THE ECONOMIC IMPACTS OF THE SOUTHERN VIRGINIA HIGHER EDUCATION CENTER: Fiscal Year 2017-18

Prepared for:

Betty H. Adams, MBA, Ed.D.
Executive Director
Southern Virginia Higher Education Center

Prepared by:

Vincent P. Magnini, Ph.D.
Executive Director
Institute for Service Research

INSTITUTE FOR SERVICE RESEARCH

Delivered: January 2019

Table of Contents

Figures and Tables

Figures:

Tables:

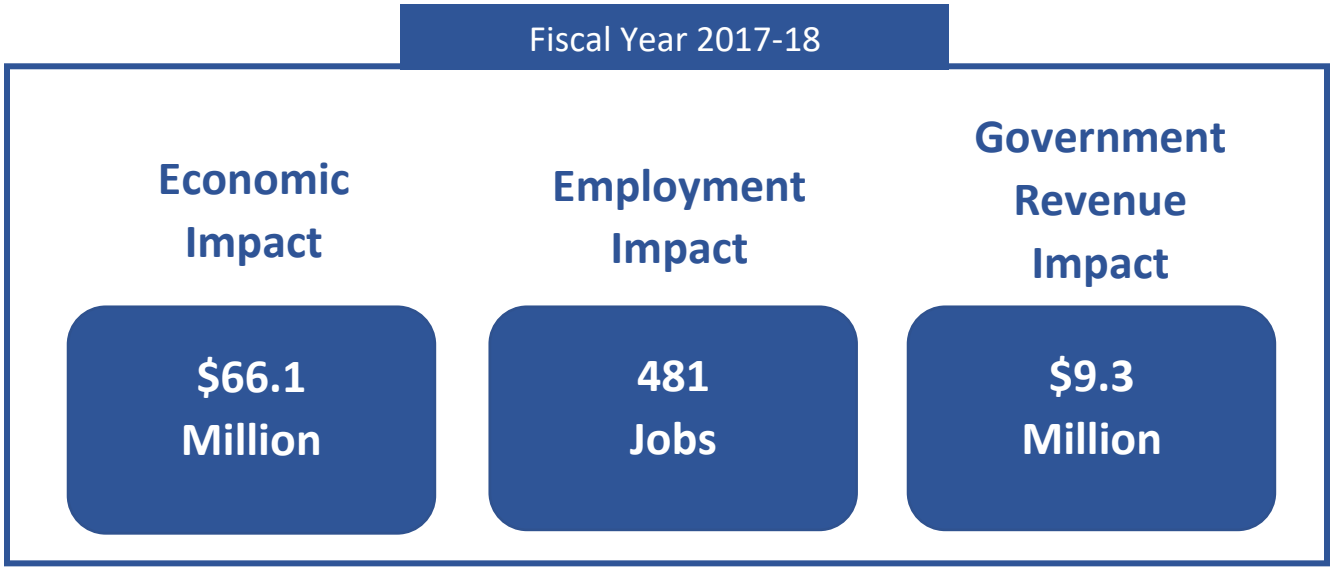
Acknowledgments

This project could not have been conducted without the 263 students and program completers who invested their time to respond to the spending profile survey. The economic models also could not have been built without the teamwork of several SVHEC administrators and staff to complete the data input sheet.

Executive Summary

Southern Virginia Higher Education Center (SVHEC) sustains a significant amount of economic impact in the Commonwealth. This executive summary lists the key findings of the fiscal year 2017-18 (FY18) SVHEC economic impact analyses:

- The total statewide economic impact produced by SVHEC during FY18 was an estimated $66.1M. Approximately 88% of the economic impact occurred in the southern Virginia region.
- The economic activity stimulated by SVHEC during FY18 supported an estimated 481 full-time equivalent jobs in the state. Roughly 89% of these jobs were located in the southern Virginia region.
- The economic activity attributed to SVHEC produced $23.3M in labor income around the Commonwealth during FY18.
- The economic activity sustained by SVHEC in FY18 spawned approximately $5.7M in federal tax revenues.
- The economic activity sustained by SVHEC during FY18 generated roughly $3.6M in state and local tax revenues.
- During FY18, SVHEC contributed an estimated $41.1M to the gross domestic product of Virginia through value-added effects.



Introduction

The mission of the Southern Virginia Higher Education Center (SVHEC) is to advance southern Virginia's economic potential through education, innovation, and collaboration. For more than 30 years, the SVHEC has been helping people in Southern Virginia transform their lives by harnessing the power of education. Through a unique partnership with community colleges and state universities, SVHEC is able to provide convenient, affordable access to a wide range of college and career training opportunities in South Boston, Virginia.[1]

While fulfilling the above mission, there are a number of economic benefits that result in both the southern Virginia region and statewide. Therefore, the purpose of this report is to communicate the economic and fiscal impacts produced by SVHEC during fiscal year 2017-18 (FY18).[2] This purpose will be achieved by developing input-output economic models that not only estimate economic impact in terms of monetary figures, but also with regard to jobs supported, labor income, and contributions to the gross-domestic product (GDP) of Virginia through value-added effects. Moreover, the fiscal impacts of SVHEC will also be addressed by modeling the estimated state / local and federal tax revenues generated by this economic activity.

The next section of this report describes the methodology used to build these economic models.

[1] The content in this paragraph is adapted directly from the SVHEC website: https://www.svhec.org/about-us.

[2] FY18 began on July 1, 2017 and ended on June 30, 2018.

Methodology

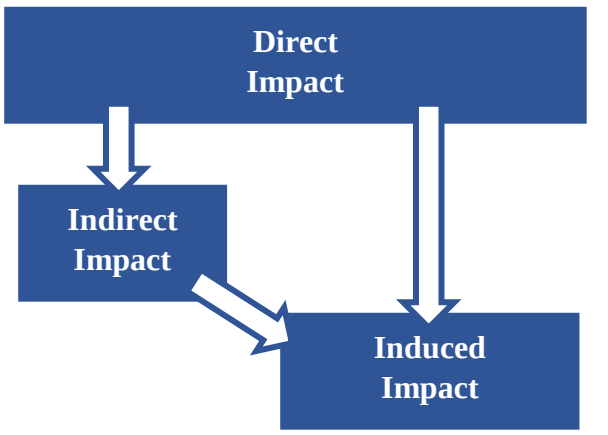
Economic Modeling

To aid the readability of this report, an economic impact glossary of terms is provided in Appendix A.

The direct economic impacts of SVHEC derive from numerous sources. Each of these sources is detailed in the subsequent model inputs section of this report.

In addition to assessing the direct effects of SVHEC economic activity, this study also models secondary or ripple effects which comprise economic activity from subsequent rounds of re-spending of money. As shown in Figure 1, there are two types of ripple effects: indirect and induced. Indirect effects entail the changes in sales, income and jobs of suppliers to entities included in direct impact. (Stynes et al., 2000). Induced effects encapsulate the changes in economic activity in the region stimulated by household spending of income earned through direct and indirect effects.

FIGURE 1: ECONOMIC RIPPLE EFFECTS



Indirect and induced effects are estimated using economic multipliers. Multipliers reflect the extent of interdependency between sectors in a region's economy and can vary significantly between regions and sectors (Stynes et al., 2000). Here is a simple example of how a multiplier can be interpreted: if the multiplier for the restaurant sector in a given region is 1.27 then it can be estimated that every dollar spent at a restaurant results in 27 cents of secondary economic activity in the region.

The economic multipliers, as well as calculations of job supported, tax revenues generated, and value-added effects were facilitated through the use of IMPLAN software. Specifically, economic multipliers for the State of Virginia are commercially available in an economic impact estimation software titled IMPLAN commercialized by MIG, Inc. Therefore, the most recent IMPLAN multipliers were employed in this study to guide the estimation of indirect and induced economic impacts. Because the majority of economic impacts of SVHEC occur in Southern Virginia (see Figure 2), the z-score of a locality's median income and the z-score of a locality's state tax distributions were used to estimate the magnitude of difference between regional and statewide ripple effects.

FIGURE 2: MAP OF VIRGINIA'S REGIONS

Source of map: http://www.virginia.org/virginiamap/

Model Input Data Sources

A total of 263 surveys were submitted by current students and program completers. The survey was distributed by SVHEC administration through electronic channels and could also be completed in a paper/pencil format during in-class meetings. Respondents could opt to remain anonymous or could provide their email addresses to be entered into a raffle for a $50 Visa gift card. The data collected through surveying helped inform the following economic model inputs:

- Students' spending associated with attending classes (e.g. transportation costs)
- Students' large item spending (e.g. textbooks)
- Additional income of program completers as a result of the completed program
- Location of residency of students and program completers

In addition to the surveying program, SVHEC administration completed a 5-page data input sheet to inform the following economic model inputs:

- SVHEC FY18 expenses
- Numbers of program completers per year / per program
- FY18 program enrollments (see Appendix B)
- Estimated number of out-of-area (more than 50 miles one-way) attendees at SVHEC hosted conferences or workshops

Finally, a number of secondary sources were referenced when building SVHEC's economic impact models. For instance, the U.S. Bureau of Labor Statistics produces estimates of average increases in earnings associated with various levels of educational attainment (https://www.bls.gov/emp/chart-unemployment-earnings-education.htm). Another example of a secondary source utilized when building the economic models is the government per diem calculator (https://www.gsa.gov/travel/plan-book/per-diem-rates). This source was used to estimate the travel spending of those attending conferences and workshops at SVHEC. Economic model inputs derived from this study's primary data were adjusted when deemed appropriate by examining these secondary data sources.

Model Inputs

Student spending

As listed in Table 1, in FY18, SVHEC students recorded average weekly expenditures of $110.84. This is a conservative average that was tabulated after the removal of numerous upper-bound outliers in each spending category. Without the removal of these outliers the average would have been 34 percent higher ($165.59 per week).[3]

In addition to these weekly expenditures, in FY18, SVHEC students spent an average of $676.17 on large purchase items such as textbooks. Like with the calculation of weekly expenditures, this large purchase item average was tabulated after the removal of upper-bound outliers. Without the removal of these outliers the average would have been 33 percent higher ($1012.72 per year). For these large items (and for weekly retail expenditures such as supplies), only retail margins were included in the economic models.

TABLE 1: STUDENT SPENDING AVERAGES (PER STUDENT)

Childcare	$5.13 per week
Food and beverage	$40.13 per week
Gas	$34.00 per week
Supplies	$15.72 per week
Transportation (other than gas)	$4.90 per week
Other	$10.96 per week
Weekly total	**$110.84**
Large purchase items (annual)	$676.17 per year

[3] It would have been difficult for students who commute from North Carolina to segregate how much of these weekly expenses they spend in North Carolina versus in Virginia. It is assumed that this 34 percent reduction from the raw data compensates for any expenditures that could have occurred outside Virginia.

Visitor spending

Because SVHEC routinely hosts conferences and workshops that attract out-of-area attendees (more than 50 miles one-way), such economic activity should be entered into the modeling. Therefore, Table 2 details how per person spending was calculated for SVHEC's 1,194 out-of-area visitors during FY18. In an effort to keep the modeling conservative, it was assumed that: 1) 10 percent of the visitors had overnight lodging as part of their trip; and 2) the average distance of travel was 100 miles (one-way).

TABLE 2: VISITOR SPENDING (PER PERSON)

Overnight Visitor:	Day Visitor:
Lodging: $103[1]	Lodging: $0
Food and Beverage / Incidentals: $51 x 2 = $102	Food and Beverage / Incidentals: $51
Mileage = $107[2]	Mileage = $107[2]
Total: $313	**Total: $158**

1.State lodging rate of $93 plus $10 in taxes
2. State reimbursement rate of $0.51 per mile

SVHEC expenditures

SVHEC's FY18 expenditures are summarized in Table 3. These expenditures stimulated economic activity and, consequently, need to be included in the economic models. It is prudent to note that $150K was deducted from these expenses to control for the local recirculation of money deriving from local funding sources. In addition, for the equipment purchases, only retail margins were calculated in the economic models.

TABLE 3: SVHEC EXPENDITURES	
Equipment	$672K
Repair and Maintenance Grounds / Technology	$556K
Lease, Utilities, Telecom	$878K
Personnel	$3.3M
Professional Development, Travel	$74K
Marketing and Educational Support	$308K
Construction – Building Improvements	$200K

Additional earnings of program completers

The additional earning values for program completers are listed in Table 4. A number of measures were taken to remain conservative on the estimation of additional earnings:

TABLE 4: ADDITIONAL EARNINGS OF PROGRAM COMPLETERS (PER COMPLETER)	
Graduate degree	$11,215
Bachelor's degree	$18,630
Associate's degree / certificate	$15,769
Work force training	$7,885

1) In the economic models, additional earnings were not included as direct effects, but rather as secondary effects (see glossary of terms in Appendix A).

2) Only a 10-year window (9 years of program completers) was utilized in the modeling. Beyond this 10-year window, it is increasingly likely that program completers are no longer in the workforce.

3) It is assumed that only 70 percent of YEAR 1 program completers are in the area's workforce. This estimate is sequentially reduced 5 percent per year (YEAR 9 = 30 percent).

4) Program completers of CPR/first aid training were not included in the additional earnings calculations.

Findings

Southern Virginia Region Results

As detailed in Table 5, SVHEC produced an estimated $57.9M in economic impacts in the southern Virginia region during FY18. Of this regional economic impact, $9.0M was through direct effects and the remainder through secondary effects (indirect and induced). This economic activity supported approximately 430 full-time equivalent (FTE) jobs in southern Virginia during FY18 with associated labor income of $20.6M (direct = $4.8M; secondary = $15.8M).[4]

As will be demonstrated in the next section, these economic impacts that occurred in the southern Virginia region account for nearly 90 percent of the SVHEC's statewide economic impacts.

TABLE 5:
THE ECONOMIC IMPACTS OF SOUTHERN VIRGINIA HIGHER EDUCATION CENTER:
SOUTHERN VIRGINIA REGION RESULTS

FY18: Southern Virginia Region	Economic Impact:	Total: $57.9M	Direct: $9.0M	Secondary (Indirect and Induced): $48.9M
	Jobs (FTE):	Total: 430	Direct: 120	Secondary (Indirect and Induced): 310
	Labor Income:	Total: $20.6M	Direct: $4.8M	Secondary (Indirect and Induced): $15.8M

[4] This labor income figure reinforces the notion that SVHEC helps add higher paying jobs to the region: Dividing 430 FTE jobs by $20.6M yields an average salary of $48K. The median income in Halifax County is $37K.

Statewide Results

When economic activity associated with SVHEC outside of southern Virginia is also included in the modeling, the statewide economic impact grows by about 12 percent. As seen in Table 6, the total statewide economic impact produced by SVHEC during FY18 was an estimated $66.1M. This economic activity supported roughly 481 FTE jobs around the state and $23.3M in associated labor income. Beyond those employed at SVHEC, the two largest contributions with regard to jobs sustained by SVHEC economic activity are miscellaneous types of retailing and restaurants.

TABLE 6:
THE ECONOMIC IMPACTS OF SOUTHERN VIRGINIA HIGHER EDUCATION CENTER:
STATEWIDE RESULTS

FY18: Statewide	Economic Impact:	Total: $66.1M	Direct: $9.0M	Secondary (Indirect and Induced): $57.1M
	Jobs (FTE):	Total: 481	Direct: 120	Secondary (Indirect and Induced): 361
	Labor Income:	Total: $23.3M	Direct: $4.8M	Secondary (Indirect and Induced): $18.5M
	3 Largest Job Sectors Supported:	Education (direct employees on location at SVHEC): 56	Retail (miscellaneous): 53	Restaurants (including limited-service): 44
	State and Local Tax Revenues:	$3.6M		
	Federal Tax Revenues:	$5.7M		
	Value-Added Effect:	$41.1M		

The FY18 fiscal contributions of SVHEC are also listed in Table 6. The economic activity supported by SVHEC generated approximately $5.7M in federal taxes and roughly $3.6M in state and local tax revenues. Lastly, SVHEC contributed an estimated $41.1M to the gross domestic product of Virginia through value-added effects.

Beyond the Economic Models

Not only does SVHEC produce a host of economic-related results, but it also helps foster a number of other societal benefits that cannot be readily incorporated into econometric modeling. While not an exhaustive list, here are several examples:

Obesity:

A large body of research finds that there is a statistically significant inverse correlation between educational attainment and obesity (Cohen, Rai, Rehkopf, and Abrams, 2013). Obesity is not only linked to numerous health problems at the individual level, but it is also estimated that obesity-related absenteeism and presenteeism cost U.S. employers $73 billion annually (Lee 2015).

Opioid Abuse:

Emerging research is finding an inverse association between educational attainment and opioid abuse (https://www.ruralhealthinfo.org/topics/substance-abuse). This topic is germane in Virginia as Governor Northam recently announced that the state will receive a $15.8M federal grant to fight the opioid epidemic (Koontz, 2018).

Welfare and Unemployment:

Not surprisingly, there is an inverse correlation between educational attainment and welfare claims / unemployment filings (Economic Modeling Specialists Intl, 2014).

References

Cohen, A. K., Rai, M., Rehkopf, D. H., & Abrams, B. (2013). Educational attainment and obesity: a systematic review. *Obesity Reviews*, *14*(12), 989-1005.

Economic Modeling Specialists Intl (2014). "Demonstrating the Value of John Tyler Community College: Analysis of the Economic Impact and Return of Investment of Education. Moscow, Idaho.

https://www.gsa.gov/travel/plan-book/per-diem-rates (accessed October 29, 2018).

https://www.svhec.org/about-us (accessed October 30, 2018).

Koontz, K. (2018). "Virginia awarded $16 million grant to fight opioid crisis.": https://wtvr.com/ 2018 /09/24/opioid-crisis-grant/.

Lee, B. (2015). Obesity is Everyone's Business. Forbes: www.forbes.com/sites/brucelee/2015/ 09/01/ obesity-is-everyones-business/#400e348a3b6f.

Rural Health Information Hub (RHI hub): https://www.ruralhealthinfo.org/topics/substance-abuse (accessed November 13, 2018).

Stynes, D. J., Propst, D. B., Chang, W., & Sun, Y. (2000). *Estimating national park visitor spending and economic impacts: The MGM2 model.* Report to the National Park Service. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University.

U.S. Census Bureau (2010). *Summary Population and Housing Characteristics* (issued January 2013). CPH-1-1.

United States Department of Labor: Bureau of Labor Statistics: https://www.bls.gov/emp/chart-unemployment-earnings-education.htm (accessed October 30, 2018).

Investigator Bio

Dr. Vincent Magnini is the Executive Director of the Institute for Service Research. He was recently ranked as one of the top 12 most prolific hospitality researchers worldwide and holds editorial board appointments on all of the top-ranked research journals in the field. Further, he is a U.S. Fulbright Scholar. He has published six books and more than 200 articles and reports. Dr. Magnini has also been featured on National Public Radio's *With Good Reason, All Things Considered, Pulse on the Planet* and cited in the *New York Times* and *Washington Post.*

Appendices

APPENDIX A: GLOSSARY OF TERMS

{Many of the definitions in this glossary are paraphrased directly from Stynes et al. (2000) MGM2 user's manual}

Direct effects – the changes in sales, income and jobs in an area as a result of first-round economic activity such as direct student spending or spending by visitors to SVHEC.

Full-time equivalent (FTE) job – the equivalent of one employee working full-time or 2,080 hours per year.

Indirect effects – the changes in sales, income and jobs to businesses that supply goods and services to entities experiencing economic direct effects.

Induced effects – the changes in economic activity in the region stimulated by household spending of income earned through direct and indirect effects.

IMPLAN – a computer-based input / output economic modeling system. With IMPLAN one can estimate 528 sector input / output models for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model.

Multipliers – express the magnitude of the secondary effects in a given geographic area and are often in the form of a ratio of the total change in economic activity relative to the direct change. Multipliers reflect the degree of interdependency between sectors in a region's economy and can vary substantially across regions and sectors.

Ripple effects (AKA secondary effects) – the changes in economic activity from subsequent rounds of re-spending of dollars. There are two types of ripple effects: indirect and induced.

Secondary effects (AKA ripple effects) – the changes in economic activity from subsequent rounds of re-spending of dollars. There are two types of secondary effects: indirect and induced.

Tourist – an individual who travels more than 50 miles (one-way) to visit a destination.

Value-added (also termed 'gross regional product') – the sum of total income and indirect business taxes. Value-added is a commonly used measure of the contribution of a region to the national economy, because it avoids the double counting of intermediate sales and incorporates only the 'value-added' by the region to final products.

APPENDIX B: PROGRAM ENROLLMENTS IN FY18

PROGRAM	17-18 enrollment
Distance Learning (affiliate)	143
GED Preparation	110
Healthcare (other than nursing)	11
Healthcare – Nursing - CNA	6
Healthcare – Nursing – LPN	46
Healthcare – Nursing – RN	69
IT academy	65
Literacy / ESL	113
Mechatronics	15
Welding	34
Work Ready Foundations	20
Customized Workforce Training	12
Work Ready Initiative Grant Program	n/a
AHA CPR/First Aid	21
Sentara HRH Adv Cardiac Life Support/Ped Adv Life Support/Other	128
All Other Graduate Programs	22
All Other Bachelors Programs	43
All Other Associates Programs	867