

The Economic Impact of the University of North Carolina at Pembroke for FY 2013

Summary Highlights

The Total Economic Impact: \$131.42 million

Total Operational Impacts of UNCP	\$104,303,362
Student Spending and Visitors Spending	\$18,017,974
Effects of Construction	\$9,104,713



Prepared by

**Bishwa S Koirala, Ph.D.
Economic and Business Research Center
School of Business
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-Bishwa S Koirala, Ph.D.

Table of Contents

1. Introduction	7
2. Data and Methodology	9
2.1 Data	9
2.1.1 Sources of Revenue	10
2.1.2 UNCP Spending	11
2.1.3 Types of Employment and Payroll	13
2.2 Economic Impact Estimation Method	14
3. Economic Impacts of UNCP	17
3.1. Operational Impact of UNCP	17
3.1.1R Operational Impact of UNCP on Robeson County	18
3.1.1B Operational Impact of UNCP on Bladen County	19
3.1.1C Operational Impact of UNCP on Columbus County	20
3.1.1Cu Operational Impact of UNCP on Cumberland County	21
3.1.1H Operational Impact of UNCP on Hoke County	22
3.1.1M Operational Impact of UNCP on Moore County	23
3.1.1S Operational Impact of UNCP on Scotland County	24
3.2 Economic Impact of Construction Activities of UNCP	25
3.3 Students and Visitors' Spending Impacts	25
3.4 Tax Contribution to State	26
Appendix	28

Tables and Figures

Table 1.1 UNCP Enrollment Activities	7
Table 2.1 UNCP Sources of Revenues 2013 FY	10
Figure 2.1.1 Revenue by Source	11
Table 2.1.2 UNCP Spending in Dollars in 2013 FY	11
Table 2.1.3 Employee Compensation in Dollar by Study County in 2013 FY	12
Figure 2.1.2 Employee Compensation by County	13
Table 2.1.4 Good and Services Expenditure in Dollar by Study County in 2013 FY	13
Table 2.1.5 Types of Employment and Number of Employees of UNCP	14
Table 2.1.6 Number of Employees by Study County/Area of UNCP	14
Figure 2.3 Total Economic Impact Components	16
Table 3.1 Total Economic Impacts of UNCP on the Economy of the Study Region	17
Table 3.1.1 Operational Impact of UNCP on the Study Area	18
Table 3.1.1R Operational Economic Impact (operational) of UNCP on Robeson County	19
Table 3.1.1B Operational Economic Impact (operational) of UNCP on Bladen County	20
Table 3.1.1C Operational Economic Impact (operational) of UNCP on Columbus County	20
Table 3.1.1Cu Operational Economic Impact (operational) of UNCP on Cumberland County	22
Table 3.1.1H Operational Economic Impact (operational) of UNCP on Hoke County	22
Table 3.1.1M Operational Economic Impact (operational) of UNCP on Moore County	23
Table 3.1.1S Operational Economic Impact (operational) of UNCP on Scotland County	24
Table 3.2 Economic Impacts of UNCP Construction Activities in FY13	25

Executive Summary

An economic impact of University of North Carolina at Pembroke (UNCP) is analyzed and estimated considering its operation in the fiscal year 2013. The study area covered in this study includes Pembroke/Robeson County and its surrounding counties that include Bladen, Columbus, Cumberland, Hoke, Moore and Scotland. This report provides an economic impact assessment of UNCP on the study area as defined above. It also estimates an average value of direct tax contribution to the state of North Carolina in the 2013 Fiscal Year by its employees. It should be noted that this study addresses only the monetary and employment impacts of UNCP on its operational counties and the State's economy; it does not assess the University's benefits to the human capital and earnings of the State's workforce and alumni of UNCP. The economic impact of UNCP has stimulating results, which are outcomes of direct economic activities generated by the university in the study region. In addition to the education role of UNCP, it has become an economic pivotal for economic development of this region, especially in the Robeson County and the Pembroke town.

During FY13, UNCP spent about \$ 100,444,014 on payroll (excluding benefits), scholarship and fellowship, utilities, goods and services and construction (or capital projects). UNCP spent more than \$50.7 million on employee compensation, \$28.95 million on purchasing of goods and services, \$9.87 million on grants and aids, about \$3.83 million and about \$7.05 million on respectively utilities and construction activities including new construction and renovation. Out of about \$94.4 million of revenue of UNCP, approximately \$11.26 million is originated from within study area (region); hence the net contribution to the region's economy made by the UNCP would be approximately \$83.14 million. Total economic impact results from operation, construction and student and visitors expenditure are discussed below for each county of the study region. The economic activities created by UNCP operation in this region include jobs created, purchases made, wages paid by the university or payroll, spending made by UNCP students, and spending made by visitors in the study area.

Total economic impacts of UNCP operations are estimated to have been \$104.30 million in economic outputs, with 1,916 jobs and \$60.99 million in income paid to the study counties residents. The operation of UNCP in the study counties or region with a \$54.73 million in direct

output supported by out-of-study counties funds led to an additional \$20.26 million in indirect and about \$29.30 induced economic activities in the study counties.

Table ES: Total Economic Impacts of UNCP on the Economy of the Study Region

UNCP Operational Impacts			
Impact Type	Employment¹	Labor Income²	Output³
Direct	1,481	45,247,485	54,735,685
Indirect	169	6,536,393	20,266,136
Induced	265	9,206,662	29,301,541
Total Operational Impacts of UNCP	1,916	60,990,540	104,303,362
Student Spending and Visitors Spending	487	6,938,955	18,017,974
Effects of Construction	75	1,984,050	9,104,713
Total Economic Impact of UNCP	2, 477	69,913,546	131,426,049

¹ Employment = Full-time and part-time jobs directly and indirectly supported by UNCP

² Labor income = Total employee compensation including benefits

³ Output = The value of expenditure directly and indirectly supported by UNCP

Source: Study Estimation using IMPLAN Version 3

In other words, by attracting the funds necessary to support \$54.73 million in expenditures, UNCP generated a total of \$104.30 million in economic activity in the study region in FY13. Further, the operation of UNCP has directly supported 1,481 jobs and generated additional 434 jobs due to indirect and induced economic activity. Similarly the UNCP has directly supported about \$45.26 million in income by out-of-study region revenues, and which has created about \$15.7 million in additional income through indirect and induced activity produced a total of \$60.99 million in labor income.

The construction activities of UNCP during the FY 13 include University Athletic Track, renovation of Dinning Hall, the designing of the Student Health Center and Siemens Technologies Energy projects as reported by UNCP Financial Audit Report 2013. The construction spending of about \$7.05million of UNCP during the FY 13 has resulted in an additional 75 jobs, \$1.98 million of labor income, and \$9.10 million of economic output. Similarly, UNCP draws students and employees' friends and families from out of the study counties and the state. The data on student and visitor spending patterns were gathered via an online survey using Qualtirc. The study area has about 3,173 students and 1, 481 employees, respectively and their corresponding visitors that the UNCP attracted were about 5,320 and

2,572. The total out of study area students spending estimated was \$11.27 million in FY13. The UNCP students fuel the economy of the study area through their spending, which has created an estimated output of \$18.01 million. The UNCP students and visitors spending generated additional sales and wages to other businesses and employees within the study counties. The students and visitors spending induced 487 jobs and more than \$ 6.9 million of labor income in the study area.

The IMPLAN Version 3.0 economic impact model was used to estimate the indirect and induced impacts of UNCP operation and construction activities, employees and students' expenditures, and their corresponding visitors' expenditures in the study area. Data for this study were obtained from the various departments of UNCP and survey.

1. Introduction

Founded in 1887 as the Croatan Normal School to educate American Indian teachers, the University of North Carolina at Pembroke (UNCP) is one of the 17 listed public universities in North Carolina system of higher learning, with an enrollment of approximately 6,269 students (see Table 1.1 for detail). In addition to the main campus, it has numerous Research and Education Centers in operations in Pembroke town. As the Public, four-year undergraduate and two-year master degree-granting university, a part of the University of North Carolina system, it has local, regional, state regional, national and international students. The UNCP has a strong and vibrant relationship with Pembroke, Robeson County and its surrounding counties: Bladen, Columbus, Cumberland, Hoke, Moore and Scotland, all these counties make the study area of this economic impact study. Beginning with the institution's initial focus on educating to the local tribe—*Lumbee*, the UNCP's organizational mission and scope have been widened and expanded to serve communities in larger sector. The current enrollments cover students from local, regional, national and international communities, and provide opportunities for a lifelong learning, advancement of knowledge, research, and a commitment for a local economic and social enhancement.

Table 1.1 UNCP Enrollment Activities

Fiscal Year	Total Enrollment
2004	4698
2005	4997
2006	5575
2007	5786
2008	5937
2009	6303
2010	6661
2011	6944
2012	6251
2013	6269

Source: UNCP Financial Statement Audit Report, 2013

Currently, the UNCP offers 41 undergraduate programs, 18 graduate programs in business and education, and 1 certification program. It has been ranked 80th Best Colleges is Regional

Universities (South) in the 2014 by U.S. News Ranking on Education. The enrollment figure in Table 1.1 shows that UNCP's enrollments are increasing gradually but fairly consistent after 2007, which is fairly compatible with the Robeson County's population growth, which is about 0.5%.

This report highlights the many ways in which UNCP contributes to Pembroke town/Robeson County and its surrounding counties and the State of North Carolina through service commitments of its programs and people. The operation of the UNCP has made a significant economic impact to the state through its academic and physical operations, capital outlays, allied organizations, and spending by faculty, staff, students, visitors, etc. This report provides an economic impact assessment of UNCP on the study area as defined above, which includes Pembroke/Robeson County and its surrounding counties: Bladen, Columbus, Cumberland, Hoke, Moore and Scotland. It also highlights its impact on the state of North Carolina in the 2013 Fiscal Year (FY). It should be noted that this study addresses only the monetary and employment impacts of UNCP on its operational counties and the State's economy; it does not assess the University's benefits to the human capital and earnings of the State's workforce and alumni of UNCP.

2. Data and Methodology

This section outlines information about the data sources, methodology, and assumptions used to estimate the indirect and induced effects. This study is based on an established method of measuring the economic impact of educational institutions. The method employs an “export-base” method, which recognizes that only those expenditures supported by out-of-region revenues can be considered to have tangible impacts on the region’s economy. This is because as revenues generated within a region would apparently flow to some other activity if UNCP did not exist, and thus do not produce a net economic impact. To analyze the economic impact this study uses IMPLAN, a widely-accepted and utilized software model for economic impact study. The software is built based on the input-output model to break economic impact outputs into different economics elements. The input-output table that an IMPLAN uses is called Social Account Matrix (SAM).

The initial input in the form of salaries and wages or purchase goods or services, etc. acts like an exogenous economic shock to the economy that creates a round of several spending across all industries as impact on the economy. Total economic impact from all industries gives a measure of an economic multiplier (see section 2.2 for detail). As a result, UNCP’s contribution to the study area (here Pembroke/Robeson County, Bladen, Columbus, Cumberland, Hoke, Moore and Scotland) is assessed from its ability to attract revenues from outside of these counties.

2.1 Data

This study uses three different types of data: i) university operation ii) university related construction and ii) expenditure made by university students, employees and their visitors are used for this analysis. The operation and construction data used for this analysis was obtained from Assistant Controller for the Office of the Controller for UNCP. Students’ and employees’ expenditure and their corresponding visitors are obtained by online survey. The data employed were collected following a checklist developed for this study. The raw data was then reviewed and processed to bring them into a usable format to incorporate into the IMPLAN model as well as in the presentable form.

2.1.1 Sources of Revenue

The University of North Carolina at Pembroke (UNCP) generated a total of \$94.40 million during the FY13. The revenue data shows that after the State Appropriation (about \$54.37 million) the students' tuitions and fees are major source of revenue, which accrues about \$20.48 million, of UNCP (see Table 2.1 for detail).

The figure 2.1.1 State government general fund appropriation accounted for the largest share (58%) of UNCP revenues, followed by student tuition and fees (22%), sale and services (16%), capital and grants (3%), addition to the endowment (1%), and a small amount of grants and contracts (0.003%).

Table 2.1 UNCP Sources of Revenues 2013 FY

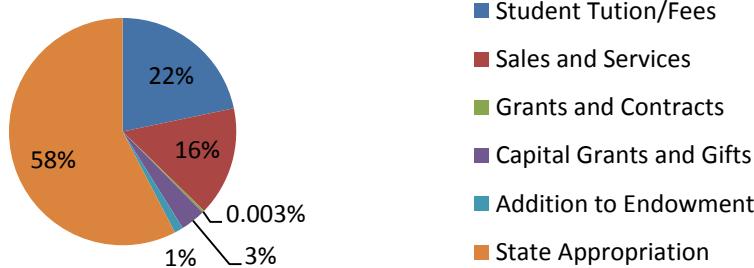
Items	Amount in \$
Student Tuition/Fees	20,489,029.76
Sales and Services	14,692,289.86
Grants and Contracts	290,100.76
Capital Grants and Gifts	3,340,966.58
Addition to Endowment	1,192,706.84
State Appropriation	54,372,770.3
Total	94,377,864.1

Source: Office of Controller, UNCP Financial Statement Report FY 2013

Out of about \$94.4 million of revenue of UNCP, approximately \$11.26 million originated from within study area (region); hence the net contribution to the region's economy made by the

UNCP would be approximately \$83.14 million. In other words, the UNCP generated approximately \$8.38 revenue from out of the study area (region) for every \$1.00 in revenue generated from within the study area.

Figure 2.1.1 Revenue by Sources



Source: Study Analysis

2.1.2 UNCP Spending

Total university expenditures for fiscal year 2012-2013 were taken from the Financial Statement Audit Report of UNCP. In FY13, UNCP spent about \$ 100,444,014 on payroll (excluding benefits), scholarship and fellowship, utilities, goods and services and construction (or capital projects). This total expenditure reflects the expenditures made in Robeson County and in other counties within North Carolina. Approximately, \$67.31 million (60% of the total and the construction expenditure) was spent in Robeson County, as shown in Table 2.1.2.

Table 2.1.2 UNCP Spending in Dollars in 2013 FY

Items	Within NC Expenditure in \$	Out of NC Expenditure in \$	Total Expenditure in \$
Employee Compensation	49,014,341.83	1,716,417.17	50,730,759
Scholarship and Fellowship			9,876,895.74
Utilities	3,833,859.82		3,833,859.82
Supplies, Materials and Services			28,951,661.06
Construction	7,050,838.12		7,050,838.12
Total			100,444,013.7

UNCP spent more than \$50.7 million on employee compensation, \$28.95 million on purchasing of goods and services, \$9.87 million on grants and aids, about \$3.83 million and about 7.05 million on respectively utilities and construction activities including new construction and renovation.

The employee's compensation data (Table 2.1.3) shows that Robeson County receives the largest amount of employees compensation, which is about \$26.76 million or 61% share of UNCP's employees' compensation from the study region.

Table 2.1.3 Employee Compensation in Dollar by Study County in 2013 FY

Counties	Employee Compensation in \$
Robeson	26,759,571.6
Bladen	271,456
Columbus	440,596
Cumberland	5,652,425.64
Hoke	675,149
Scotland	6,346,544.7
Moore	3,466,534.2

The second largest employee's compensation goes to the Scotland County (about 15%), third Cumberland County (about 13%) and the fourth Moore County and the rest three gets about the same percentage (about 1% each) (see Figure 2.1.2 for detail). The goods and supplies for UNCP are largely from the study counties. The data supplied for this study shows that Robeson County alone receives about 60% of UNCP's expenditure on material, goods and supplies.

The next largest County to receive the good and services expenditure is Cumberland County (see Table 2.1.4). Out of seven study Counties, the Bladen receives the lowest amount in terms of material, goods and supplies.

Figure 2.1.2 Employee Compensation by County

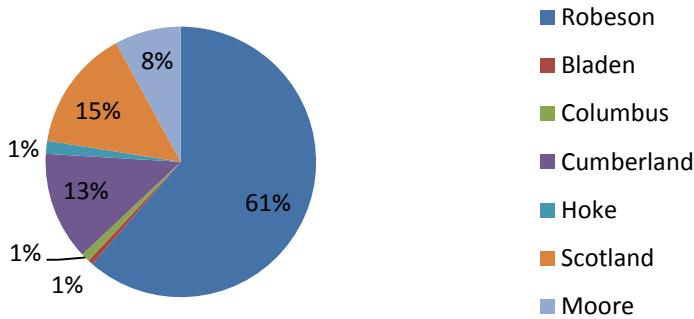


Table 2.1.4 Good and Services Expenditure in Dollar by Study County in 2013 FY

County	Robeson	Bladen	Cumberland	Hoke	Columbus	Scotland	Moore
Amount in \$	17,370,996	123,020	1,844,005	229,404	245,004	529,116	482,928

Source: Author's analysis based on UNCP Office of Human Resource 2014

2.1.3 Types of Employment and Payroll of UNCP

During the FY13, UNCP employed a total of 998 permanent faculty and staff. However, UNCP employs a total of 1,932 people, which includes faculty (permanent and adjunct), staff (permanent and temporary), student workers (graduate assistants and work study) (see Table 2.1.5 for detail).

According to information provided by the human resources a total 932 employees (about 42.24% of total UNCP employees) live in Robeson County and receive approximately \$26.76million (or 61%) in employee compensation from UNCP. The second largest county to receive the employment by UNCP is Cumberland (240) followed by Scotland (171) then Moore County (85) (see Table 2.1.6). A total of 1,481 employees live in the study counties of the UNCP impact study area.

Table 2.1.5 Types of Employment and Number of Employees of UNCP

Types of Employment	Number of Employee
Faculty Adjunct	128
Graduate Assistant	34
Permanent EPA Staff	146
Permanent Faculty	477
Permanent SPA Staff	375
Student Employee	497
Temporary Employee	169
Work Study	106
Grand Total	1,932

Source: UNCP Office of Human Resource 2014

Table 2.1.6 Number of Employees by Study County/Area of UNCP

Study Area/County	Number of Employees
Bladen	16
Columbus	18
Cumberland	240
Hoke	28
Moore	85
Robeson	923
Scotland	171
Grand Total	1,481

Source: Author's analysis based on UNCP Office of Human Resource 2014

2.2 Economic Impact Estimation Method

Dollar spent by the University of North Carolina at Pembroke (UNCP) is spent again by the employees and local businesses. Employees use their salaries or wages to buy goods and services from other businesses. Then businesses make their own purchases as well as hire employees, who also spend their salaries or wages in the local, regional and the state economies, which will create a chain reaction of indirect and induced spending with successive rounds of additional spending. However, every round of successive spending will be gradually diminished through savings, taxes, and expenditures. Hence the economic impact of UNCP on the region is greater than the total UNCP's direct spending on employees' compensation, goods, services, supplies

and construction. Expenditures for UNCP construction projects were treated as new final demand, as are conventional for economic impact analysis. Further, student and employee related UNCP visitors will have an addition impact on the region. For detail expenditure made by employees and students, an online employees and students expenditure surveys were conducted using QUALTRICS—a web based software for online survey. The following steps were taken to estimate the direct economic impact of UNCP on the region (Robeson, Bladen, Columbus, Cumberland, Hoke, Scotland and Moore counties). To have this economic impact correctly estimated and analyzed, first UNCP revenue amounts from out-of-region (study area) sources were estimated. The direct impacts are created by the externally funded and locally spent dollars.

The total economic impacts are comprised of sum of direct, indirect and induced impacts. To get total economic impact of economic activity, IMPLAN uses a variety of data sources of economic activities (see Figure 2.3). Out of total impacts, the **direct impacts** occur as a result of UNCP spending on salaries and wages, goods and services and construction. In some studies only salaries and wages are considered, which will give little amount of economic impact. The **indirect impacts** occur as a result of expenditures by businesses and organizations that support UNCP activities. As discussed above, these expenditures create demand for the goods and services of other companies, who must then purchase goods and services and hire employees to produce their products. The sum of these iterative purchases and hiring of employees are termed indirect impacts. Further, the UNCP employees and indirect industry employees spending their wages and salaries on local goods and services will create iterations of economic activities and these iterations constitute **induced impacts**. The spending by these employees creates further demand for goods and services for which firms must again purchase supplies and hire employees to produce.

After estimating the total economic impacts, this analysis will estimate multipliers, which is a measure of economic activity generated per dollar or per employee. A multiplier is estimated by dividing the total economic impact by the original direct activity (i.e. UNCP spending, employment). The economic impacts are presented in section three of this report

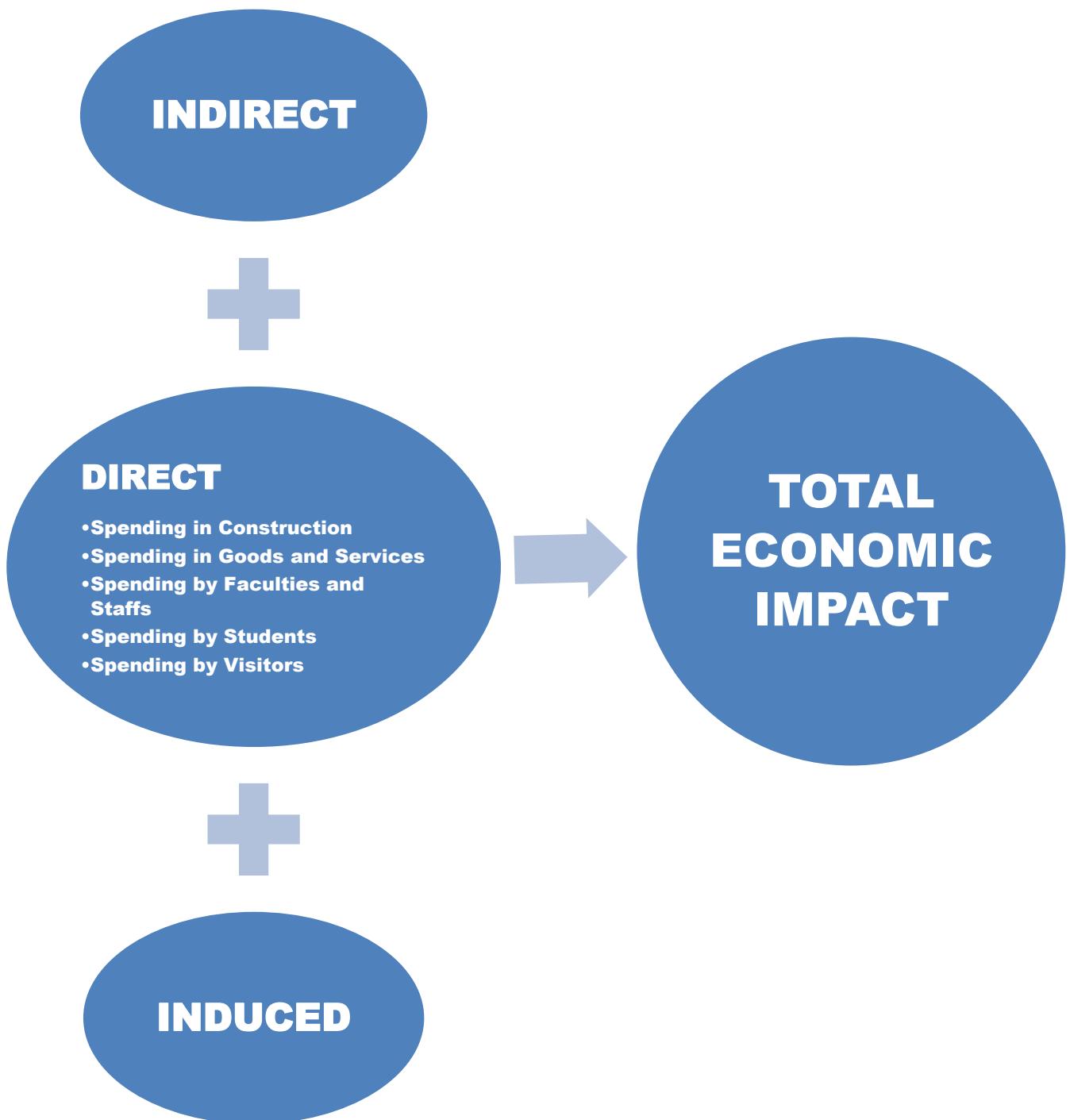


Figure 2.3 Total Economic Impact Components

3. Economic Impacts of UNCP

The economic impact of UNCP is the result of the direct economic activities generated by the university in the study region. The economic activities in the region include jobs created, purchases made, wages paid by the university or payroll, spending made by UNCP students, and spending made by visitors in the study area. Further, the economic impact also includes impact incurred by the construction spending for new construction as well as renovation projects. The University of North Carolina at Pembroke (UNCP) spent more than \$50.7 million on employee compensation, \$28.95 million on purchasing of goods and services, \$9.87 million on grants and aids, about \$3.83 million and about \$7.05 million respectively on utilities and construction activities including new construction and renovation. Out of about \$94.4 million of revenue of UNCP, approximately \$11.26 million is originated from within study area (region); hence the net contribution to the region's economy made by the UNCP would be approximately \$83.14 million. Total economic impact results from operation, construction and student and visitors expenditure are discussed below for each county of the study region.

Table 3.1 Total Economic Impacts of UNCP on the Economy of the Study Region

Impact Type	Employment	Labor Income	Output
Operational Effect	1,916	\$60,990,540	\$104,303,362
Student Spending and Visitors Spending	487	\$6,938,955	\$18,017,974
Effects of Construction	75	\$1,984,050	\$9,104,713
Total	2, 477	\$69,913,546	\$131,426,049

Source: Study Estimation using IMPLAN version 3

3.1. Operational Impact of UNCP

Table 3.1.1 presents the direct, indirect, induced and total economic impacts of UNCP operation expenditures on the study counties. Total impacts of UNCP operations are estimated to have been \$104.30 million in economic output, with 1,916 jobs and \$60.99 million in income paid to the study counties residents. The operation of UNCP in the study counties or region with a \$54.73 million in direct output supported by out-of-study counties funds led to an additional \$20.26 million in indirect and about \$29.30 induced economic activities in the study counties.

Table 3.1.1 Operational Impact of UNCP on the Study Area

Impact Type	Employment¹	Labor Income²	Output³
Direct Effect	1,481	\$45,247,485	\$54,735,685
Indirect Effect	169	\$6,536,393	\$20,266,136
Induced Effect	265	\$9,206,662	\$29,301,541
Total Effect	1,916	\$60,990,540	\$104,303,362
Multiplier	1.22	1.24	1.71

¹ Employment = Full-time and part-time jobs directly and indirectly supported by UNCP

² Labor income = Total employee compensation including benefits

³ Output = The value of expenditure directly and indirectly supported by UNCP

In other words, by attracting the funds necessary to support \$54.73 million in expenditures, UNCP generated a total of \$104.30 million in economic activity in the study region in FY13. The corresponding multiplier, which is a measure of a ratio of total divided by its respective direct, of 1.71, indicates that a total of \$1.71 was generated in the economy of study region for every \$1.00 spent in the region that was supported by revenues generated by out of the study region.

The out-of-study area (all study counties) revenue directly supported 1,481 jobs and generated additional 434 jobs due to indirect and induced economic activity. The overall employment multiplier in the study area is 1.22, which indicates a total of 1.22 jobs were generated in the study counties' economy for every job that UNCP has generated.

Similarly the UNCP has directly supported about \$45.26 million in income by out-of-study region revenues, and which has created about \$15.7 million in additional income through indirect and induced activity produced a total of \$60.99 million in labor income. The income multiplier, which is an average of all counties, in the study region of 1.24 indicates a total of \$1.24 was generated in the study region's economy for every dollar that UNCP spent on employee compensation that was supported by revenues generated by out-of-study counties.

3.1.1R Operational Impact of UNCP on Robeson County

In Robeson County alone approximately \$32.5 million (about 60% of total UNCP direct output) has made in Robeson County from out-of-county revenue in spent in this county. Table 3.1.1R represents a total economic impact created by UNCP on the Robeson County, which says that

UNCP has created a total of output about \$68.88 million from its operation in this county. The output multiplier is as high as 2.2 showing that any \$1 spent in this county had generated about \$2.2 as an output.

Table 3.1.1R Operational Economic Impact (operational) of UNCP on Robeson County

Impact Type	Employment	Labor Income	Output
Direct Effect	923	\$26,759,571	\$32,488,221
Indirect Effect	146	\$5,596,906	\$16,356,266
Induced Effect	180	\$6,242,599	\$20,034,013
Total Effect	1,249	\$38,599,076	\$68,878,499
Multiplier	1.35	1.44	2.12

Similarly, the operation of UNCP in Robeson County directly supported 923 jobs and generated additional 326 jobs from indirect as well as induced economic activity. The employment sector multiplier estimated is 1.35 that specifies that for each job that UNCP had generated 1.35 jobs in Robeson County's economy.

Further, the UNCP has directly supported about \$26.76 million in labor income in this county, and which has created about \$11.8 million in additional income through indirect and induced activity produced a total of \$38.59 million in labor income. The income multiplier in the Robeson County of 1.44 indicates a total of \$1.44 was generated in this county's economy for every dollar spent by the UNCP on employee compensation that was supported by revenues generated by out of the Robeson County.

3.1.1B Operational Impact of UNCP on Bladen County

The economic impact of UNCP based on its operation on Bladen County is mainly from employees' compensation. Table 3.1.1B gives a detail picture of a total economic impact created by UNCP on the Bladen County Total economic output generated by UNCP is estimated \$0.44 million. The output multiplier is 1.58, which is lower than in Robeson County, states that any \$1 spent in this county had generated about \$1.58 as an output.

The operation of UNCP in Bladen County directly supported 16 jobs that has generated about 2.4 both from indirect as well as induced economic activity. The employment sector multiplier is

quite low, which is about 1.14. Further, the UNCP has directly supported about \$0.37 million in labor income in this county and created about \$0.43 million in additional income through indirect and induced activity. The income multiplier estimated is 1.16, which indicates a total of

Table 3.1.1B Operational Economic Impact (operational) of UNCP on Bladen County

Impact Type	Employment	Labor Income	Output
Direct Effect	16	\$370,216	\$446,675
Indirect Effect	1.31	\$32,952	\$144,241
Induced Effect	1.03	\$28,416	\$116,776
Total Effect	18.34	\$431,584	\$707.693
Multiplier	1.14	1.16	1.58

\$1.16 was generated in this county's economy for every dollar spent by the UNCP on employee compensation that was supported by revenues generated by out of the Bladen County.

3.1.1C Operational Impact of UNCP on Columbus County

The operational economic impact of UNCP based on its operation on Columbus County is mainly from employees' compensation though it has very little impact from goods, materials and services. Table 3.1.1C gives a detail picture of a total economic impact created by UNCP on the Columbus County. The total economic output generated by UNCP is estimated \$1.14 million, which was generated based on the direct contribution of \$0.60 million made by the UNCP from out of the county revenue. The output multiplier is 1.88, higher than that of Bladen County, which states that any \$1 spent in this county had generated about \$1.88 as an output.

Table 3.1.1C Operational Economic Impact (operational) of UNCP on Columbus County

Impact Type	Employment	Labor Income	Output
Direct Effect	18	\$489,946	\$604,493
Indirect Effect	2.71	\$65,984	\$294,163
Induced Effect	2.23	\$69,681	\$243,027
Total Effect	22.94	\$625,612	\$1,141,684
Multiplier	1.27	1.27	1.88

On the employment site, the operation of UNCP in Columbus County directly supported 18 jobs and generated about 3 jobs from indirect as well as induced economic activity. Although this figure is low but its multiplier is about 1.27, which is higher than what the Bladen County has.

Additionally, the UNCP has directly buttressed approximately \$0.49 million in labor income in this county, and has created about \$0.012 million in additional income through indirect and induced activity generated a total of \$0.62 million in labor income. The income multiplier in the Columbus County of 1.27 indicates a total of \$1.27 was generated in this county's economy for every dollar spent by the UNCP on employee compensation that was supported by revenues generated by out of the Columbus County.

3.1.1Cu Operational Impact of UNCP on Cumberland County

The economic impact of UNCP's operation on Cumberland County is estimated based on its operation on Cumberland County and is mainly from employees' compensation and goods and services. Compared to other counties beside the Robeson County, UNCP's operation has more economic impacts on this county that has created more economic activities. Table 3.1.1Cu gives a detail picture of a total economic impact created by UNCP's operation on Cumberland County. Total economic output generated by UNCP is estimated \$8.46 million. The output multiplier is 1.63, which is lower than in Robeson County but higher than other study area counties, states that any \$1 spent in this county had generated about \$1.63 as an output. This higher multiplier figure reveals that UNCP has created more economic activities in Cumberland County.

Table 3.1.1Cu Operational Economic Impact (operational) of UNCP on Cumberland County

Impact Type	Employment	Labor Income	Output
Direct Effect	240	\$7,139,525	\$8,461,515
Indirect Effect	10	\$557,884	\$2,147,163
Induced Effect	30	\$1,019,801	\$3,157,776
Total Effect	280	\$8,717,210	\$13,766,454
Multiplier	1.17	1.22	1.63

The operation of UNCP in Cumberland County directly supported 240 jobs that have generated about 40 additional jobs both from indirect as well as induced economic activity. The employment sector multiplier is quite low, which is about 1.17. Further, the UNCP has directly supported about \$7.13 million in labor income in this county and created about \$1.56 million in additional income through indirect and induced activity totaling to a labor income in this county to \$8.71 million at the Cumberland County's final discharge. The income multiplier estimated is

1.22, which indicates a total of \$1.22 has been generated for every dollar spent by the UNCP under the labor income component.

3.1.1H Operational Impact of UNCP on Hoke County

The economic impact of UNCP based on its operation on Hoke County is mainly from two economic activities of UNCP: employees' compensation and goods and services like in other counties. Table 3.1.1H gives a detail picture of a total economic impact created by UNCP on the Hoke County. The total estimated economic output generated by UNCP is accrued to be \$1.27 million. The output multiplier is 1.54, which is lower than in both Robeson and Cumberland Counties. This estimated multiplier says that any \$1 spent in this county by UNCP had generated about \$1.54 as an economic output.

The operation of UNCP in Hoke County directly supported 28 number of jobs that has generated about 4 new jobs altogether from indirect as well as induced economic activity. The employment sector multiplier is quite low, which is about 1.14, states that every job that UNCP has created in Hoke County has generated about 1.14 numbers of jobs from different economic activities.

Table 3.1.1H Operational Economic Impact (operational) of UNCP on Hoke County

Impact Type	Employment	Labor Income	Output
Direct Effect	28	\$675,149	\$825,032
Indirect Effect	2	\$42,764	\$259,595
Induced Effect	2	\$37,502	\$185,563
Total Effect	32	\$755,415	\$1,270,191
Multiplier	1.14	1.12	1.54

Further, the UNCP has directly supported about \$0.67 million in labor income in this county and created about \$0.079 million in additional income through indirect and induced activities totaling to a \$.755 million in labor income. The income multiplier estimated is 1.12, which indicates a total of \$1.12 has been generated for \$1 spent by the UNCP under the labor income component.

3.1.1M Operational Impact of UNCP on Moore County

The operational economic impact of UNCP on Moore County is estimated mainly from two economic activities of UNCP: employees' compensation and goods and services. Table 3.1.1M gives a detail picture of a total economic impact created by UNCP on the Moore County.

Table 3.1.1M Operational Economic Impact (operational) of UNCP on Moore County

Impact Type	Employment	Labor Income	Output
Direct Effect	85	\$ 3,466,534	\$4,168,175
Indirect Effect	4	\$140,278	\$684,221
Induced Effect	23	\$833,580	\$2,523,842
Total Effect	112	\$4,440,392	\$7,376,238
Multiplier	1.32	1.28	1.77

The total estimated economic output generated by UNCP in Moore County is about \$7.37 million in FY 13, which has a direct output of \$4.16 million. The output multiplier is 1.77, which is lower than in Robeson County, but greater than other counties in the study region. This estimated multiplier says that any \$1 spent in this county by UNCP had generated about \$1.77 as an economic output due to UNCP's operation.

The operation of UNCP in Moore County directly supported 85 employments that has generated about 27 new jobs altogether from indirect as well as induced economic activity. The employment sector multiplier is low compared to the output sector, though it is about 1.32 but higher than other study counties except Robeson County. This multiplier confirms that for every job the UNCP had in Moore County has created 1.32 numbers of jobs due to different economic activities in the county.

In Moore County, the operation of the UNCP has directly supported about \$3.46 million in labor income and created an additional labor income of about \$0.93 million through indirect and induced activities. In total UNCP's operation in the county has created about \$4.44 million. The income multiplier estimated is 1.28, which indicates a total of \$1.28 has been generated for every \$1 spent by the UNCP under the labor income component in Moore County.

3.1.1S Operational Impact of UNCP on Scotland County

The Scotland County is the third largest county in terms of receiving the UNCP's operation activities out of seven study counties. Like in other study counties, the operational economic impact of UNCP on Scotland County is estimated mainly from two economic activities of UNCP: employees' compensation and goods and services. Table 3.1.1S gives a detail picture of a total economic impact created by UNCP on the Scotland County.

Table 3.1.1S Operational Economic Impact (operational) of UNCP on Scotland County

Impact Type	Employment	Labor Income	Output
Direct Effect	171	6,346,544	7,741,574
Indirect Effect	3	99,625	380,486
Induced Effect	27	975,081	3,040,544
Total Effect	201	7,421,249	11,162,603
Multiplier	1.18	1.17	1.44

The total estimated economic output generated by UNCP in Scotland County is about \$11.16 million in FY 13, which has a direct output of \$7.74 million, this figure next to the Cumberland County. The output multiplier is 1.44, which is lower than in both Robeson and Cumberland Counties, but greater than other counties in the study region. This estimated multiplier states that every \$1 spent in this county by UNCP had generated about \$1.44 as an economic output due to UNCP's operation.

The operation of UNCP in Scotland County directly supported 171 employments that has generated about 30 new jobs altogether from indirect as well as induced economic activity. In total there are 201 employment generated in Scotland County alone due to UNCP's operation. Although the employment sector multiplier is low, it is about 1.18, compared to the output sector, but this multiplier confirms that for every job the UNCP had in Scotland County has created 1.18 numbers of jobs due to different economic activities in the county.

In Scotland County, about \$6.34 million in labor income has been directly created by the operation of the UNCP and created an additional labor income of about \$1.74 million through indirect and induced activities. The total labor income created by UNCP's operation was about \$7.42 million in FY 13. The income multiplier estimated is as low as 1.17, but it has indicated

that a total of \$1.17 in labor income has been generated for every \$1 spent by the UNCP for the labor income in Scotland County.

3.2 Economic Impact of Construction Activities of UNCP

UNCP's major construction activities during the FY 13 include University Athletic Track, renovation of Dinning Hall, the designing of the Student Health Center and Siemens Technologies Energy projects as reported by UNCP Financial Audit Report 2013. During the year, expenditures for these projects were \$653,102.48. Construction projects completed included Dining Hall renovations of \$1,800,893.57, Siemens Technologies Energy projects of \$4,184,894.52, and general infrastructure projects such as road improvements of \$411,947.55. These construction activities are physically located in Pembroke, Robeson County. The UNCP has spent a total of about \$7.05million (\$7,050,838) on construction activities.

The estimated construction impacts to show how the county's economy was impacted by these activities in FY 13. UNCP's construction spending of about \$7.05million has resulted in an additional 75 jobs, \$1.98 million of labor income, and \$9.10 million of economic output (see Table 3.2 for detail).

Table 3.2 Economic Impacts of UNCP Construction Activities in FY13

Impact Type	Employment	Labor Income	Output
Indirect Effect	67.0	1,719,611.6	8,256,010.4
Induced Effect	7.6	264,438.8	848,702.7
Total Effect	74.6	1,984,050.5	9,104,713.1

Although actual construction might have taken only for a week or months to complete, the IMPLAN model generates construction impacts on an annual basis. Hence based on future construction activities, the economic impact in future years would be different—can be either higher or lower.

3.3 Students and Visitors' Spending Impacts

UNCP draws students and employees' friends and families from out of the study counties and the state. The data on student and visitor spending patterns were gathered via an online survey

using Qualtirc. A request to participate was sent to all students enrolled in Spring 2014 (approximately 5771 students). Responses of about 7.3 percent were received. Information was gathered on a wide range of categorical and geographic purchasing patterns. The survey probed spending patterns for gasoline, vehicle maintenance, rent and utilities, books, computers, groceries, restaurants, alcoholic beverages, entertainment, apparel, sporting goods, and personal services. Although exact information based on the county of residence was not clearly obtained, a tentative figure was obtained for both student and employee expenditure and their visitor's expenditure surveys. The study area has about 3,173 students and 1, 481 employees, respectively and their corresponding visitors that the UNCP attracted were about 5,320 and 2,572. The numbers of estimated visitors are calculated based on the survey conducted for students and employees expenditure surveys. In the survey, information about visitors who are related to the employees from the study counties are also obtained and considered for the estimation.

The student expenditure estimation was carried out following UNCP's students spending data for commuters is assumed to be university's room and board expenditure to make consistent for cost of attending the UNCP. The total out of study area students spending estimated was \$11.27 million in FY13. The UNCP students fuel the economy of the study area through their spending. Using the IMPLAN, the total output for that direct spending of \$11.27 million estimated an output of \$18.01 million (see Table 3.1) as discussed above. The UNCP students and visitors spending generated additional sales and wages to other businesses and employees within the study counties. The students and visitors spending induced 487 jobs and more than \$ 6.9 million of labor income in the study area. The economic impact of UNCP visitors for recreation purposes, attending conferences, athletic events, alumni homecomings and reunions, etc. is likely to have a positive economic impact on the region but due to lack of data this analysis could not be made.

3.4 Tax Contribution to State

Employees of UNCP have contributed the State of North Carolina from different dimensions. The direct, indirect, and induced economic activity associated with UNCP operation and construction, students' spending, generated an estimated total of \$1,132,659 in taxes to state by

its employees in FY13, an estimates of gross receipt tax was estimated to have been collected for the state. These tax estimates were left as it calculated an average at the rate of 5.8%.

Appendix-1

Definitions

- Impact Analysis: estimate of the impact of dollars from outside the region on the study region's economy
- Output: the total economic activity resulted from UNCP operation and construction activities on the study region.
- Employment: the estimated number of jobs created as a result of UNCP activities.
- Labor Income: all forms of employment income, including employee compensation (wages and benefits), etc.
- Employee compensation: wage and salary payments as well as benefits, including health and life insurance, pension payments and other non-cash compensation.
- Direct Impacts: the initial, immediate economic impacts generated by UNCP initial expenditures.
- Indirect Impacts: the secondary impact produced by changing input needs of directly affected industries.
- Induced Impacts: the economic impact resulting from UNCP's employees spending a portion of their salary on goods and services for personal consumption