# The Economic Impact of Elizabeth City State University

**ECSU**
ELIZABETH CITY STATE UNIVERSITY
*Elevate Higher. Emerge Stronger.*

**NORTH CAROLINA INSTITUTE
OF MINORITY ECONOMIC
DEVELOPMENT**

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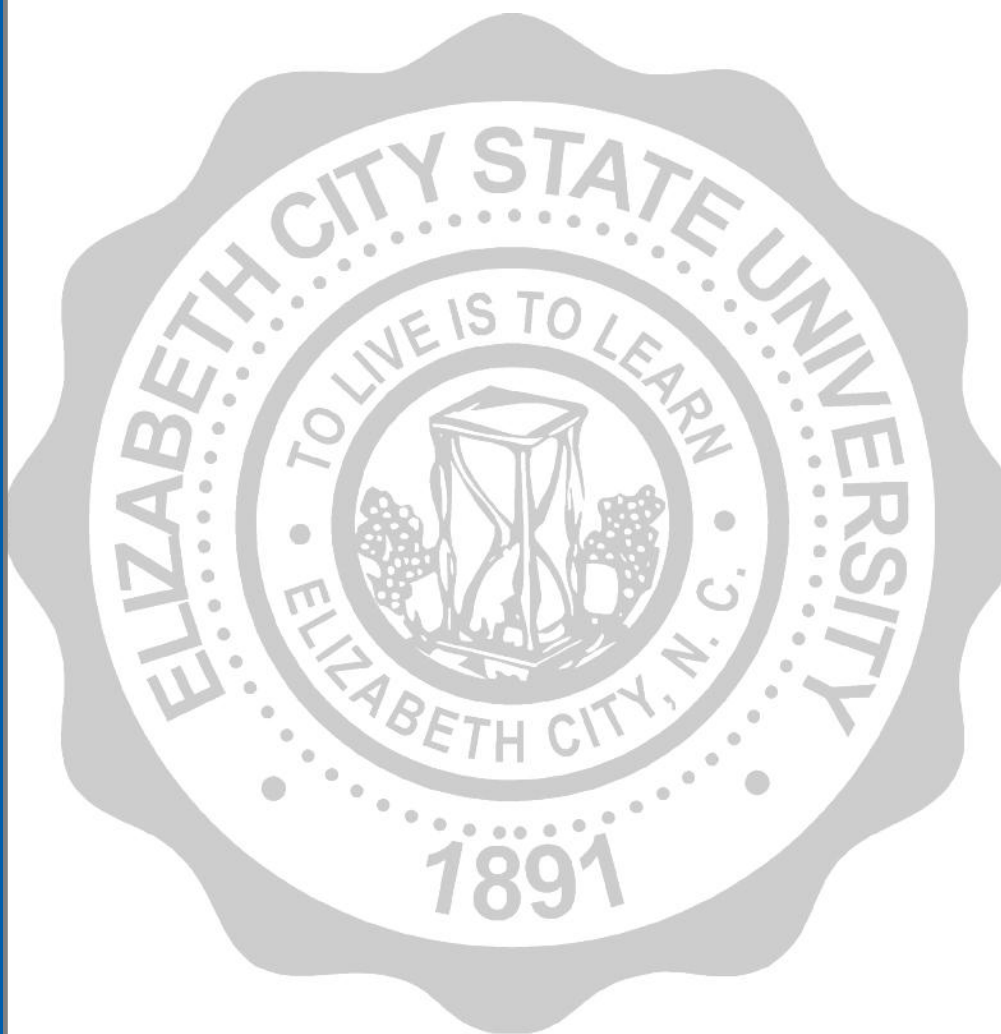
# About the Authors

The North Carolina Institute of Minority Economic Development commissioned this study to assess the economic impact of Elizabeth City State University. This report is part of the Institute's Historically Black Colleges and Universities Economic Series designed to measure and quantify the economic impact of HBCUs on their local communities, the state and beyond.

## ABOUT THE INSTITUTE

The North Carolina Institute of Minority Economic Development ("The Institute") is a statewide nonprofit organization that works to build the assets in low wealth communities and limited resource populations. Its primary strategies are within business development, research and information, and education and training. Since inception in 1986, the Institute has published 20 special reports. Since 2005 its business development clients have realized more than $300 million in contracts and financial transactions. The Institute operates the Women's Business Center of North Carolina, the Raleigh MBDA Center, and Public Allies North Carolina.

## ABOUT THE AUTHOR OF THE ECONOMIC ANALYSIS

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Dr. Jeffrey M. Humphreys is the Director of the Selig Center for Economic Growth in the University of Georgia's Terry College of Business. A nationally recognized scholar, Dr. Humphreys is best known for his detailed studies, analysis and publication of more than 300 articles about economic forecasting, racial and ethnic buying power, economic impact and economic development. Dr. Humphreys is best known for his detailed estimates of the spending power of African-Americans, Latinos, and Asian Americans.  In 2003, the editors of the American Demographics selected Dr. Humphreys as a "Demographic Diamond" – one of the 25 market researchers who have made the most significant contributions for business leaders in understanding consumer trends. The US Department of Education, Institute for Educational Statistics, has engaged Dr. Humphreys in its understanding of the economic impact of higher educational institutions, including HBCUs.

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# Profile of Elizabeth City State University

Founded in 1891, Elizabeth City State University was established in response to House Bill 383 of the North Carolina General Assembly, which called for a normal school for "teaching and training teachers of the colored race to teach in the common schools of North Carolina." Between 1891 and 1928, curricula and resources were expanded, enrollment increased from 23 to 355 and the faculty from two to 15 members.

Under the leadership of the second president, John Henry Bias, the institution was elevated from a two-year normal school to a four-year teachers college (1937). The institution's name was officially changed to Elizabeth City Teachers College on March 30, 1939 and the mission was expanded to include training elementary school principals for rural and city schools.

Between 1959 and 1963, the number of majors increased from one major, elementary education, to 12 academic majors. The college was granted membership in the Southern Association of Colleges and Schools in December 1961 and maintains its accreditation with that body to the present. In 1963, the General Assembly changed the institution's name from Elizabeth City State Teachers College to Elizabeth City State College and on July 1, 1969, the college became Elizabeth City State University. In 1971, the General Assembly redefined the University of North Carolina system with 16 public institutions. Including ECSU, those institutions are constituents of The University of North Carolina (July 1972).

Currently, ECSU offers 37 baccalaureate degree programs and four master's degree programs in Elementary Education, Biology, Mathematics and School Administration. ECSU also offers a doctor of pharmacy degree in collaboration with the Eshelman School of Pharmacy (UNC-Chapel Hill). ECSU has earned national acclaim for its academic advances: In 2007, Diverse Issues in Higher Education ranked ECSU #1 among Historically Black Colleges and Universities for its black male student athlete graduation

rate. Between 1999 and 2012, ECSU repeatedly earned national acclaim in U.S. News and World Report Magazine's ranking of best colleges in the south. The U.S. News and World Report's 2012 Edition of Best Colleges ranked ECSU as second in the Top Public Schools Regional Colleges (South) category and #14 among the nation's Historically Black Colleges and Universities.

## Mission Statement



Elizabeth City State University, a constituent institution of the University of North Carolina, offers baccalaureate, graduate, and professional programs for a diverse student body. The institution's rich heritage provides a firm foundation for its educational endeavors, as well as its role in serving the needs and aspirations of individuals and society.

Through teaching, research, and community engagement, Elizabeth City State University provides a student-centered environment, delivered in a manner that enhances student learning, while preparing its graduates for leadership roles and lifelong learning. The university is also a leader in facilitating sustainable economic growth, while safeguarding the unique culture and natural resources of the region.

## Core Values

ECSU is guided by a commitment to excellence, which is personified in the subsequent group of core values the university strives to demonstrate and maintain.

- Accountability
- Diversity
- Excellence
- Preparing students holistically - "to live is to learn."

# Overview: The Economic Impact of Elizabeth City State University

What is the short-term economic impact of Elizabeth City State University (ECSU) on its host community?  What are the college degrees granted by ECSU worth?  This study answers these perennial questions.  The economic analysis documents the economic role that ECSU plays in the Elizabeth City Micropolitan Statistical Area (MSA).

Based on data for the 2010 fiscal year, short-term economic impacts are estimated for four important categories of annual (recurring) college/university-related expenditures:

1) Spending by ECSU for wages & salaries and fringe benefits;

2) Spending by ECSU for other budget categories (e.g., outlays for items other than wages & salaries and fringe benefits);

3) Spending by undergraduate students who attended ECSU; and

4) Spending by the graduate and professional students who attended ECSU.

In addition to these recurring (annual) economic impacts, nonrecurring (one-time) economic impacts arising from expenditures for major capital (construction) projects are estimated.  Expenditures for construction projects vary considerably from year to year and therefore may not be indicative of the typical annual economic impact that ECSU has on the Elizabeth City MSA.  The economic impacts of outlays for construction projects therefore are reported separately from the annual (recurring) impacts described above.  Also, one type of long-term economic impact is estimated – the additional work-life earnings attributable to the college degrees conferred by ECSU are estimated for 2010 graduates.

It should be noted that unless otherwise indicated all dollar amounts are reported in 2010 dollars.

# Economic Impact Highlights

The fundamental finding of this study is that the ECSU creates substantial economic impacts in terms of output, value-added, labor income, and employment.  The economic impact of ECSU on its host community in 2010 includes:

- **$112 million** in output (sales);

- **$83 million** in value added (gross regional product);

- **$59 million** in labor income; and

- **1,530** full- and part-time jobs.

Measured in the simplest and broadest possible terms, the total economic impact of ECSU was $112 million in 2010.  Output can be thought of as the equivalent of business revenue, sales, or gross receipts.  Of the 2010 total, $91 million (82 percent) is initial spending by the institutions and students; $20 million (18 percent) is the induced or respending (multiplier) impact.  Dividing the 2010 total output impact ($112 million) by initial spending by the institutions and students ($91 million) yields an average multiplier value of 1.22.  On average, therefore, every dollar of initial spending generates an additional 22 cents for the economy of the region hosting the institution.

2010 Economic Impact of Elizabeth City State University Summary:

$112 million

in output (sales);

$83 million

in value added (gross regional product);

$59 million

in labor income

1,530

full- and part-time jobs.

In 2010, value added comprises $83 million (74 percent) of the $112 million output impact, with domestic and foreign trade comprising the remainder – $29 million (26 percent) – of the output impact. Labor income received by residents of the Elizabeth City MSA equals $59 million, and represents 71 percent of the value-added impact.  Expressed in other dimensions, the employment impact of ECSU, including multiplier effects, is 1,530 full- and part-time jobs.

In addition to these short-term recurring impacts, the impact of capital outlays (major construction projects) on output was $22 million in FY 2010. The economic impacts of capital outlays on valued added, labor income, and employment were $9 million, $6 million, and 222 jobs, respectively.

In addition to the short-term impacts of college- and university related spending on their host communities, the 444 graduates of ECSU (2010) can expect work-life earnings of $1.4 billion, of which $585 million (43%) represents the incremental work-life earnings that can be attributed to their college degrees. That amounts to an additional 1.32 million in work-life earnings per degree conferred. On average, that's what a college degree is worth.

# The Short-Term Economic Impact of ECSU-Related Spending In 2010

The total annual economic impact of university-related spending is defined to consist of the net changes in regional output, value added, labor income, and employment that are due to initial spending by ECSU, by its' faculty and staff, and by its' students. The total economic impact includes the impact of the initial round of spending and the secondary, or indirect and induced, spending – often referred to as the multiplier effect – created as the initial expenditures are re-spent. Figure 1 provides a schematic representation of impact relationships.

**Figure 1: Schematic representation of impact relationships**
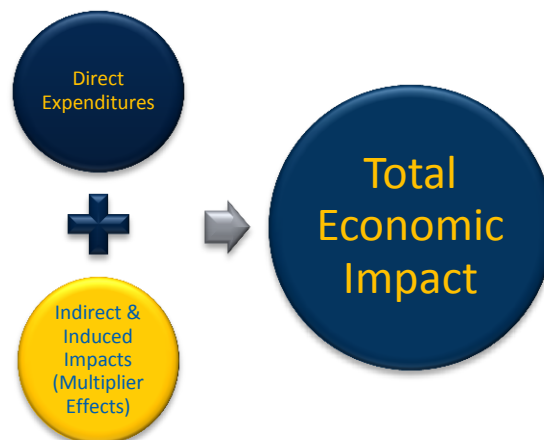


There are two types of secondary spending, indirect spending and induced spending. Indirect spending refers to the changes in inter-industry purchases as a region's industries respond to the additional demands triggered by spending by ECSU, its faculty and staff, and its students. It consists of the ripples of activity that are created when the institution, its employees, and its students purchase goods or services from other industries located in the host community. Induced spending is similar to indirect spending except that it refers to the additional demand triggered by spending by households as their income increases due to changes in production. Basically, the induced impact captures the ripples of activity that are created when households spend more due to the increases in their earnings that were generated by the direct and indirect spending.

The sum of the direct, indirect, and induced economic impacts is the total economic impact, which often is expressed in terms of output (sales), value added (gross regional product), income, or employment. Total industry output is gross receipts or sales, plus or minus inventory. It is the value of production by industry (including households) for a given period of time (one year). Total output impacts are the most inclusive, largest, measure of economic impact. Because of their size, output impacts typically are emphasized in economic impact studies and receive much media attention. One problem with output as a measure of economic impact, however, is that it includes the value of inputs produced by other industries, which means that there inevitably is some double counting of economic activity. The other measures of economic impact (value added, labor income, and employment) are free from double counting and provide a much more realistic measure of the true economic impact of ECSU on its regional economy.

Value added (or gross regional product) consists of employee compensation, proprietor income, other property income, and indirect business taxes. Value added is equivalent to gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus intermediate inputs (consumption of goods and services purchased from industries or imported). It is often referred to as the state- or regional-level counterpart of the nation's gross domestic product (GDP).

Income comprises all forms of employment income, including wages, salaries, and proprietors' incomes. It does not include non-wage compensation (e.g., pensions and health insurance), transfer payments (e.g., welfare or Social Security benefits), or unearned income (e.g., dividends, interest, and rent). Employment includes total wage and salary employees as well as self-employed individuals. It includes both full- and part-time jobs and is measured in annual average jobs. Employment therefore is expressed as the full- and part-time job count and not as full-time equivalents.

## Results

Total initial spending accruing to ECSU's regional economy equals the summation of spending originating from spending by the institution for wages and salaries; spending by the institution for other budget categories (e.g., outlays for items other than wages and salaries); spending by undergraduate students attending the institution; and spending by the graduate and professional students attending

the institution. For 2010, total initial spending for ECSU was $91 million. Initial spending for ECSU is reported in the first column of Table 1.

**Table 1: Total Economic Impact of Elizabeth City State University in 2010[1]**

| Institution | Initial Spending (2010 dollars) | Output Impact (2010 dollars) | Value Added Impact (2010 dollars) | Labor Income Impact (2010 dollars) | Employment Impact (jobs) |
|---|---|---|---|---|---|
| **ELIZABETH CITY STATE UNIVERSITY** | **91,455,380** | **111,531,192** | **83,000,612** | **59,274,216** | **1,530** |
| Wages & Salaries & Benefits | 39,865,672 | 59,278,049 | 51,558,348 | 45,592,387 | 852 |
| Other Institutional Spending | 11,978,353 | 7,390,218 | 4,218,570 | 1,727,403 | 63 |
| Undergraduate Students | 39,114,000 | 44,285,458 | 26,871,385 | 11,792,086 | 607 |
| Graduate/Professional Students | 497,355 | 577,468 | 352,309 | 162,341 | 8 |

## Total Output Impact

For each category of initial spending, an IMPLAN model of ECSU's regional economy was used to calculate the total output impact. Output impacts for 2010 are reported in the second column of Table 1. The output impact includes the impact of the first round of spending and the impacts generated by the re-spending of these amounts – the multiplier effect.

ECSU generated an output impact on the region of $112 million in 2010. The output impact was 1.22 times greater than their initial spending. The output impacts are reported in the second column of Table 1.

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[1] Output refers to the value of total production, including domestic and foreign trade. Value added includes employee compensation, proprietary income, other property type income, and indirect business taxes. Labor income includes both the total payroll costs of workers who are paid by employers and payment received by self-employed individuals. Employment includes both full-time and part-time jobs. Initial spending estimates are based on survey data obtained from the National Center for Education Statistics' Integrated Postsecondary Education Data System (Fall 2010 Staff Survey, Fall 2010 Enrollment Survey, and the 2010 Finance Survey. The impacts of spending on Output, Value Added, Labor Income, and Employment were estimated using the IMPLAN system, version 3.0, Type SAM multipliers, 2010 data, and consumption functions provided by MIG, Inc.

## Total Value-Added Impact

Because value-added impacts exclude expenditures related to foreign and domestic trade, they provide a much more accurate measure of the actual economic benefits flowing to businesses and households in a region than the more inclusive output impacts.

ECSU generated a value-added impact of $83 million in 2010. The value-added impact equaled 74 percent of the output impact. The value-added impacts are reported in the third column of Table 1.

## Labor Income Impacts

The IMPLAN model also was used to calculate impacts in terms of labor income. ECSU generated a labor income impact of $59 million. The labor income impact equaled 71 percent of the value added impact. Labor income is reported in the fourth column of Table 1.

## Employment Impacts

The economic impact of hosting ECSU probably is most easily understood in terms of its effects on employment. ECSU generated an employment impact of 1,530 full- and part-time jobs. Employment impacts are reported in the fifth column of Table 1.

# The Economic Impact of Construction Projects

Expenditures for major construction projects also generate economic impacts on a one-time or non-recurring basis.  Expenditures for construction during FY 2010 and FY 2011 were provided by Mr. Charles Hall, Director of Design and Construction, ECSU.  The amount reported for FY 2010 was $15,101,068.  The amount reported for FY 2011 was $15,833,381.  The economic impacts of expenditures for construction were estimated using the IMPLAN system.

In FY 2010, the economic impact of construction expenditures by ECSU on output was $22 million.  The impacts on regional GDP and labor income were $9 million and $6 million, respectively.  The employment impact of construction outlays was 222 jobs.  The economic impacts generated by construction expenditures are reported in Table 2.

**Table 2: Economic Impact of Construction Expenditures by Elizabeth City State University [2]**

| Institution | Initial Spending (current dollars) | Output Impact (current dollars) | Value Added Impact (current dollars) | Labor Income Impact (current dollars) | Employment Impact (jobs) |
|---|---|---|---|---|---|
| **ELIZABETH CITY STATE UNIVERSITY** | | | | | |
| **Construction in FY 2010** | 15,101,068 | 21,573,452 | 8,894,034 | 5,836,012 | 222 |
| **Construction in FY 2011** | 15,833,381 | 22,411,542 | 8,927,060 | 5,802,847 | 221 |

[2] Output refers to the value of total production, including domestic and foreign trade.  Value added includes employee compensation, proprietary income, other property type income, and indirect business taxes.  Labor income includes both the total payroll costs of workers who are paid by employers and payment received by self-employed individuals.  Employment includes both full-time and part-time jobs.  Initial spending estimates for FY 2010 and FY 2011 were obtained from ECSU (Mr. Charles Hall, Director of Design and Construction).  The impacts of spending on Output, Value Added, Labor Income, and Employment were estimated using the IMPLAN system, version 3.0, Type SAM multipliers, 2010 data, and consumption functions provided by MIG, Inc.

# Increases in Work-Life Earnings Associated With Degrees From ECSU

**Figure 2: The number of degrees conferred for each academic year[3]**
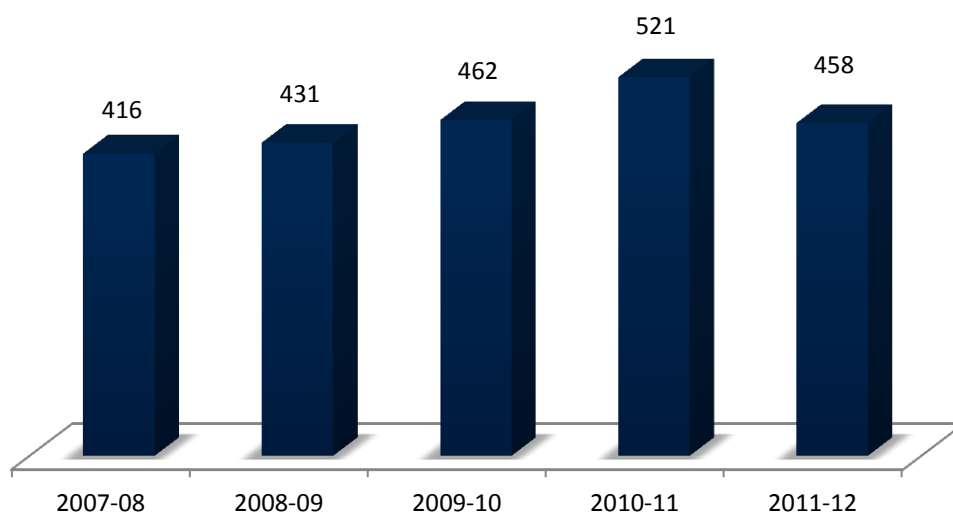


From the perspective of the students and their parents, perhaps the most relevant measure of the economic "worth" of higher education is increased earnings over a working lifetime.  The increase in earnings associated with a degree will of course vary from one individual to another and overtime; it is possible, however, to estimate aggregate benefits to graduates of ECSU in a given year, as well as benefits accruing to the average degree holder.  This section of the report presents such estimates for graduates of ECSU who received degrees in 2010.  The number degrees conferred by each institution were obtained from the NCES's IPEDS.

The higher work-life earnings obviously benefit degree holders, but due to migration and a host of other factors there is controversy in the academic literature regarding whether or not increases in work-life earnings should be included in estimates of the economic impact of a college or university on its host community (Brown and Heaney 1997).

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[3] Degrees Conferred for 2011-12 is preliminary data.

## Estimating Work-Life Earnings

In 2002, the U.S. Census Bureau issued synthetic estimates of work-life earnings: "The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings" (P23-210). The estimates were based on earnings data for 1997-1999 from the *Current Population Surveys* conducted by the U.S. Census Bureau in 1998, 1999, and 2000. A typical work-life was defined as the period from age 25 through age 64. The synthetic estimates were created by using the working population's 1-year annual earnings and summing their age-specific average earnings for people ages 25 through 64 years. The resulting totals represent what individuals with the same education level could expect to earn, on average, in today's dollars, during a hypothetical 40-year working life. The estimates should be considered to be illustrative and do not predict actual future earnings. The synthetic work-life earnings are "expected average amounts" based on cross-sectional earnings data.

In 2007, Mark Kantrowitz updated the Census Bureau's synthetic estimates of work-life earnings based on data from the Census Bureau's *2006 Current Population Survey*. Kantrowitz's estimates of work-life earnings were published the *NASFAA Journal of Student Financial Aid* (Vol. 37, No. 1), "The Financial Value of a Higher Education." The estimates of "synthetic work-life earnings per degree" reported in the first column of Table 3 are based on the estimates produced by Mark Kantrowitz, but they were converted from 2005 dollars (as originally published) to 2010 dollars using the U.S. Bureau of Labor Statistic's Consumer Price Index (all urban consumers).

Work-life earnings increase dramatically with education level. For example, over a working lifetime, the average worker with a high school diploma earns an average of $1.69 million compared to $2.13 million for the average worker with an Associate's degree, or $3.03 million for the average worker with a Bachelor's degree, or $3.70 million for the average worker with a Master's degree, or $4.93 million for the average worker with a Doctoral degree (PhD), or $6.21 million for the average worker with a Professional Degree.

Incremental work-life earnings per degree are reported in the second column of Table 3. Incremental work-life earnings for graduates with an Associate's degree are defined as the difference in synthetic work-life earnings between workers with a high school diploma and an Associate's degree. Incremental work-life earnings for graduates with a Bachelor's degree are defined as the difference in synthetic

work-life earnings for workers with a high school diploma and a Bachelor's degree.  Incremental work-life earnings for graduates with a Master's degree are defined as the difference in synthetic work-life earnings between workers with a Bachelor's degree and a Master's degree.  Incremental work-life earnings for graduates with a Doctoral degree are defined as the difference in synthetic work-life earnings between workers with a Bachelor's degree and a Doctoral Degree.  Incremental work-life earnings for graduates with a Professional degree are defined as the difference in synthetic work-life earnings between workers with a Bachelor's degree and a Professional degree.

**Table 3: Synthetic Estimates of Work-Life Earnings of 2010 Graduates of Elizabeth City State University (millions of 2010 dollars)[4]**

| Institution | Synthetic Work-Life Earnings Per Degree | Incremental Work-Life Earnings Per Degree | Number of Degrees Conferred | Synthetic Work-Life Earnings All Graduates | Incremental Work-Life Earnings All Graduates |
|---|---|---|---|---|---|
| **ELIZABETH CITY STATE UNIVERSITY** | **-** | **-** | **444** | **1,357** | **585** |
| **Professional** | 6.21 | 3.18 | 0 | 0 | 0 |
| **Doctoral** | 4.93 | 1.89 | 0 | 0 | 0 |
| **Master's** | 3.70 | 0.66 | 14 | 52 | 9 |
| **Bachelor's** | 3.03 | 1.34 | 430 | 1,305 | 576 |
| **Associate's** | 2.13 | 0.43 | 0 | 0 | 0 |

Synthetic work-life earnings of all graduates can be obtained by multiplying the number of degrees conferred by estimated synthetic work-life earning per degree.  These amounts are reported in the fourth column of Table 3.  Similarly, incremental work-life earnings of all graduates can be obtained by multiplying the number of degrees conferred by estimated incremental work-life earnings per degree. These amounts are reported in the fifth column of Table 3.

## Results

The analysis expects that the 444 graduates of ECSU can expect work-life earnings of $1.4 billion ($ 2010), which is $585 million more than they could expect to earn had they not earned their college

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[4] The Synthetic work-life earnings estimate for a high school graduate, including GED, is $1.69 (expressed in millions of 2010 dollars).  The estimates of synthetic work life earnings per degree were obtained (in $2005 dollars) from Mark Kantrowitz, "The Financial Value of a Higher Education", NASFAA Journal of Student Financial Aid, Vol 37, NO. 1, 2007.  The U.S. Bureau of Labor Statistics' consumer price index for all urban consumers was used to convert $2005 to $2010.  The number of degrees conferred (2010) was obtained from the National Center for Education Statistics' Integrated Postsecondary Education Data System.

degrees (Table 3). Thus, in terms of incremental (additional) work-life earnings, the collective worth of the degrees granted by ECSU is $585 million, or about $1.32 million per graduate. The economic worth of higher education over the course of a graduate's working life thus is considerable.

The 430 graduates who received bachelor's degree will account for 98 percent of the collective increase in work-life earnings. On average, the work-life earnings of graduates with a bachelor's degree will be $1.34 million more than for persons with a high school degree. The 14 graduates who earned master's degrees will account for 2 percent of the collective increase in work-life earnings. On average, the work-life earnings of graduates with a master's degree will be $0.66 million more than for persons with a bachelor's degree.

Although average earnings rise considerably with educational attainment, individual earnings within each specific education level can vary substantially. These differences result from a variety of factors, including occupational choice and labor force experience. Nonetheless, most graduates of ECSU will realize significantly higher work-life earnings when they earn a college degree, and those completing an advance degree will increase their total earnings even more. For example, persons with a bachelor's degree and about four times more than a high school graduate.

This study shows that ECSU plays a major role in raising the earning potential of its graduates. Investments in education should significantly increase the work-life earnings of many North Carolinians and foster the economic development of the entire state.

## Conclusions

In the simplest terms, the collective or rolled-up economic impact of ECSU on its host community was $112 million in 2010.  This amount represents the impact of spending by the institution, spending by its faculty and staff, and spending by students.  ECSU added $59 million in labor income to the local economy and 1,530 jobs.  In addition, the economic impact of major capital (construction) projects on output was $34 million in FY 2010.

Although this study measures $112 million in recurring annual economic impact in FY 2010 and a $22 million impact of spending on major capital (construction) projects, the actual economic impact of university-related spending is much higher.  The study's scope did not include the short-term impacts of spending by visitors, retirees, and non-university-related income received by employees of the institutions.

In addition to the annual impacts of university related spending, the 2010 graduates of ECSU can expect to realize work-life earnings of $1.4 billion, of which $585 million (43%) represents the incremental work-life earnings that can be attributed to their college degrees.  That amounts to an additional $1.32 million in work-life earnings per degree conferred.  On average, that's what a college degree is worth.

# Limitations

Several types of short-term university-related expenditures were not estimated, including spending by visitors and spending by retirees who live in the Elizabeth City MSA. Expenditures supported by employees of the ECSU non-institutional income also were not estimated. Such income may result from an employee's consulting, investments, and other personal business activities, and often would not come to the Elizabeth City MSA if that person's job at ECSU did not exist.

Perhaps the greatest limitation of this report is that there was no attempt to evaluate the long-term impacts of ECSU on the economic development of the Elizabeth City MSA, the state, and the nation. ECSU not only spends money year by year, but also has long-term impacts on the labor force, business and industry, and government. Businesses benefit from easy access to a large pool of part-time and full-time workers. Moreover, companies and agencies that depend on highly specialized skills often cluster around universities, and this may be particularly true of high-tech and information-based companies – which, despite the recent recession, still are expected to account for a disproportionately high share of future economic growth.

In addition, cultural and educational programs and facilities may be available to the general public and provide intangible benefits to the Elizabeth City Micropolitan Statistical Area by improving residents' quality of life.

# Methodology

## *Unit of Analysis*

The regional economic area is the host community, including the surrounding counties from which employees and students commute. The effects of expenditures that go to persons, businesses, or governments located outside the regions are not included in the value added, labor income, and employment impact estimates. The definitions of ECSU's regional economy (the Elizabeth City Micropolitan Statistical Area) was based on the standard metropolitan and micropolitan statistical area definitions released by the Office of Management and Budget and consists of Camden, Pasquotank, and Perquimans counties.
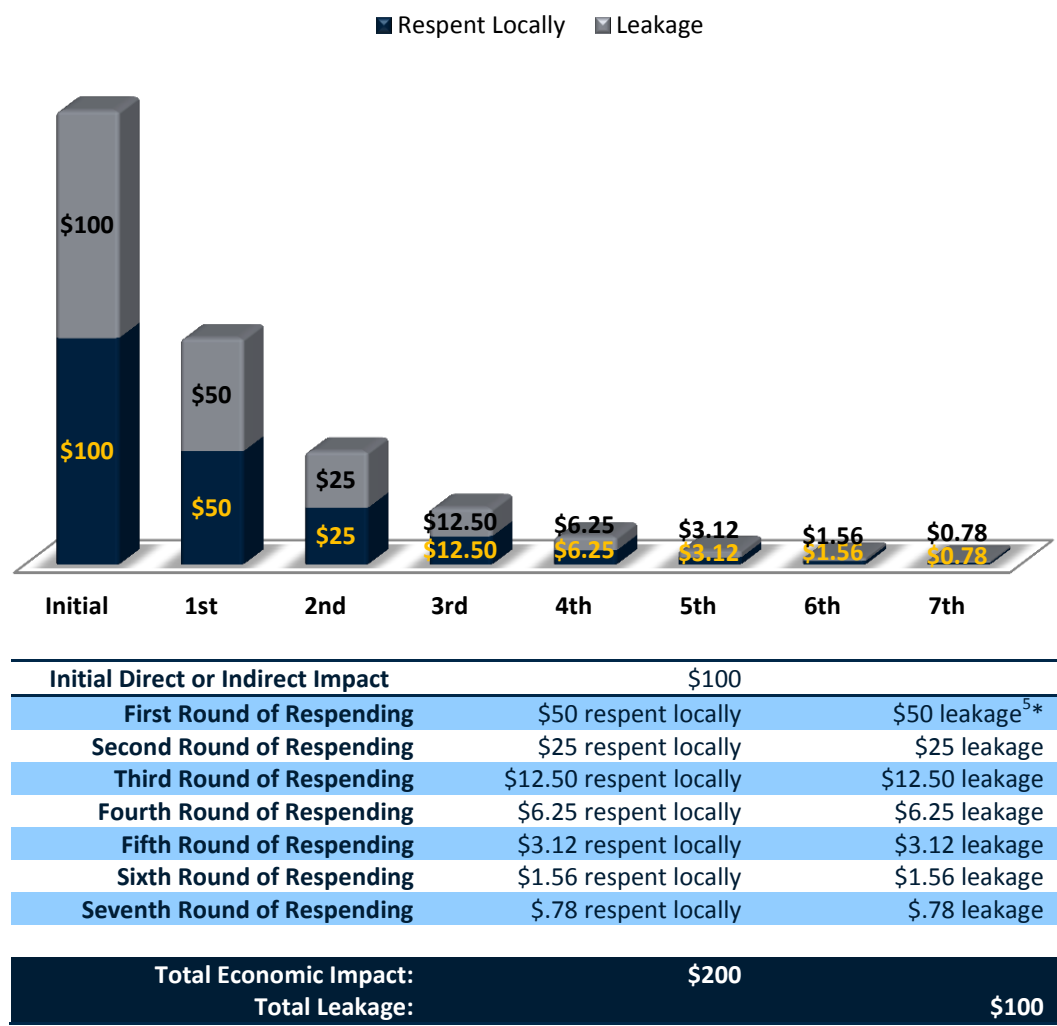
The geographic areas corresponding to the regional model that were built for ECSU, which include the labor forces directly involved in their economic spheres was based on the standard metropolitan and micropolitan statistical area definitions released by the Executive Office of the President, Office of Management and Budget on December 1, 2009. The geographic area of the regional model for each institution therefore takes into consideration population and commuting patterns.

## *Statistical Mode*

Estimating the economic impact of ECSU on its regional economies involved four basic steps. First, the most recent National Center of Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) finance and employment data (fiscal year 2010) were obtained for ECSU; and then these institutional expenditures were allocated to industrial sectors recognized by the economic impact modeling system. Second, spending by undergraduate, graduate, and professional students was estimated based on the IPEDS Fall Enrollment Survey and other sources; and then these expenditures were allocated to industrial sectors recognized by the economic modeling system. Third, the IMPLAN Professional Social Accounting and Impact Analysis Software (Version 3.0) and data for 2010 were used to build a regional economic model specific to ECSU. A detailed discussion of the IMPLAN modeling system, including its structure, methods, and use, can be found in *IMPLAN Version 3.0 User's Guide (www.IMPLAN.com)*. Once the economic model was generated, the total economic impacts of all categories of initial spending were estimated.

The multiplier concept is common to virtually all economic impact studies. Multipliers measure the response of the local economy to a change in demand or production. In essence, multipliers capture the impact of the initial round of spending (for final consumption) plus the impacts generated by successive rounds of re-spending of those initial dollars. The magnitude of a particular multiplier depends upon what proportion of each dollar spent leaves the region during each round of spending. Multipliers therefore are unique to the region and to the industry that receives the initial round of spending. Economic multipliers are model-based and dependent on the specific spending patterns of the industry and applicable regional economies.

**Figure 3: How multipliers capture the impact of respending initial impacts if the output multiplier equals 2.0**



| Initial Direct or Indirect Impact | $100 | |
|---|---|---|
| First Round of Respending | $50 respent locally | $50 leakage[5]* |
| Second Round of Respending | $25 respent locally | $25 leakage |
| Third Round of Respending | $12.50 respent locally | $12.50 leakage |
| Fourth Round of Respending | $6.25 respent locally | $6.25 leakage |
| Fifth Round of Respending | $3.12 respent locally | $3.12 leakage |
| Sixth Round of Respending | $1.56 respent locally | $1.56 leakage |
| Seventh Round of Respending | $.78 respent locally | $.78 leakage |

| Total Economic Impact: | $200 | |
|---|---|---|
| Total Leakage: | | $100 |

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[5] Leakage indicates amounts spent outside area and not recirculated locally.

Figure 3 illustrates the successive rounds of spending that might take place if a person buys an item locally. Assume that the amount spent is $100 and that the appropriate regional output multiplier is 2.0. The initial injection of spending to the region is $100, which creates a direct economic impact of $100 to the regional economy. Of that $100, only $50 is re-spent locally; the rest flows out of the region through non-local taxes, non-local purchases, and income transfers. After the first round of re-spending, the total economic impact to the region is $150. During the second round of re-spending, $25 is re-spent locally and $25 leaks out of the region, a 50 percent leakage. Now, the total economic impact to the region is $175. After seven rounds of re-spending, less than one dollar remains in the local economy, but the total economic impact has reached almost $200. The induced (multiplier effect) impact to the region ($100) equals the total impact ($200) minus the direct impact ($100).

The multiplier traces the flows of re-spending that take place throughout the region until the initial dollars have completely leaked from it to other regions. Obviously, multiplier effects within large, self-sufficient areas are likely to be larger than those in small, rural, or specialized areas that are less able to capture spending for necessary goods and services. Multiplier effects also vary greatly from industry to industry, but in general, the greater the interaction with the local economy, the larger the multiplier for that industry. For example, personal services, business services, and entertainment industries have intricate relationships with local supporting industries, and therefore have relatively high multiplier values. Conversely, electric, gas, and sanitary services usually are less intertwined with local supporting industries, and their multipliers are lower.

Type SAM (Social Accounting) multipliers from the IMPLAN modeling system were used to estimate the economic impacts associated with all categories of spending. Type SAM multipliers capture the original expenditures resulting from the impact, the indirect effects of industries buying from industries, and the induced effects of household expenditures based on information in the social account matrix. The multipliers account for Social Security and income tax leakage, institutional savings, commuting, and inter-institutional transfers, and people-to-people transfers.

Wherever appropriate, the IMPLAN software applied margins to convert purchaser prices to producer prices. In input-output models, all expenditures are in terms of producer prices. Spending therefore can be allocated to the industries that actually produce the good or service. The margins are derived from U.S. Bureau of Economic Analysis data. The margins used differed depending on the consumer. For

example, households pay transportation, wholesale, and the full retail margin. In contrast, ECSU may pay little or no retail margin as they have typically more buying power than a household. Also, some sectors of the model do not have margins. For example, because there are no wholesalers or retailers involved when someone rents a room, hotels and lodging do not have margins.

The model's default estimates of the local economy's regional purchase coefficients were used to derive the ratio of locally purchased to imported goods. The regional purchase coefficient represents the proportion of the total demands for a given commodity that is supplied by the region to itself. The regional purchase coefficients were estimated with an econometric equation that predicts local purchases based on each region's unique characteristics. In addition, the entire analysis was conducted using the full range of industrial sectors in order to avoid aggregation bias.

It should be noted that the economic models are designed to measure the total economic impact of university-related spending on its host community, but if ECSU were to close or otherwise cease to exist, economic activity might not drop as much as the models indicate. The net drop in economic activity might be less than indicated by the models because some spending might be directed toward other activities within the region. For example, a portion of the displaced students might transfer to other colleges or universities within the region. Since it is extraordinarily difficult to predict such adjustments, the total rather than net economic impacts of university-related spending are reported. Thus, the economic impact estimates should be considered an upper bound on the true economic impact of university-related spending. This approach is consistent with the vast majority of studies of the economic impact of institutions of higher education that have been produced.

## Initial Spending for Wages and Salaries

The primary data resource was IPEDS, established by the NCES. Specifically, the *Fall Staff Survey* and the *Finance Survey* provided all of the institution-level data regarding staffing and spending for wages and salaries. The most recent surveys reported staffing and expenditure levels for the 2010 fiscal year. Spending for wages & salaries and fringe benefits is reported in the first column of Table 1. This amount

was allocated to various economic sectors recognized by the IMPLAN software based on the typical expenditure pattern for households of moderate income.

## Initial Spending for Non-Wage and Salary (Other) Items

In addition to expenditures for wages & salaries and fringe benefits, the IPEDS *Finance Survey* provided institution-level expenditure data for all other major categories of spending, including instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, independent organizations, and other expenditures.

To eliminate the potential for double counting, expenditures for auxiliary enterprises, scholarships and fellowships were not included in initial spending.  Spending associated with these budget items is largely accounted for in the spending amounts attributed to faculty, staff, and students.  Auxiliary Enterprises are essentially self-supporting operations of the institution that exist to furnish a service to students, faculty, or staff, and that charge a fee that is directly related to, although not necessarily equal to, the cost of service.  Similarly, scholarships and fellowships transfer income to students, and students' spending of these funds is reflected in the amounts attributed to students' personal expenditures.

Budgeted expenditures were allocated to various economic sectors based on a typical expenditure (consumption) pattern for US colleges and universities that was developed by the IMPLAN modelers at MIG, Inc.  This specific expenditure pattern was imported into the model from the IMPLAN Pro Library. Initial spending by ECSU for items other than wages and salaries is reported in column 1 of Table 1.

## Students Personal Expenditures

The students who attend an educational institution spend significant amounts of money in the local economy as a part of their living expenses, so the dollar value of this spending also was estimated.  Since a detailed survey of students' spending habits was not feasible, typical expenditure levels per student

and the pattern of spending by industry were estimated based on data obtained from several sources, including:

1) Various *Consumer Expenditure Surveys* that are conducted annually by the U.S. Bureau of Labor Statistics (BLS);

2) A special BLS study that appeared in the July 2001 issue of the *Monthly Labor Review* that examined the expenditures of college-age students and non-students; and

3) A nationwide (not North Carolina specific) sample of the estimated costs of attendance prepared by individual institutions.

Although the estimated costs of attendance prepared by individual institutions were not detailed enough to be used in the IMPLAN modeling system, they did provide information that was used to develop a profile of average expenditures for some of the items typically purchased by undergraduates, graduate students, and professional students.

Although the Bureau of Labor Statistics' *Consumer Expenditure Surveys* cover consumer units consisting of one person at low income levels, no recent data are available expressly for college students; therefore, in order to adapt the data for this study, spending estimates for several categories of goods or services were increased, decreased, or eliminated.  For example, compared to a weighted average of consumer units at lower income levels, students' expenditures for books and food consumed away from home were increased substantially, while students' expenditures for grocery stores, cash contributions, insurance and pensions, and health care were reduced.  Because expenditures for vacation and travel do not take place locally, such expenditures were eliminated entirely.  After adjustment, the average local expenditure per undergraduate student per academic year was estimated at $12,720.  Similarly, the average local expenditure per graduate student was estimated at $14,010.  These amounts include spending for some items that were purchased locally by others (e.g., parents) on behalf of the students. For example, parents may pay landlords directly for shelter (rent).  It should be noted that these amounts do not include tuition and fees.  The economic impact of economic activities supported through tuition and fees is already captured in the impact estimates attributed to spending by the institution.

Students' expenditures were distributed to the IMPLAN sectoring scheme based on national average expenditure patterns, data provided by various *Consumer Expenditure Surveys*, and estimated costs of attendance prepared by a sampling of institutions.  Part-time students were assumed to spend one-half the amount of full-time students.  Initial spending by students is reported in column 1 of Table 1.

**The NORTH CAROLINA INSTITUTE OF MINORITY ECONOMIC DEVELOPMENT**

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