1 million in Hampton Roads, an earnings impact of \$24.5 million, and an employment impact of 885 jobs.⁵

Housing impact: One of the hard-to-measure impacts of universities is the generally positive effect they have on neighborhoods near campus. As a rule, students and faculty value convenient access to campus, and this tends to increase the value of nearby neighborhoods. This is a bit easier to measure in the context of NSU's economic impact, due to the housing program conducted by the university's Office of Community and Outreach Services. The program enhances surrounding neighborhoods by building homes, many of which have been constructed in partnership with the local non-profit

⁴ See Appendix A for details of the calculation of this figure.

⁵ Because Room and Board are combined in the NSU data, I chose the smaller of the two multipliers for those two categories, in order to arrive at a conservative calculation.

Plumblin Ministries. Other community-outreach programs convey benefits to the area as well, such as the Brambleton Community Outreach Center, which the university has operated since 1983.

Since 1993, NSU and the NSU/Plumblin partnership has built 97 homes near campus. The average appraised value of those homes is \$115,000, which according to the university represents an average improvement in the value of those parcels of approximately \$82,500 each. Aggregating over the 97 homes implies that an increased value of housing stock in the vicinity of NSU of \$8,002,500. Annualizing this capital value at a mortgage rate of 6.5% yields an implicit income value of \$606,975 per year. (The 6.5% rate is higher than current levels but serves as a reasonable guide for the long-term financial picture.) The resulting annual economic impact on the Hampton Roads region is \$1.2 million on output, \$0.5 million on household incomes, and 21 jobs.

Human-capital impact: It is well known that a college education confers a clear advantage on a graduate in the form of an earnings premium. In fact, the premium resulting from a college education has been growing in recent years. To the extent that NSU alumni remain in the Hampton Roads region, the increase in their annual incomes can be construed as part of the university's economic impact.

An auxiliary analysis using 2001 data from the federal government's Current Population Survey identified the annual earnings premium for a person holding a bachelor's degree or better as compared to one holding a high-school degree. Using the current racial distribution of NSU students (88.0% African American, 8.2% white, and 3.8% other), and assuming that NSU alumni are described by approximately the same

distribution, the data imply a weighted average earnings premium of \$23,770 per year. This average is independent of how long ago the person graduated.

According to NSU, there are currently 13,777 alumni living in the Hampton Roads region (this figure excludes James City and York Counties, but is a close approximation). The direct annual income premium accruing to those regional alumni is approximately \$327.5 million. However, the challenge of a study like this is to identify *new* impacts, and not all of those alumni would be present in the Hampton Roads region if not for NSU. Again lacking survey data to address this directly, this report builds on a previous section and assumes that 40% of those alumni would be living elsewhere if not for NSU. This conservative assumption implies that 40% of the income premium to alumni in the region, or \$131.0 million, can be treated as new income to the region resulting from NSU. Applying the relevant multipliers to this figure yields economic impacts of \$257.0 on output and \$118.3 million on household income, plus an additional 4,635 jobs in the region. It is worth noting that these impacts are approximately the same magnitude as those resulting from the university's operations.

Research impact: The economic impact of university research involves static as well as dynamic impacts. Static impacts result from employment of students and researchers and their research-related purchases, which in this case have already been included in the university's operating expenditures. Dynamic, or long-term, impacts result from increasing the underlying productivity of a region's economy. As such, the dynamic impact of NSU's research mission could far exceed its static impact, because enhancing NSU's research program will enhance the economic opportunities of knowledge-intensive businesses in the Hampton Roads region. However, dynamic effects

cannot generally be assessed quantitatively within the multiplier framework of most economic-impact studies. One problem is determining the proportion of the impact that accrues specifically to a given region.

With this in mind, this report calculates a separate economic impact for externally funded research at NSU. A 1999 study by the University of Arkansas calculated multipliers that related research funding to its statewide economic impact. The research multiplier for Virginia was calculated to be 6.77, expressed in terms of household income, not the overall impact on final demand.⁶ NSU's total funding via grants and contracts for the 2002-03 academic year were \$17,102,133. Therefore, NSU's research program generated an economic impact in 2002-03 (in terms of household income) of \$115.8 million throughout the Commonwealth of Virginia.

This calculation is separate from the rest of the economic impacts calculated in this report because (i) its basis of analysis is revenues, not expenditures; and (ii) its geographical application is statewide instead of the Hampton Roads region. It should not be added to the overall household-income impact calculated for NSU's students and operations.

6. The Economic Impact of RISE: 2006-07

The direct activities related to the first two buildings of the RISE Center fall into two categories: projected construction expenses for RISE One and Two; and projected operations of RISE One and Two in 2006-07.

⁶ The multiplier was obtained via personal communication with Jeffery Collins, director of the Center for Business and Economic Research at the University of Arkansas at Fayetteville. The research multiplier for the entire U.S. was 5.00.

Construction: According to information provided by NSU, the total construction expense for RISE One and Two, including infrastructure upgrades, is projected to be about \$91.5 million. A break-down of those expenses appears in Table 8.2. For example, approximately \$6.5 million is expected to be spent on architectural and engineering services. When the appropriate multipliers are applied to these expenditures, the construction phase of the RISE project is projected to generate \$221.8 million in final demand or output in the Hampton Roads region. That is a gross impact in the sense that it includes the original \$91.5 million. In addition, construction is projected to add \$113.6 million to aggregate household incomes in the region, and increase regional employment by 2,263 jobs. Both the household income and employment impacts are net impacts. All of these impacts are multi-year impacts, reflecting the multi-year construction project.

Operations: When operational, RISE One and Two combined are expected to employ a total of 1,200 people, including 119 researchers, 407 research assistants, 483 technical staff, 41 managers and executives, and 150 support staff. Of these 1,200 jobs, approximately 200 are in existence already, which implies that the first two phases of RISE will account for approximately 1,000 new employees.

Table 8.2 performs the calculations necessary to obtain the projected annual economic impact of RISE operations. The multipliers in this section of the table are different than the first section because they are derived from direct employment instead of direct spending. For example, the first multiplier in that section is the dollars of annual economic impact per employee in this industry.

Using these multipliers, the table shows that the operations of RISE One and Two are projected to generate \$122.6 million per year in final demand in the Hampton Roads

region. Those operations are also projected to increase aggregate household income by \$53.6 million per year, and to add 872 jobs to Hampton Roads employment (the latter figure is in addition to the 1,000 jobs at RISE itself).

This report does not add up the construction and operations impacts to get an aggregate figure because they are not quite comparable. The construction impact applies to the multi-year construction phase, while the operations impact applies to a year of operations in 2006-07.

The point about static vs. dynamic economic impacts of university research applies to the RISE Center as well. As with university research more broadly, some of the impacts of the RISE Center are either difficult to quantify or are highly speculative, and therefore the economic impacts in this section, as throughout this report, should be interpreted as lower bounds. For example, this section excludes the potential long-run impact of businesses established through the business incubator planned for RISE Two, and through technology transfer in general.

7. Concluding Remarks

This report calculates conservative, lower-bound estimates of the economic impact of Norfolk State University on the Hampton Roads regional economy. The impact is multidimensional, both because the analysis generates impacts on household income and employment as well as final demand, and because two categories of additional impacts are separated out: (i) the increase in household income throughout the Commonwealth of Virginia resulting from NSU research grants; and (ii) the economic

impact of the construction and first-year operation of the first two phases of the Research and Innovations to Support Empowerment (RISE) Center.

For the 2002-2003 academic year, NSU generated an economic impact of \$527.8 million in final demand or output, and was responsible for 8,865 additional jobs in the region. It is worth noting that the \$527.8 million impact on final demand was generated by a university budget of \$103.3 million. Therefore, each dollar in the university budget in 2002-03 generated \$5.11 of overall economic activity in the Hampton Roads region.

In a separate calculation, the university's externally funded research was found to have generated \$115.8 million in household income throughout Virginia in 2002-03.

The construction of RISE One and RISE Two is expected to generate \$221.8 million in final demand and 2,263 additional jobs. In the first year of operations, RISE One and RISE Two are expected to generate \$122.6 million in final demand and 872 additional jobs.

8. Tables

The tables appear starting on the following page.

TABLE 8.1: IMPACT CALCULATIONS FOR 2002-03 ACADEMIC YEAR

NSU Expenditure	Industry	Expenditure	Multipliers			Impact		
			Output	Earnings	Jobs	Output	Earnings	Jobs
1. NSU OPERATIONS								
Services & Supplies	BUSINESS SERVICES	\$21,699,049	2.8975	1.9141	25.4857	\$62,872,148	\$41,535,148	553
Utilities	UTILITIES & SEWERS	\$2,375,766	1.947599	1.5440	15.2630	\$4,627,039	\$3,668,190	36
Plant & Equipment	MAINT & REPAIR	\$10,877,739	1.9075	0.6217	28.9134	\$20,749,700	\$6,762,614	315
Scholarships & Fellowships	MISCELL. SERVICES	\$11,454,002	1.9622	0.9033	35.3842	\$22,475,157	\$10,345,965	405
Salaries & Wages	MISCELL. SERVICES	\$56,937,238	1.9622	0.9033	35.3842	\$111,722,818	\$51,429,243	2,015
		<u>\$103,343,794</u>				<u>\$222,446,863</u>	<u>\$113,741,160</u>	<u>3,324</u>
2. NSU STUDENTS								
Room/Board	EAT & DRINK	\$5,883,600	2.2634	1.5080	45.9386	\$13,317,134	\$8,872,363	270
Books & Supplies	RETAIL TRADE	\$4,103,400	2.4099	1.3366	50.9339	\$9,888,628	\$5,484,428	209
Transport-ation	TRANSPORT. ATION	\$5,744,760	2.342801	0.9203	37.7779	\$13,458,829	\$5,286,811	217
Personal	MISCELL. SERVICES	\$5,334,420	1.9622	0.9033	35.3842	\$10,467,252	\$4,818,379	189
		<u>\$21,066,180</u>				<u>\$47,131,844</u>	<u>\$24,461,980</u>	<u>885</u>
3. NSU HOUSING PGM								
Annualized Home Value	MISCELL. SERVICES	\$606,975	1.9622	0.9033	35.3842	\$1,191,012	\$548,257	21
		<u>\$606,975</u>				<u>\$1,191,012</u>	<u>\$548,257</u>	<u>21</u>
4. NSU HUM'N CAPITAL								
Annual Earnings Prem	MISCELL. SERVICES	\$130,991,716	1.9622	0.9033	35.3842	\$257,033,255	\$118,319,839	4,635
		<u>\$130,991,716</u>				<u>\$257,033,255</u>	<u>\$118,319,839</u>	<u>4,635</u>
TOTALS		\$256,008,665				\$527,802,975	\$257,071,237	8,865

All multipliers are based on IMPLAN data for 2000

APPENDIX A: STUDENT EXPENDITURE WORKSHEET

All Students	HR Region	Elsewhere	Total	Pct.
Off Campus	2,893	2,010	4,903	71.7%
On Campus	1,142	794	1,936	28.3%
TOTAL	4,035	2,804	6,839	100.0%

Off Campus	# Students*	Cost/stud	Total
Room/Board	2,942	\$2,000	\$5,883,600.00
Books, etc.	2,942	\$1,000	\$2,941,800.00
Transport	2,942	\$1,400	\$4,118,520.00
Personal	2,942	\$1,300	\$3,824,340.00
			\$16,768,260.00

On Campus	# Students*	Cost/stud	Total
Books, etc.	1,162	\$1,000	\$1,161,600.00
Transport	1,162	\$1,400	\$1,626,240.00
Personal	1,162	\$1,300	\$1,510,080.00
			\$4,297,920.00

Totals	
Room/Board	\$5,883,600
Books, etc.	\$4,103,400
Transport	\$5,744,760
Personal	\$5,334,420
	\$21,066,180

* This figure is 60% of the total number of students, to reflect the extent of new student spending in the Hampton Roads economy.

TABLE 8.2: IMPACT CALCULATIONS FOR RISE CENTER

RISE Activity	Industry	Expenditure/ Employment	Multipliers			Impact		
			Output	Earnings	Jobs	Output	Earnings	Jobs
CONSTRUCTION PHASE								
Construction	CONSTRUCTION	\$68,191,315	2.4811	1.1361	26.6727	\$169,186,267	\$77,474,608	1,819
Land acquisition	BUSINESS SERVICES	\$968,344	2.8975	1.9141	25.4857	\$2,805,739	\$1,853,552	25
Infrastructure Upgrades	UTILITIES & SEWERS	\$7,840,000	1.947599	1.5440	15.2630	\$15,269,176	\$12,104,984	120
Furniture, Fixtures, Equipment	FURNITURE & FIXTURES	\$4,000,000	1.5069	0.5183	7.8037	\$6,027,752	\$2,073,184	31
Architectural, engineering svces	ARCHITECTS & ENGINEERS	\$6,550,000	2.5936	1.9141	25.4857	\$16,987,897	\$12,537,656	167
Miscellaneous	BUSINESS SERVICES	\$3,971,608	2.8975	1.9141	25.4857	\$11,507,578	\$7,602,237	101
		\$91,521,267				\$221,784,409	\$113,646,220	2,263
OPERATIONS PHASE, PER YEAR								
New Employment	RESEARCH & DEVELOPMENT	1,000	122,601	53,593	0.8721	\$122,601,407	\$53,593,475	872
		1,000				\$122,601,407	\$53,593,475	872

All multipliers are based on IMPLAN data for 2000