

**An Estimate of Nova Southeastern University's Impact on Florida's Economy in 2010:
Contributions from the Planned \$500 Million Medical and Research-Intensive
Academic Village and from Projected Student Enrollment**

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EXECUTIVE SUMMARY

Nova Southeastern University is the 10th largest private, not-for-profit, postsecondary institution in the United States, based on Fall Term 2002 unduplicated enrollment statistics reported to the National Center for Education Statistics. It was recently announced that Nova Southeastern University plans to build a \$500 million academic village, with an emphasis on research and medicine. This academic village will further increase the University's size and subsequent impact on Florida's economy.

The purpose of this study is to provide a projected estimate of Nova Southeastern University's impact on Florida's economy in 2010, due not only to student enrollment but also because of the planned \$500 million academic village and the creation of new jobs related to research activities and medicine. As these estimates are determined, this study will also provide another tool for the University to communicate with the public about its many services and social and economic contributions to the community.

Various reports in the literature related to technology and university-affiliated medical research were reviewed and applied against a conservative set of parameters and assumptions specific to Nova Southeastern University. Based on these parameters and assumptions, by 2010, when unduplicated enrollment may possibly reach 30,000 or more Fall Term students and the many facilities associated with the academic village come online, Nova Southeastern University may be responsible for a more than \$1.6 billion impact on Florida's economy: \$1.2 billion due to expenses and spending related to student enrollment and \$0.4 billion from the medical and research-intensive planned academic village. The University's contribution to Florida's economy continues to grow and it will rapidly increase as the \$500 million academic village comes online and provides service opportunities and the infusion of new money into the economy.

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BACKGROUND

Growth of the University

Nova Southeastern University is the 10th largest private, not-for-profit, postsecondary institution in the United States, based on Fall Term 2002 unduplicated enrollment statistics reported to the National Center for Education Statistics and made available at the federal government's Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://www.nces.ed.gov/ipeds/pas>) (Memorandum from Tom MacFarland to John Losak; August 13, 2003). The other private universities on this list of the ten largest private, not-for-profit, postsecondary institutions were all established before 1900 and include:

Fall Term 2002 Enrollment	Institution	Year Founded
38,096	New York University	1831
32,408	Brigham Young University	1875
30,682	University of Southern California	1880
28,982	Boston University	1839
24,969	Harvard University	1636
23,357	Northeastern University	1898
23,227	DePaul University	1898
23,019	George Washington University	1821
22,769	University of Pennsylvania	1740
21,619	Nova Southeastern University	1964

The University was originally chartered in 1964 as Nova University of Advanced Technology and the 1967 charter class consisted of only 17 students. Now, approximately 40 years later, the University reported an unduplicated Fall Term 2003 enrollment of 23,522 students. Compared to the enrollment statistic reported for Fall Term 2002, the University experienced a 9 percent year-to-year increase in unduplicated enrollment, from Fall Term 2002 (21,619 students) to Fall Term 2003 (23,522 students).

The Role of Technology and Research at Nova Southeastern University

Although originally chartered as Nova University of Advanced Technology, the University expanded its mission over the years and in turn now offers programs in business, professions such as law and medicine, and various disciplines in science and humanities. However, as suggested in the University's original name, technology and subsequently research remained a central focus at Nova Southeastern University.

The University's focus on technology was recently highlighted in a series of public statements, where it was announced that Nova Southeastern University plans to build a \$500 million academic village, with an emphasis on research and medicine (Monnay, 2004). As currently

planned, the new research-intensive infrastructure will be build adjacent to the University's main campus in Davie, Florida, and it will begin with the construction of a 60,000 square foot building to house 150 professionals from the United States Geological Service, in support of Everglades restoration and science associated with the South Florida Ecosystem Project (United States Department of the Interior, United States Geological Survey; 2002).

As the academic village is developed, it may be responsible for the creation of 5,000 new jobs (Monnay, 2004) and it is expected that the majority of these jobs would be in technical areas related to research and the medical professions. The planned academic village will also result in the following additions to the University's immediate and adjacent campus infrastructure:

- A 300-room hotel to serve conference participants and friends and family members of hospital patients.
- A 200,000 square foot retail shopping and commercial complex, offering a variety of services and products.
- A 400,000 square foot array of mixed residential facilities, to support the many employees and new community members drawn to this village.
- A medical office and clinical facilities.

Although Nova Southeastern University is organized as a not-for-profit entity and is exempt from property taxes, many facilities associated with the planned academic village will be part of a taxable entity, offering direct fiscal support to Broward County and the City of Davie, Florida. It is initially estimated that the academic village will generate more than \$12 million in tax revenues for Broward County and \$3 million in tax revenues for Davie (Monnay, 2004).

Purpose of This Study

The purpose of this study is to provide a projected estimate of Nova Southeastern University's impact on Florida's economy in 2010, due not only to student enrollment but also because of the planned \$500 million academic village and the creation of new jobs related to research activities and medicine. As these estimates are determined, this study will also provide another tool for the University to communicate with the public about its many services and social and economic contributions to the community.

METHODOLOGY

Technology and Medical Research Economic Impact Models

The literature was widely used to determine an appropriate methodology for estimating the economic impact of a university-affiliated research and medical complex. As a leading resource, it was useful to look at Pilat (1998) and the many facets related to the economic impact of technology. For a variety of societal as well as technological reasons, the health-care market (and emerging technologies associated with health-care) was clearly identified as an economic sector that will experience rapid expansion. Following along with this theme, the Global Health Council reported on a new annual award program and associated honorarium, designed to recognize studies on the economic impact of medical research (Welch; January 17, 2002).

The literature was also quite rich regarding the many reports, research models, and subsequent public information pieces about the economic impact of technology and medical research. A few of the more valuable resources in this area were:

- The Iowa Department of Public Health reported on a 2003 study where it was determined that the health-related industry had a nearly \$10 billion impact on Iowa's economy (Iowa Department of Public Health, n.d.).
- Monge and Ellis (1997) reported on the economic impact of the health industry in Illinois and were explicit in their use of a 2.02 economic multiplier, which was restricted in focus to a specific limited geographic area (Southern Illinois).
- Santana (n.d.) cited a recent report prepared for the Association of American Medical Colleges (AAMC), where it was found that the national economic impact of AAMC member institutions during 2002 exceeded \$326 billion. It was also mentioned that the total economic impact of all medical schools and teaching hospitals in the United States would of course be much higher.

The literature was also quite detailed on the specific contributions of individual colleges and universities and the economic impact of their medical infrastructure, including point-of-service health delivery and research:

- The University of Pittsburgh provided extensive detail on the economic impact of biomedical research and biotechnology transfer (University of Pittsburgh, n.d.).
- Washington University (Saint Louis, Missouri) focused on out-of-area visiting patients and their families and the new revenue brought into a community due to visits to university-sponsored medical activities (Washington University, n.d.). Levasseur (2003) offered additional details on the economic impact of health tourism, as institutions draw people to facilities and in turn spend money in a community that would not receive this benefit if it were not for the medical facilities.

- The Texas Medical Center (Houston, Texas) and affiliated colleges and universities provided a fairly extensive audit of its medical research and health-related physical and human resources and determined that it had a nearly \$6 billion economic impact, due to expenditures and the multiplier effect of expenditures throughout a community (Gilmer, 2001). Along with the many interesting facts about economic impact and job creation, what is perhaps most interesting about this study is that the methodology was based on Caffrey and Isaacs (1971) and their historic work on economic input and output models in higher education.

A further set of university medical complex economic impact studies was also reviewed, for additional ideas on methodology and special focus areas. A brief listing includes studies presented by:

- The University of Texas Southwestern Medical Center at Dallas, in a study similar to what was published by the Texas Medical Center, reported a more than \$2 billion impact on the local and regional economy (The University of Texas Southwestern Medical Center at Dallas, 2004).
- The Medical University of South Carolina provided a specific examination of research expenditures and the economic impact of these expenditures (Bank, 2003).
- The Buffalo Niagara Medical Campus, along with general discussion of economic impact, addressed city, county, and state tax revenues and the value-added impact of the medical complex on local real estate market conditions (Buffalo Niagara Medical Campus, n.d.).
- As an item that was rarely mentioned in other economic impact reports, it was interesting to note how the dollar value of uncompensated care was addressed in an economic impact study by a regional health and medical research facility (Schmidt, 2001).
- The SUNY Downstate Medical Center (New York, New York), where more than a third of all employees are non-citizen immigrants, emphasized in their economic impact report the role of medicine and medical research facilities as a generator of jobs and as an engine for job entry and upward mobility in the workforce (SUNY Downstate Medical Center, n.d.). Sinai Samaritan Medical Center (Milwaukee, Wisconsin) also discussed jobs in their economic impact report, and they additionally focused on medical facilities as a source of entry-level jobs for the community (Levine and Van Dunk, 2003). The issue of jobs was also the focus of The Advisory Board Company (n.d.) and their determination that the employment of each doctor in a medical facility results in the employment of 17 additional workers.

Other economic impact studies for medical and research-oriented institutions were also reviewed and they all provide useful insight into the dollar value of this type of industry. It should be recalled, however, that these specialized institutions also serve a unique role in attracting federal

research funds (Young, 2003), serving the health needs of the local community (Brown University Office of Community and Government Relations, 2000), and contributing to the total educational infrastructure of a community (Prell, 2003). These reports, as well as others not cited in this study, all provided a useful reference for the methodology judged appropriate for the University's first attempt to estimate the impact of its soon to be expanded research and medical infrastructure and supporting academic village.

Economic Impact Model for Nova Southeastern University and the Planned Academic Village

The methodology for this projected (2010) estimate of Nova Southeastern University's impact on Florida's economy borrows from Caffrey and Isaacs (1971) and it is based on a reasonable set of assumptions, estimates, and historical data published by the federal government:

- Construction of a building used to house the more than 150 employees of the United States Geological Survey, the first phase of the academic village, may begin as early as 2004.
- Construction for the entire village and supporting infrastructure may require seven to 10 years. For the purpose of this report, it is projected that many parts of the planned academic village will be completed by 2010, although it is recognized that some additions may carry beyond this date.
- For the purpose of this report, all costs and salaries are expressed in current dollars, with no adjustment for inflation. Because the estimates presented in this report are for 2010, this practice should result in a conservative future estimate of economic impact.
- It is expected that the total cost of construction may reach \$500,000,000. Annualized over a 20-year period, this represents an annual construction cost of \$25,000,000.
- It is expected that the supporting research-intensive and medical-related infrastructure will result in a conservative estimate of 3,000 new jobs, although it has been projected that this number may be higher.
- Of these 3,000 jobs, it is further expected that 60 percent will be in the health-related professions and 40 percent will be in other trade and service areas.
- Salary data presented in this report were from the National Compensation Survey (United States Department of Labor, Bureau of Labor Statistics; n.d.) and associated static and *ad hoc* resources maintained by the Bureau of Labor Statistics (United States Department of Labor, 2003) and the Bureau of the Census (United States Department of Commerce, 1999), reporting specifically on salaries in the Miami – Fort Lauderdale region:

- The mean hourly rate (Dec-02) for health-related occupations was \$27.86. A brief sample of hourly health-related salaries in this industry includes the following breakouts:
 - \$59.72 Physician
 - \$36.68 Pharmacist
 - \$25.70 Registered Nurse
 - \$20.97 Radiological Technicians
 - \$19.49 Respiratory Therapist
 - \$19.33 Clinical Laboratory Technologists and Technicians
 - \$16.26 Licensed Practical Nurse
 - \$12.34 Health Technologists and Technicians
 - \$09.58 Health Aides
 - \$09.10 Health Service Occupations
 - \$08.91 Nursing Aides, Orderlies, and Attendants

- The mean hourly rate (Dec-02) for technical occupations was \$26.54.

- The mean hourly rate (Dec-02) for all occupations was \$17.03.

- For the purpose of this report, it was assumed that all 3,000 employees would be paid for a 40-hour workweek 52 weeks per year.

- The projected (2010) economic impact directly attributed to student enrollment was based on spending patterns and enrollment statistics established in Research and Planning Report 01-08 (MacFarland, 2001). This base was used to develop a ratio of economic impact per unduplicated headcount student enrollment and this ratio was used to project future economic impact, per student, against projected enrollment in 2010.

- As a moderate (neither liberal nor conservative) estimate of economic impact, a 2.5 multiplier¹ was applied against the yearly infusion of money into the state-wide economy. This multiplier should be more than adequate to account for spending that largely originates in South Florida but will likely permeate throughout Florida.

¹ Taylor (1990, p. 40) is a useful reference on the term *economic multiplier* and the impact of a multiplier on a local economy:

The method of estimating the total economic impact of [any university] is essentially an application of a multiplier model in which direct spending, that is money that flows into the area from other areas, is subsequently respent within the area by the initial recipients. The respending process continues in successive rounds, from each of which there are leakages into the 'external' economy until the amount respent is approximately zero. The ratio between the initial injection and the total spending is termed the value of the multiplier.

RESULTS

Based on these parameters, the yearly economic impact of the planned academic village and employment of all workers will reach approximately \$430 million per year, when the academic village reaches completion in 2010.

Table 1

Preliminary Estimate of the Economic Impact of the Planned Academic Village at Nova Southeastern University, by 2010

\$500,000,000	Total construction costs at completion
\$25,000,000	Annualized construction over 20 years
3,000	Total jobs
0.60	Percent of health-related occupation jobs at \$27.86 per hour
0.40	Percent of all other jobs at \$17.03 per hour
\$104,307,840	Annual payroll - health-related jobs (40 hour work week and 52 work week year)
\$42,506,880	Annual payroll - other jobs (40 hour work week and 52 work week year)
\$171,814,720	Annual infusion into the economy (annualized construction and annual payroll from health-related jobs and other jobs)
2.50	Multiplier
\$429,536,800	Annual economic impact in 2010 from the projected medical and research-intensive academic village

It was previously estimated that Nova Southeastern University provided a nearly \$465 million impact on the South Florida economy and a more than \$730 million impact on Florida's economy during Fiscal Year 2000, at a time when the University's unduplicated fall term enrollment approximated 18,000 students (MacFarland, 2001)². The University's enrollment has grown since then and the unduplicated Fall Term 2003 enrollment now approximates 23,500 students. It is not unreasonable to think that unduplicated fall term enrollment could reach 30,000 students or more by 2010, when major parts of the planned academic village are brought online.

Based on these established economic impact estimates and a conservative projected increase in student enrollment, it is likely that the University's impact on Florida's economy will increase from \$730 million in 2000 to more than \$1.2 billion in 2010. This projected \$1.2 billion economic impact would then be added to the projected \$430 million economic impact due to construction and staffing of the planned academic village, resulting in a University-generated impact of more than \$1.6 billion on Florida's 2010 economy.

² Research and Planning recently obtained the data needed to update this Fiscal Year 2000 University-wide estimate of economic impact and this updated estimate should be available in a few months.

Table 2

Projected 2010 Economic Impact of Nova Southeastern University on Florida	
\$730,000,000	Economic impact 2000
18,000	Approximate unduplicated Fall Term 1999 enrollment
\$40,556	Ratio – Economic impact per student
30,000	Projected unduplicated Fall Term 2010 enrollment
\$1,216,666,667	Projected economic impact in 2010 from student enrollment
\$429,536,800	Projected economic impact in 2010 from the planned medical and research-intensive academic village
\$1,646,203,467	Projected 2010 economic impact of Nova Southeastern University on Florida

SUMMARY

Nova Southeastern University continues to increase its enrollment, campus-based infrastructure, and presence throughout Florida. The continued growth in enrollment and incorporation of the planned \$500 million academic village into the community infrastructure will only further increase the University’s economic impact on Broward County, South Florida, and Florida.

The health care industry is already considered one of the largest employers in Broward County (Broward County Board of Commissioners, n.d.). The United States Census Bureau provided specific details about taxable Health Care and Social Assistance (North American Industry Classification System (NAICS) Code = 62) establishments in Broward County (United States Census Bureau, *1997 Economic Census – Broward County, FL*; n.d.) and the greater Miami-Fort Lauderdale Consolidated Metropolitan Statistical Area (CMSA) (United States Census Bureau, *Florida: 1997 Economic Census – Health Care and Social Assistance*; 1999):

Health Care & Social Assistance	Broward County	Miami-Fort Lauderdale CMSA
Number of Establishments	4,226	10,383
Number of Employees	51,708	112,426
Annual Payroll	\$1,602,978,000	\$3,480,478,000
Shipments, Sales, Receipts	\$3,878,991,000	\$8,661,522,000

The planned academic village, with its emphasis on technology and medical research as well as point-of-service health care services will further expand the size of the health care industry in Broward County.

By 2010, when unduplicated enrollment may possibly reach 30,000 or more Fall Term students and the many facilities associated with the academic village come online, Nova Southeastern University may be responsible for a more than \$1.6 billion impact on Florida's economy: \$1.2 billion due to expenses and spending related to student enrollment and \$0.4 billion from the medical and research-intensive planned academic village. The University's contribution to Florida's economy continues to grow and it will rapidly increase as the \$500 million academic village comes online and provides service opportunities and the infusion of new money into the economy.

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