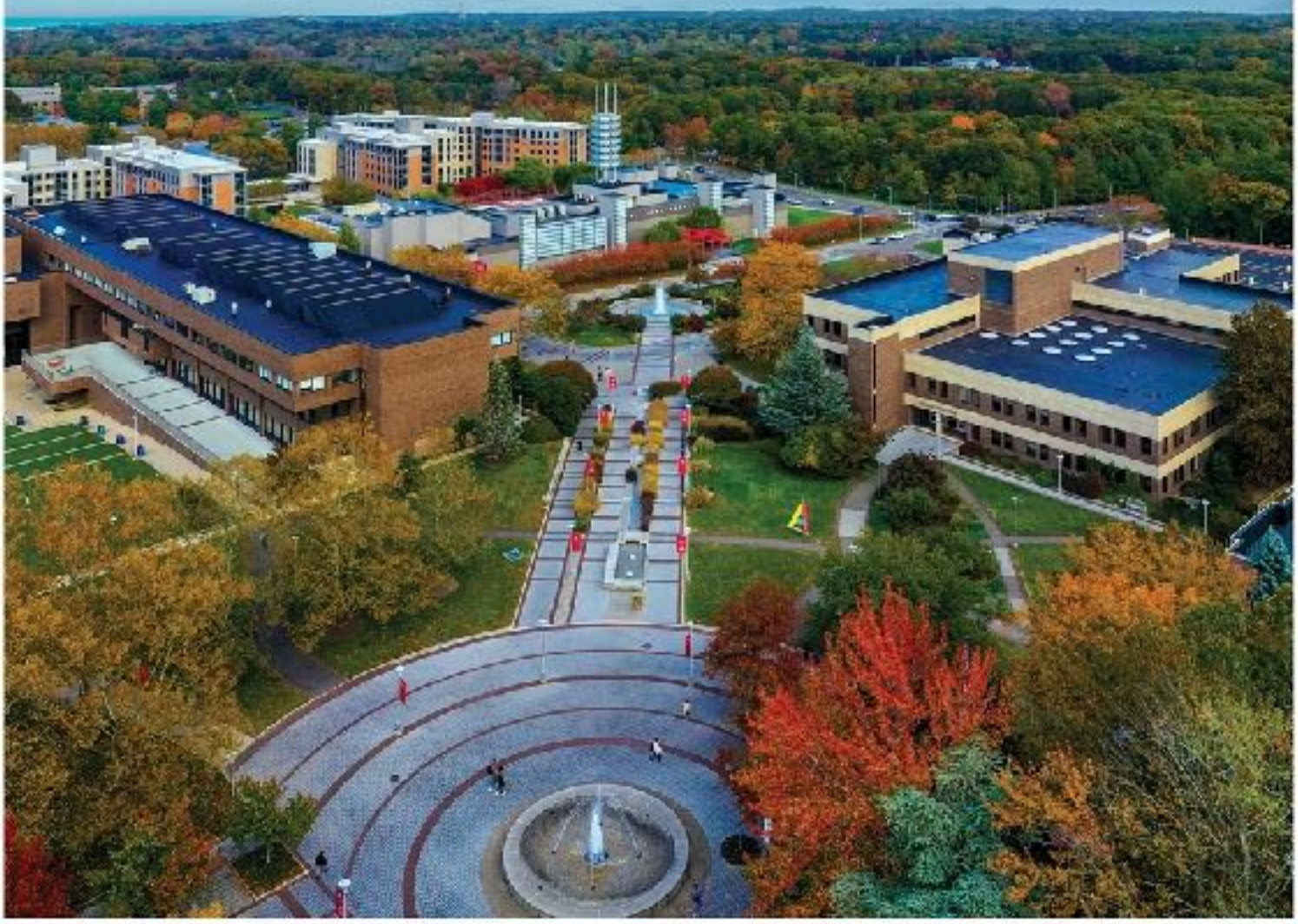
THE IMPACT OF STONY BROOK UNIVERSITY

2024

As a flagship of the State University of New York and Long Island's only public research university, Stony Brook produces the innovations and the educated workforce that drive the region's economy.



Stony Brook University

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

Supported by the Office of the President and the Stony Brook Foundation

January 2024

CONTENTS

PART I: EXECUTIVE SUMMARY

Using financial and economic data from the 2021–22 fiscal year, this study uses the Regional Input-Output Modeling System (RIMS II) developed by the Bureau of Economic Analysis of the U.S. Department of Commerce to estimate the economic impact of Stony Brook University on the economy of Long Island in terms of economic output — the total value of all goods and services produced in a specific region during a specified time — as well as increased earnings and jobs supported. Primary data sources for this study were the University's unaudited financial report for 2021–22, audited financial statements for the university's various clinical practice entities and data from the Stony Brook Office of Institutional Research, Planning & Effectiveness about degree completions and earnings.

1. In total, Stony Brook University's impact on the Long Island economy amounted to $8.93 billion in increased output, $3.42 billion in earnings and just over 55,000 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 8 percent of total jobs in Suffolk County.

3. The regional economy received $8.93 billion from the state's direct investment of $514.1 million in tax dollars, which includes direct operating support, interest payments on capital projects and support of employee fringe benefits. This yield represents more than a 1,600 percent return, or an economic gain of $16 for every dollar the state invests.

4. The total operating expenses for 2021–2022 were $2.93 billion, excluding depreciation and payments to the clinical practice corporation. Direct state appropriations, including support for employee fringe benefits and debt service, accounted for $514.1 million, or 17 percent of the total.

5. In 2021–2022, the RIMS II multiplier effect, or secondary impact, of Stony Brook University's operating expenditures generated an additional estimated $1.14 billion in increased economic output. The total direct and indirect effects of operating expenditure generated output of $4.07 billion and supported 24,416 jobs.

6. In 2021–2022, Stony Brook expenditures on capital projects that did not appear in the operating expenses totaled $122.6 million. Including the multiplier effect, capital expenditures increased economic output by $169.8 million, raised earnings by $46.6 million and supported 689 jobs.

7. Students and their families spent an additional $288.2 million in the Long Island economy not captured in operating expenses. These expenditures increased output by $374.6 million, raised earnings by $100.6 million and supported 2,547 jobs.

8. 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 $3.38 billion, raised earnings by $1.43 billion and supported 22,995 jobs.

9. In 2021–2022, expenditures across Stony Brook's clinical practice activities outside of hospital expenditures totaled $714 million. Including the multiplier effect, clinical activities increased economic output by $934.5 million, raised earnings by $435.3 million and supported 4,380 jobs.

10. Beyond the increased worker productivity attributed to Stony Brook's economic impact on Long Island, Stony Brook graduates have an enormous impact worldwide, with total estimated annual earnings of $27.73 billion among alumni from the past 40 years. These earnings translate to an estimated aggregate economic output worldwide by $36.1 billion, increased aggregate earnings by $15.2 billion and supported 245,153 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 2,800 full- and part-time faculty, and provides more than 15,000 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 of $3 billion in its financial statements.

Looking at the many programs and activities funded with these dollars, Stony Brook's wide-ranging mission includes a focus on undergraduate and graduate education, research, healthcare, 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 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, 2021-2022

FACULTY STATUS	NUMBER
Full Time	2,086
Tenured	765
Tenure Track	178
Non-tenure Track	1,143
Part Time	780
Tenured	30
Tenure Track	6
Non-tenure Track	744
Total	**2,866**

Data Source: Stony Brook University Fact Book

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

EMPLOYMENT SETTING	NUMBER
Faculty	2,866
University Staff	4,277
University Hospital	7,223
Long Island State Veterans Home	490
Faculty Student Association	202
Other Employees	307
Total	**15,365**
PAYROLL	
Monthly Payroll	$116 million

Data Source: Employee head counts, 2021–22 from Stony Brook University Fact Book; outlay of salaries and wages from IPEDS Finance Survey

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

YEAR	REVENUE ($ billions) Current dollars	REVENUE ($ billions) Constant 2022 dollars
2022	3.21	3.21
2016	2.28	2.78
2008	1.64	2.49
2003	1.26	2.61

Data Sources: Annual Financial Report, Stony Brook University, 2003, 2008, 2016, 2022; Consumer Price Index

TABLE 4. TOTAL REVENUE BY SOURCE, 2022

REVENUE SOURCE	AMOUNT	PERCENT OF TOTAL
OPERATING REVENUE		
University Hospitals & Clinics	$1,937,271,245	57.8
Net Tuition & Fees	$269,899,598	8.1
Federal Grants & Contracts	$213,892,844	6.4
Auxiliary Enterprises	$117,870,759	3.5
State, Local & Private Grants & Contracts	$75,264,891	2.2
Other Operating Revenue	$69,799,393	2.1
NONOPERATING REVENUE		
State Appropriations	$514,052,389	15.3
Federal & State Student Financial Aid	$133,593,004	4
Other Nonoperating, Incl. Capital Gifts & Grants	$20,374,288	0.6
Total Revenue, All Sources	**$3,352,018,411**	**100.0**

State appropriations include amounts for direct operating support, interest payments on capital projects and support of employee fringe benefits.

Data Source: Annual Financial Report, Stony Brook University, 2022

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:

- Operating expenditures on diverse educational, research and related activities
- Capital expenditure projects
- The economic impact of students and their families from outside the region
- Clinical practice activities that include expenditures by Stony Brook Dental Associates Inc., SB Clinical Practice Management Plan Inc., and the University Faculty Practice Corporations School of Medicine of SUNY Stony Brook
- The multiplier effect associated with research institutions increases Stony Brook's economic impact in terms of output, 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. Operating Expenditures

Stony Brook's operating expenditures alone have a strong economic impact. In addition to the direct expenditures of $2.93 billion, the indirect effects increased this amount, so that the full economic impact of operating expenditures exceeds $4.07 billion. More than half of this economic impact, $2.51 billion, is attributable to hospital services. Other categories of expenditures, including instruction and research, have large impacts as well.

TABLE 5. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	$396,543,586	$111,111,513	$507,655,099
Research	$152,442,741	$42,714,456	$195,157,197
Public Service	$30,179,096	$8,456,183	$38,635,279
Academic Support	$75,386,398	$23,799,486	$99,185,884
Student Services	$66,723,370	$18,695,888	$85,419,258
Institutional Support	$124,953,062	$39,447,682	$164,400,744
Operation & Maintenance	$107,907,239	$42,882,337	$150,789,576
Scholarships & Fellowships	$52,672,207	$14,758,752	$67,430,959
Auxiliary Enterprises	$88,919,914	$35,843,617	$124,763,531
Hospital & Clinical Services	$1,739,108,269*	$765,903,282	$2,505,011,551
Other Expenses & Deductions	$38,684,021	$10,839,263	$49,523,284
Interest Expenses	$55,893,400	$29,640,270	$85,533,670
TOTAL	**$2,929,413,303 ***	**$1,144,092,729**	**$4,073,506,032**

* Excludes $147,935,609 payment to University Faculty Practice Corporations (UFPC), which is counted in clinical activities below (see Table 9). Amounts above report expenditures on operations and maintenance, depreciation and interest as discrete categories and do not allocate these expenses to other functional areas.

B. Capital Expenditures

Table 6 indicates that construction spending by Stony Brook was approximately $58.8 million in 2022. Expenditures on land, equipment and interest payments account for an additional $63.8 million, making total capital expenditures of nearly
$123 million in 2022. In addition to these direct expenditures, multiplier effects increase output by more than $47 million, so that the total economic impact of capital expenditures by Stony Brook was more than $169.8 million in 2022.

TABLE 6. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Construction	$58,795,298	$23,212,384	$82,007,682
Equipment	$55,306,553	$21,116,042	$76,422,595
Land	$6,941,409	$2,089,364	$9,030,773
Interest Expenses	$1,559,037	$826,757	$2,385,794
TOTAL	**$122,602,297**	**$47,244,547**	**$169,846,844**

C. 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 7 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 on outside meals, retail expenditures, entertainment and services.

As the table indicates, off-budget family expenses totaled more than $288 million and led to indirect effects on output of an additional $86.4 million, for a total economic impact of more than $374 million.

TABLE 7. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Family Expenses	$288,153,893	$86,446,168	$374,600,061

D. Enhanced Worker Productivity

State colleges and universities offer lower in-state tuition than private universities. 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 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 opportunities 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 30 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 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. If 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, more than 9 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 undergraduate degrees.

The effects of enhanced human capital and worker productivity are substantial. As Table 8 demonstrates, enhanced worker productivity directly increased output by $2.60 billion in 2022 and with the added indirect effect of $780 million, the total effect of enhanced worker productivity on economic output was $3.38 billion.

TABLE 8. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	$2,601,280,302	$780,384,091	$3,381,664,393

E. Expenditures From Clinical Activities

As Table 9 indicates, clinical activities increased total economic output by nearly $935 million in 2022.

TABLE 9. ECONOMIC IMPACT OF CLINICAL ACTIVITIES ON OUTPUT

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT

Total Clinical Activities	$713,881,805	$220,645,507	$934,527,312

PART IV: THE UNIVERSITY'S IMPACT ON EARNINGS

In addition to increasing economic output, Stony Brook University adds to the earnings of workers in the region. Tables 10–14 show the effects of operating expenditures, capital expenditures, off-budget family expenditures, enhanced worker productivity and clinical activities on earnings.

The tables reveal that each category leads to higher earnings:

- Operating expenditures ($1.4 billion)
- Capital expenditures ($46.6 million)
- Off-budget family expenses ($100.6 million)
- Enhanced worker productivity ($1.4 billion)
- Clinical activities ($435.3 million)

TABLE 10. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	$155,464,166	$43,561,059	$199,025,225
Research	$59,764,890	$16,746,122	$76,511,012
Public Service	$11,831,658	$3,315,231	$15,146,889
Academic Support	$29,004,024	$9,156,570	$38,160,594
Student Services	$26,158,772	$7,329,688	$33,488,460
Institutional Support	$48,074,211	$15,177,029	$63,251,240
Operation & Maintenance	$25,791,483	$10,249,535	$36,041,018
Scholarships & Fellowships	$20,650,040	$5,786,141	$26,436,181
Auxiliary Enterprises	$25,723,465	$10,369,129	$36,092,594
Hospital Services	$579,421,035	$255,177,024	$834,598,059
Other Expenses & Deductions	$15,165,998	$4,249,513	$19,415,511
Interest Expenses	$19,591,727	$10,389,493	$29,981,220
TOTAL	**$1,016,641,469**	**$391,506,534**	**$1,408,148,003**

TABLE 11. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Construction	$20,735,164	$8,186,243	$28,921,407
Equipment	$11,094,932	$4,236,045	$15,330,977
Land	$1,185,535	$356,846	$1,542,381
Interest Expenses	$536,285	$284,392	$820,677
TOTAL	**$33,551,916**	**$13,063,526**	**$46,615,442**

TABLE 12. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Family Expenses	$77,389,903	$23,216,971	$100,606,874

TABLE 13. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	$1,098,626,994	$329,588,098	$1,428,215,092

TABLE 14. ECONOMIC IMPACT OF CLINICAL ACTIVITIES ON EARNINGS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Total Clinical Activities	$332,577,855	$102,699,867	$435,277,722

PART V: THE UNIVERSITY'S IMPACT ON JOBS

Stony Brook University supports many jobs. Tables 15–19 show the effects of operating expenditures, capital expenditures, off-budget family expenditures, enhanced worker productivity and clinical activities on jobs.

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

- Operating expenditures (24,415)
- Capital expenditures (688)
- Off-budget family expenses (2,547)
- Enhanced worker productivity (22,996)
- Clinical activities (4,380)

TABLE 15. ECONOMIC IMPACT OF OPERATING EXPENDITURES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Instruction	3,458	969	4,427
Research	1,329	372	1701
Public Service	263	74	337
Academic Support	763	241	1,004
Student Services	582	163	745
Institutional Support	1,265	399	1,664
Operation & Maintenance	462	184	646
Scholarships & Fellowships	459	129	588
Auxiliary Enterprises	682	275	957
Hospital Services	7,976	3,512	11,488
Other Expenses & Deductions	337	95	432
Interest Expenses	278	148	426
TOTAL	17,854	6,561	24,415

TABLE 16. ECONOMIC IMPACT OF CAPITAL EXPENDITURES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT

Construction	305	120	425
Equipment	143	55	198
Land	41	12	53
Interest Expenses	8	4	12
TOTAL	497	191	688

TABLE 17. ECONOMIC IMPACT OF OFF-BUDGET FAMILY EXPENSES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Off-Budget Family Expenses	1,959	588	2,547

TABLE 18. ECONOMIC IMPACT OF ENHANCED WORKER PRODUCTIVITY ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Worker Productivity	17,689	5,307	22,996

TABLE 19. ECONOMIC IMPACT OF CLINICAL ACTIVITIES ON JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Total Clinical Activities	3,346	1,034	4,380

PART VI: PUTTING IT ALL TOGETHER — AGGREGATE EFFECTS

A. Economic Impact on Long Island

Table 20 combines the results reported earlier to show aggregate effects on output, earnings and jobs. The numbers are very large. In 2022, Stony Brook University increased aggregate economic output by $8.93 billion, increased aggregate earnings by $3.42 billion and supported 55,026 jobs. These numbers are more impressive considering that $8.93 billion represent about 3 percent of Long Island's annual GDP.

TABLE 20. AGGREGATE ECONOMIC IMPACTS ON OUTPUT, EARNINGS AND JOBS

	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Economic Impact on Output			
Operating Expenditures (Table 5)	$2,929,413,303	$1,144,092,729	$4,073,506,032
Capital Expenditures (Table 6)	$122,602,297	$47,244,547	$169,846,844
Off-Budget Family Expenses (Table 7)	$288,153,893	$86,446,168	$374,600,061
Enhanced Worker Productivity (Table 8)	$2,601,280,302	$780,384,091	$3,381,664,393
Clinical Activities Expenses (Table 9)	$713,881,805	$220,645,507	$934,527,312
Grand Total Impact on Output	**$6,655,331,600**	**$2,278,813,042**	**$8,934,144,642**
Economic Impact on Earnings			
Operating Expenditures (Table 10)	$1,016,641,469	$391,506,534	$1,408,148,003
Capital Expenditures (Table 11)	$33,551,916	$13,063,526	$46,615,442
Off-Budget Family Expenses (Table 12)	$77,389,903	$23,216,971	$100,606,874

Enhanced Worker Productivity (Table 13)	$1,098,626,994	$329,588,098	$1,428,215,092
Clinical Activities (Table 14)	$332,577,855	$102,699,867	$435,277,722
Grand Total Impact on Earnings	**$2,558,788,138**	**$860,074,997**	**$3,418,863,133**

Economic Impact on Jobs			
Operating Expenditures (Table 15)	17,854	6,561	24,415
Capital Expenditures (Table 16)	497	191	688
Off-Budget Family Expenses (Table 17)	1,959	588	2,547
Enhanced Worker Productivity (Table 18)	17,689	5,307	22,996
Clinical Activities (Table 19)	3,346	1,034	4,380
Grand Total Impact on Jobs	**41,345**	**13,681**	**55,026**

B. Economic Impact of Stony Brook Graduates Worldwide

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 21 estimates the aggregate annual effect of all Stony Brook graduates on output, earnings and jobs supported. In 2022, Stony Brook graduates:

- Increased aggregate economic output by $36.1 billion
- Increased aggregate earnings by $15.2 billion
- Supported 245,153 jobs

TABLE 21. ECONOMIC IMPACT OF SBU GRADUATES ON OUTPUT, EARNINGS AND JOBS

CATEGORY	DIRECT EFFECT	INDIRECT EFFECT	TOTAL EFFECT
Output	$27,732,199,381	$8,319,659,814	$36,051,859,195
Earnings	$11,712,441,299	$3,513,732,390	$15,226,173,689
Jobs	188,579	56,574	245,153

Note: Table 21 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 interindustry 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 an economic output of $1.8 million once indirect 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, 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 number of jobs that include both full-time and part-time workers.

APPENDIX B. METHOD FOR CALCULATING ENHANCED PRODUCTIVITY EFFECTS

State colleges and universities offer 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 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; Ali, 2003; and Jepsen and Montgomery, 2009).

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 30 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 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. If 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 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, 95 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 undergraduate degrees.

PART VIII: REFERENCES

Ali, M.K. (2003). Analysis of enrollment: A spatial-interaction model. *The Journal of Economics*, 29(2), 67–86.

Alm, J. and Winters, J. (2009). Distance and intrastate college student migration. *Economics of Education Review*, 28, 728–738. Desjardins, S.L., Dundar, H. and Hendel, D.D. (1999). Modeling the college application process in a land-grant university.

Economics of Education Review, 18(1), 117–132.

Jepsen, C. and Montgomery, M. (2009). Miles to go before I learn: The effect of travel distance on the mature person's choice of a community college. Journal of Urban Economics, 65(1), 64-73.

Kariel, H.G. (1968). Student enrollment and spatial interaction. *Annals of Regional Science*, 2(1), 114–127.

Leppel, K. (1993). Logit estimation of a gravity model of the college enrollment decision. *Research in Higher Education*, 34(3), 387–398.

McConnell, H. (1965). Spatial variability of college enrollment as a function of migration potential. *The Professional Geographer*, 17(6), 29–37.

Ordovensky, J.F. (1995). Effects of institutional attributes on enrollment choice: Implications for postsecondary vocational education. *Economics of Education Review*, 14(4), 335–350.

Ullis, J.J. and Knowles, P.L. (1975). A study of the intrastate migration of Washington college freshmen: A further test of the gravity model. *Annals of Regional Science*, 9(1), 112–121.

Stony Brook
University