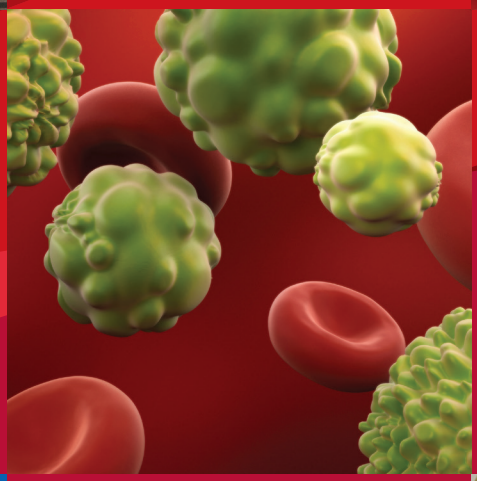
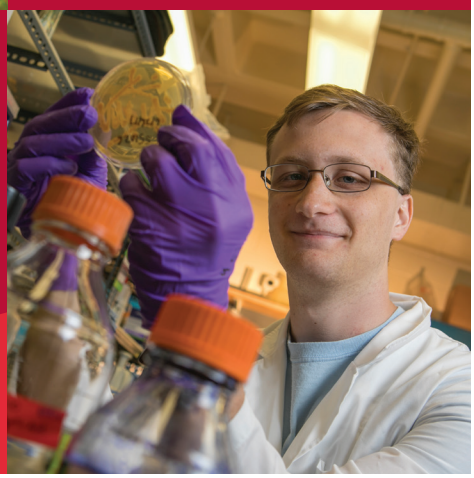
THE IMPACT OF STONY BROOK UNIVERSITY

As Long Island's only public research university, Stony Brook produces the innovations and the educated workforce that drive the area's high-tech economy.



Stony Brook University

2018



John A. Rizzo, PhD
Professor of Economics and Population,
Family and Preventive Medicine

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PART I: EXECUTIVE SUMMARY

1. In total, Stony Brook University's impact on the Long Island economy amounted to $7.23 billion in increased output, $2.39 billion in earnings and 54,645 jobs.

2. The economic impact of Stony Brook University accounted for more than 3 percent of all economic activity in the Nassau/Suffolk county region and roughly 8 percent of total jobs in Suffolk County.

3. The regional economy received $7.23 billion from the state's direct investment of $470.2 million in tax dollars. This represents more than a 1,500 percent return, or an economic gain of $15 for every dollar the state invests.

4. In 2016, Stony Brook graduates increased aggregate economic output worldwide by $15.3 billion, increased aggregate earnings by $3.9 billion and supported 99,815 jobs.

5. The total operating expenses for 2015–2016 were $2.69 billion. Direct state appropriations accounted for $457.3 million, or 17 percent of the total.

6. Stony Brook economic development programs brought an additional $234 million in economic revenue to the Long Island region (not including federal, state and other revenue included in the operating budget).

7. In 2015–2016, the multiplier effect, or secondary impact, of Stony Brook operating expenditures, as determined by the Regional Input-Output Modeling System (RIMS II) developed by the Bureau of Economic Analysis of the U.S. Department of Commerce, generated an additional estimated $250 billion in increased economic output. Economic output refers to the total value of all goods and services produced in a specific region during a specified time period. The total direct and indirect effects of operating expenditures generated output of $5.22 billion and supported 38,968 jobs.

8. In 2015–2016, Stony Brook expenditures on capital projects that did not appear in the operating expenses totaled $322.7 million. Including the multiplier effect, capital expenditures increased economic output by $590.7 million, raised earnings by $176.8 million and supported 3,539 jobs.

9. Students and their families spent an additional $238.1 million in the Long Island economy not captured in operating expenses. These expenditures increased output by $416.7 million, raised earnings by $111.9 million and supported 2,833 jobs.

10. Stony Brook University increased student enrollments in and graduations from baccalaureate, master's, doctoral and professional degree programs, raising worker productivity. This enhanced productivity increased economic output by nearly $767 million, raised earnings by $197.1 million and supported 4,991 jobs.

PART II: INTRODUCTION

Stony Brook University is a major asset and contributor to the Long Island economy. The University is Long Island's largest single-site employer, employs more than 2,500 full- and part-time faculty and provides nearly 16,000 people with full- or part-time jobs. As Long Island's only public research university, Stony Brook produces the educated workforce that drives the area's high-tech economy.

The economic importance of Stony Brook for Long Island's economy is apparent just by considering the University's operating expenses in its financial statements. Stony Brook's total operating expenses for 2016 were $2.69 billion, an increase of approximately $689 million since the last study of Stony Brook's economic impact was conducted in 2008, and an increase of more than $1.5 billion in the 13 years since the 2003 impact study was completed. Stony Brook provides tremendous value to its students.

Stony Brook University Hospital accounts for more than 50 percent of revenues, with state appropriations contributing 21 percent. Grants and contracts collectively account for 10 percent of revenues. Given its multiple funding sources, tuition and fees account for just 11 percent of its revenues.

Looking at the many programs and activities funded with these dollars, it is clear that Stony Brook's wide-ranging mission includes a focus on undergraduate and graduate education, research, community service and economic development — all of which enrich the surrounding region.

But the raw expenses alone do not demonstrate to a sufficient degree just how integral Stony Brook is to the regional economy. Any organization that creates employment and income generates secondary effects in the area's economy in additional employment and income, which is the result of spending and re-spending income. These effects are distinct from the impact of direct expenditures and are generally categorized as indirect economic impacts. The total economic impact of the organization is then obtained by adding together these direct and indirect effects. The approach for quantifying these direct and indirect effects — known as the multiplier methodology — is described in Appendix A.

TABLE 1. FACULTY HEAD COUNT, 2016

FACULTY STATUS	NUMBER
Full Time	1,867
Tenured	712
Tenure track	295
Non-tenure track	860
Part Time	828
Tenured	30
Tenure track	10
Non-tenure track	788

Data Source: IPEDS Data Center. Prepared by the Office of Institutional Research, Planning & Effectiveness, April 11, 2017

TABLE 2. TOTAL EMPLOYMENT AND PAYROLL (FULL- AND PART-TIME EMPLOYEES)

EMPLOYMENT SETTING	NUMBER
Academic	3,834
Non-academic	5,055
Hospital	7,007
Total	**15,896**
PAYROLL	
Monthly Payroll	$91 million

Data Source: Annual Financial Report, Stony Brook University, 2016

TABLE 3. TOTAL REVENUE FOR YEARS IN WHICH ECONOMIC IMPACT REPORT WAS PREPARED

YEAR	REVENUES ($ billions)
2016	2.28
2008	1.64
2003	1.26

Data Sources: Annual Financial Report, Stony Brook University, 2003, 2008, 2016

TABLE 4. TOTAL REVENUE FOR YEARS IN WHICH ECONOMIC IMPACT REPORT WAS PREPARED (CONSTANT 2016 DOLLARS)

YEAR	REVENUES ($ billions)
2016	2.28
2008	1.83
2003	1.64

Data Sources: Annual Financial Report, Stony Brook University, 2003, 2008, 2016; Consumer Price Index

TABLE 5. TOTAL REVENUES BY SOURCE, 2016

REVENUE SOURCE	AMOUNT ($ millions)	PERCENT OF TOTAL
Hospital	1,170.2	51
State Appropriations	470.7	21
Tuition & Fees	244.6	11
Federal Grant & Contracts	141.2	6
State, Local and Private Grants & Contracts	93.5	4
Auxiliary Enterprises	89.8	4
Non-Operating Revenues	69.7	3

Data Source: Annual Financial Report, Stony Brook University, 2016

PART III: THE UNIVERSITY'S IMPACT ON THE LONG ISLAND ECONOMY

There are a number of factors that contribute to Stony Brook's large and diverse benefits to Long Island's economy that provide an indirect economic stimulus to the regional economy far beyond that which appears in the University's direct expenditures. These include the following:

- Stony Brook's economic development programs
- Operating expenditures on diverse educational, research and related activities
- Capital expenditure projects
- The economic impact of students and their families from outside the region
- The multiplier effect associated with research institutions, which nearly doubles Stony Brook's economic impact in terms of jobs and income

Beyond these financial capital impacts, as a large public research university that offers very affordable in-state tuition, Stony Brook provides opportunities for students to graduate from college and graduate school programs who might not otherwise be able to do so. Thus, Stony Brook enhances human capital as well, educating students who become more productive workers and contribute enormously to the Long Island economy.

The approach used to estimate enhanced worker productivity effects is described in Appendix B.

A. Economic Development

Stony Brook's economic development initiatives spur economic growth. These programs enable some $234 million in indirect output through joint projects with industry partners that increase these companies' sales revenues, contracts, grants and awards they receive, and private capital they raise. Additional support from Vice President of Economic Development (VPED) programs leads to a total of $234.3 million in economic development.

TABLE 6. ECONOMIC IMPACT OF ECONOMIC DEVELOPMENT ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Economic Development	$654,024*	$233,607,654	$234,261,678

* This expenditure of a portion of a Long Island Regional Economic Development Council (REDC) award, for design of an addition to the Advanced Energy Center, is this year's only direct expenditure of awarded economic development funds that can be separated from campus and Research Foundation operating expenditures elsewhere categorized. The 2015–16 total of REDC-awarded funds was $5.5 million.

B. Operating Expenditures

Stony Brook's operating expenditures alone have a strong economic impact. In addition to the direct expenditures — some $2.69 billion in 2016 — the indirect effects nearly double this amount, so that the full economic impact of operating expenditures exceeds $5.22 billion. Nearly half of this economic impact, $2.48 billion, is attributable to hospital services. Other categories of expenditures, including instruction and research, have large impacts as well.

TABLE 7. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	$410,333,037	$381,240,425	$791,573,462
Research	$112,967,711	$104,958,300	$217,926,011
Public Service	$27,185,116	$25,257,691	$52,442,807
Academic Support	$86,225,256	$71,247,929	$157,473,185
Student Services	$50,897,081	$47,288,478	$98,185,559
Institutional Support	$123,353,848	$101,927,285	$225,281,133
Operation & Maintenance	$89,408,641	$71,392,800	$160,801,441
Scholarships & Fellowships	$25,727,426	$23,903,351	$49,630,777
Auxiliary Enterprises	$85,581,054	$66,984,291	$152,565,345
Hospital Services	$1,254,465,216	$1,220,845,548	$2,475,310,764
Dental Services	$1,372,934	$1,288,773	$2,661,707
Clinical Services	$356,195,168	$334,360,404	$690,555,572
Other Expenses & Deductions	$8,473,755	$7,872,966	$16,346,721
Interest Expenses	$58,655,400	$71,154,866	$129,810,266
TOTAL	**$2,690,841,643**	**$2,529,723,107**	**$5,220,564,750**

C. Capital Expenditures

Table 8 indicates that construction spending by Stony Brook was approximately $274 million in 2016. Expenditures on land, equipment and interest payments account for an additional $48 million, making total capital expenditures of nearly $323 million in 2016. In addition to these direct expenditures, multiplier effects increase output by nearly $268 million, so that the total economic impact of capital expenditures by Stony Brook was more than $590 million in 2016.

TABLE 8. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Construction	$274,093,044	$226,318,636	$500,411,680
Equipment	$27,695,531	$21,965,326	$49,660,857
Land	$8,565,798	$4,760,014	$13,325,812
Interest Expenses	$12,319,078	$14,944,274	$27,263,352
TOTAL	**$322,673,451**	**$267,988,250**	**$590,661,701**

D. Off-Budget Family Expenses

Much of the economic impact of student education and living is contained in the University's financial statements, especially in the tuition, dormitory income and Faculty Student Association funds. But a large part of student expenses, especially for those students who live off campus, is not captured in University spending.

These student and family expenses include off-campus meals and entertainment, clothing and other retail purchases, and family visitation expenses. Table 9 estimates these additional annual costs for the average student. The analysis assumes that the average full-time student will receive overnight visitors once per year and that the average student will spend approximately $1,500 during that time period on outside meals, retail expenditures, entertainment and services.

As the table indicates, off-budget family expenses totaled more than $238 million and led to indirect effects on output of approximately an additional $178.5 million, for a total economic impact of more than $416 million.

TABLE 9. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Family Expenses	$238,097,420	$178,573,065	$416,670,485

E. Enhanced Worker Productivity

State colleges and universities offer substantially lower in-state tuition than private universities. But an additional attraction is that these schools appeal to commuters, who can enjoy further savings by avoiding on-campus housing and related costs. So, geographic proximity is an important consideration. Indeed, well-established literature finds that travel distance to public colleges and universities substantially affects student enrollments and graduations. Specifically, greater distance has been found to significantly reduce enrollment.

By virtue of its location, Stony Brook University provides educational opportunity to residents of Long Island and downstate New York. If Stony Brook were unavailable, many students would have to travel significantly farther to attend a public university. For example, Stony Brook is about 45 miles from SUNY Old Westbury, 25 miles from Farmingdale State College and more than 50 miles from The City University of New York schools. Private universities are generally much more expensive and would not be an option for many students.

Based upon a review of the available literature on students' distance from college and the effects of distance on enrollment, it is conservatively estimated that but for the availability of Stony Brook University, 5 percent of its students each year would not have graduated from college. This is a very conservative assumption, given estimates from the literature (references below). These college graduates will enjoy a significantly higher wage than high school graduates. Available evidence from the Bureau of Labor Statistics indicates that four-year college graduates earn on average about $25,000 more per year than high school graduates. And this will be true for such students in each of Stony Brook's graduating classes. Assuming that individuals work on average for 40 years, this increased earnings productivity will accrue for 5 percent of students in each of Stony Brook's prior 40 years of graduating classes.

Similar calculations were made to estimate the additional benefits from education beyond college degrees, again assuming that but for the availability of Stony Brook University, 5 percent of these students with advanced degrees (master's, doctorates and professional degrees) would not have received these degrees and the resulting higher incomes, but would have stopped after having obtained their college degrees.

The effects of enhanced human capital and worker productivity are substantial. As Table 10 demonstrates, enhanced worker productivity increased output by nearly $767 million in 2016.

TABLE 10. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	$438,274,250	$328,705,688	$766,979,938

PART IV: THE UNIVERSITY'S IMPACT ON EARNINGS

In addition to increasing economic output, Stony Brook University adds substantially to earnings of workers in the region. Tables 11–15 show the effects of economic development, operating expenditures, capital expenditures, off-budget family expenditures and enhanced worker productivity on earnings.

The tables reveal that each category leads to substantially higher earnings:

- Economic development ($159 million)
- Operating expenditures ($1.7 billion)
- Capital expenditures ($177 million)
- Off-budget family expenses ($112 million)
- Enhanced worker productivity ($197 million)

TABLE 11. ECONOMIC IMPACT OF ECONOMIC DEVELOPMENT ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Economic Development	$230,643*	$158,724,190	$158,954,833

*This figure refers only to earnings related to the design expenditures reported in Table 6, and not to the earnings supported by external awards to the Office of Economic Development.

TABLE 12. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	$144,924,274	$134,649,143	$279,573,417
Research	$39,857,082	$37,031,215	$76,888,297
Public Service	$9,592,668	$8,912,548	$18,505,216
Academic Support	$30,045,475	$24,826,561	$54,872,036
Student Services	$17,974,271	$16,699,895	$34,674,166
Institutional Support	$43,128,067	$35,636,722	$78,764,789
Operation & Maintenance	$22,624,338	$18,065,534	$40,689,872
Scholarships & Fellowships	$9,072,815	$8,429,553	$17,502,368
Auxiliary Enterprises	$24,579,825	$19,238,629	$43,818,454
Hospital Services	$410,601,336	$399,597,220	$810,198,556
Dental Services	$488,975	$459,153	$948,128
Clinical Practice	$126,860,042	$119,123,058	$245,983,100
Other Expenses & Deductions	$2,988,282	$2,776,413	$5,764,695
Interest Expenses	$16,347,499	$19,831,151	$36,178,650
TOTAL	**$899,084,949**	**$845,276,795**	**$1,744,361,744**

TABLE 13. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Construction	$84,553,433	$69,815,770	$154,369,203
Equipment	$6,894,922	$5,468,363	$12,363,285
Land	$1,605,571	$892,216	$2,497,787
Interest Expenses	$3,433,377	$4,165,030	$7,598,407
TOTAL	**$96,487,303**	**$80,341,379**	**$176,828,682**

TABLE 14. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Family Expenses	$63,946,164	$47,959,623	$111,905,787

TABLE 15. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	$112,636,054	$84,477,040	$197,113,094

PART V: THE UNIVERSITY'S IMPACT ON JOBS

Stony Brook University supports many jobs. Tables 16–20 show the effects of economic development, operating expenditures, capital expenditures, off-budget family expenditures and enhanced worker productivity on jobs.

The tables reveal that each category creates large numbers of jobs:

- Economic development (4,314)
- Operating expenditures (38,968)
- Capital expenditures (3,539)
- Off-budget family expenses (2,833)
- Enhanced worker productivity (4,991)

TABLE 16. ECONOMIC IMPACT OF ECONOMIC DEVELOPMENT ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Economic Development	6*	4,308	4,314

*This jobs number is derived from Table 11, Earnings, and Table 6, Output, and does not reflect the 892.5 private-sector jobs created/retained by VPED industry partners, making a grand total of 5,206.5 regional jobs from Economic Development activities.

TABLE 17. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	3,934	3,655	7,589
Research	1,082	1,005	2,087
Public Service	260	242	502
Academic Support	844	698	1,542
Student Services	488	453	941
Institutional Support	1,212	1,002	2,214
Operation & Maintenance	545	435	980
Scholarships & Fellowships	246	229	475
Auxiliary Enterprises	942	737	1,679
Hospital Services	7,827	7,616	15,443
Dental Services	9	9	18
Clinical Practice	2,398	2,251	4,649
Other Expenses & Deductions	81	75	156
Interest Expenses	313	380	693
TOTAL	**20,181**	**18,787**	**38,968**

TABLE 18. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Construction	1,692	1,397	3,089
Equipment	126	100	226
Land	50	28	78
Interest Expenses	66	80	146
TOTAL	**1,934**	**1,605**	**3,539**

TABLE 19. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Off-Budget Family Expenses	1,619	1,214	2,833

TABLE 20. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	2,852	2,139	4,991

PART VI: PUTTING IT ALL TOGETHER — AGGREGATE EFFECTS

Table 21 combines the results reported earlier to show aggregate effects on output, earnings and jobs. The numbers are very large. In 2016, Stony Brook University:

- Increased aggregate economic output by $7.23 billion
- Increased aggregate earnings by $2.39 billion
- Supported 54,645 jobs

These numbers are all the more impressive considering that $7.23 billion represents about 3 percent of Long Island's annual GDP.

TABLE 21. AGGREGATE ECONOMIC IMPACTS ON OUTPUT, EARNINGS AND JOBS

	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Economic Impact on Output			
Economic Development (Table 6)	$654,024	$233,607,654	$234,261,678
Operating Expenditures (Table 7)	$2,690,841,643	$2,529,723,107	$5,220,564,750
Capital Expenditures (Table 8)	$322,673,451	$267,988,250	$590,661,701
Off-Budget Family Expenses (Table 9)	$238,097,420	$178,573,065	$416,670,485
Enhanced Worker Productivity (Table 10)	$438,274,250	$328,705,688	$766,979,938
Grand Total Impact on Output	**$3,690,540,788**	**$3,538,597,764**	**$7,229,138,552**
Economic Impact on Earnings			
Economic Development (Table 11)	$230,643	$158,724,190	$158,954,833
Operating Expenditures (Table 12)	$899,084,949	$845,276,795	$1,744,361,744
Capital Expenditures (Table 13)	$96,487,303	$80,341,379	$176,828,682
Off-Budget Family Expenses (Table 14)	$63,946,164	$47,959,623	$111,905,787
Enhanced Worker Productivity (Table 15)	$112,636,054	$84,477,040	$197,113,094
Grand Total Impact on Earnings	**$1,172,385,113**	**$1,216,779,027**	**$2,389,164,140**
Economic Impact on Jobs			
Economic Development (Table 16)	6	4,308	4,314
Operating Expenditures (Table 17)	20,181	18,787	38,968
Capital Expenditures (Table 18)	1,934	1,605	3,539
Off-Budget Family Expenses (Table 19)	1,619	1,214	2,833
Enhanced Worker Productivity (Table 20)	2,852	2,139	4,991
Grand Total Impact on Jobs	**26,592**	**28,053**	**54,645**

Of course, the main mission of any institution of higher learning is to enhance human capital. And Stony Brook has done more than its share of that. Table 22 estimates the aggregate annual effect of all Stony Brook graduates on output, earnings and jobs supported. In 2016, Stony Brook graduates:

- Increased aggregate economic output by $15.3 billion
- Increased aggregate earnings by $3.9 billion
- Supported 99,815 jobs

TABLE 22. AGGREGATE ECONOMIC IMPACTS ON OUTPUT, EARNINGS AND JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Output	$8,765,485,000	$6,574,113,750	$15,339,598,750
Earnings	$2,252,721,079	$1,689,540,809	$3,942,261,888
Jobs	57,037	42,778	99,815

Note: Table 22 shows the economic impacts of increased earnings of all SBU graduates in a single year. It assumes individuals work for 40 years, so that these effects include graduates from the past 40 years.

PART VII: APPENDICES

APPENDIX A. MULTIPLIER METHODOLOGY

The economic impact of Stony Brook University is assessed using input-output (I-O) models. An input-output model quantifies the flows of economic activity within a region. The model captures what each business or sector must purchase from every other sector to produce a dollar's worth of goods or services. The economic impact of spending on a project consists of three components: direct, indirect and induced effects. Direct effects are quantified as the spending for the project itself; for example, the successful bid by a defense contractor to manufacture aircraft. In this example, indirect effects are the changes in sales, income or jobs in sectors within the region that supply goods and services to the aerospace sector. The increased need for drafting firms, tools, equipment and sheet metal resulting from the awarding of the contract is an indirect effect of project spending. Induced effects are the increased sales within the region from household spending of the income earned in the aerospace and other sectors that support the manufacturing of the aircraft. Contractor employees and workers on the project spend the income they earn on housing, utilities, groceries, etc. These represent induced effects. Because the project may require the hiring of additional employees, and the region will be adding residents who will also spend, their effects on economic activity are quantified as well.

Multipliers are used to quantify all three effects — direct, indirect and induced. These multipliers are developed from input-output tables produced by the Bureau of Economic Analysis (BEA). Since the 1970s, the BEA has produced regional I-O multipliers that quantify inter-industry purchases resulting from changes in final demand. The multipliers produced by the model are customized to account for the economic activity in any set of contiguous U.S. counties. Multipliers show the total effect on economic activity resulting from a project. For example, a project costing $1 million might generate economic output of $1.8 million once direct and induced effects are added to the cost of the project itself. There are several measures of changes in total economic activity that one may estimate — gross output, earnings and employment.

Gross output is equal to the sum of the intermediate inputs and value added. It can also be measured as the sum of the intermediate inputs and final use. Gross output is a duplicative total in that goods and services will be counted multiple times if they are used in the production of other goods and services.

Earnings consist of wages and salaries and proprietors' income. Employer contributions for health insurance are also included. Personal contributions to social insurance and employee pension plans are excluded because the model must account for only the portion of personal income that is currently available for households to spend.

Employment consists of a count of jobs that include both full-time and part-time workers.

APPENDIX B. METHOD FOR CALCULATING ENHANCED PRODUCTIVITY EFFECTS

State colleges and universities offer substantially lower in-state tuition than private universities. But an additional attraction is that these schools appeal to commuters, who can enjoy further savings by avoiding on-campus housing and related costs. So, geographic proximity is an important consideration as well. Indeed, well-established literature finds that travel distance to public colleges and universities substantially affects student enrollments and graduations. Specifically, greater distance has been found to reduce enrollment significantly (Alm and Winters, 2009; McConnell, 1965; Kariel, 1968; Ullis and Knowles, 1975; Leppel, 1993; Ordovensky, 1995; Desjardins, Dundar and Hendel, 1999; and Ali, 2003).

Stony Brook has many commuter students. If Stony Brook University were unavailable, many students would have to travel significantly farther to attend a public university. For example, Stony Brook is about 45 miles from SUNY Old Westbury, 25 miles from Farmingdale State College and more than 50 miles from The City University of New York schools. Private

universities are generally much more expensive and would not be an option for many students.

Based upon a review of the available literature on students' distance from college and the effects of distance on enrollment, it is conservatively estimated that but for the availability of Stony Brook University, 5 percent of its students each year would not have graduated from college. This is a very conservative assumption, given estimates from the literature (references below). These college graduates will enjoy a significantly higher wage than high school graduates. Available evidence from the Bureau of Labor Statistics indicates that four-year college graduates earn on average about $25,000 more per year than high school graduates. And this will be true for such students in each of Stony Brook's graduating classes. Assuming that individuals work on average for 40 years, this increased earnings productivity will accrue for 5 percent of students in each of Stony Brook's prior 40 years of graduating classes.

Thus, total increased earnings for each year (EARNSTOT) may be estimated in the following equation as:

EARNSTOT = PCTSTUDENTS*WAGEPREMIUM*∑STUDENTSi, i = 1... 40

Where:

PCTSTUDENTS = percent of students who would not have graduated college but for the availability of Stony Brook

WAGEPREMIUM = increased average annual earnings of college graduates vs. high school graduates

∑STUDENTSi = number of students graduating from Stony Brook over a 40-year time period

To calculate total economic impacts for output, earnings and jobs, the equation must be multiplied by the appropriate multipliers for each of these categories. We used the average values of RIMS multipliers across all industries for output, earnings and employment to obtain these values.

Similar calculations were made to estimate the additional benefits from education beyond college degrees, again assuming that but for the availability of Stony Brook University, 5 percent of these students with advanced degrees (master's, doctorates and professional degrees) would not have obtained these degrees and the resulting higher incomes, but would have stopped after having obtained their college degrees.

PART VIII: REFERENCES

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