

State Economic Impacts
of the
University of Connecticut

Prepared by:

Rigoberto A. Lopez, Mahdi Fallahi, and Steven Lanza
Department of Agricultural and Resource Economics
Department of Economics
University of Connecticut

Fall 2019

ECONOMIC IMPACTS OF THE UNIVERSITY OF CONNECTICUT

EXECUTIVE SUMMARY

This report ascertains and documents the significance of the University of Connecticut (UConn) to the State of Connecticut's economy.¹ Because UConn purchases goods and services from other industry sectors and hires local labor, its economic impacts cascade throughout the entire state economy. This study uses FY 2018 data on University operational and capital expenditures, employment, and labor income for the main and regional campuses (Storrs, Greater Hartford, Stamford, Avery Point and Waterbury) as well as UConn Health. It estimates the total economic impacts of the University as a whole and of each campus through the use of the IMPLAN input-output model, which channels UConn spending into statewide impacts on output, employment, labor income, and value added to the state economy.

The analysis reveals that UConn's FY 2018 total impact on the state's economy was significant, as summarized by the following:

- \$5.3 billion impact on statewide economic output, generated directly from UConn and through spillover effects on other industries and households.
- 26,000 jobs supported through \$2.6 billion in labor income that accrues not just directly from UConn but also from business-to-business and household spending.
- \$2.8 billion in value added to the state economy—the best measure of UConn's contribution to gross state product—given by the difference between the value of output and the cost of raw materials (i.e., money left in the hands of residents and businesses).

¹ This study was conducted by Rigoberto A. Lopez and Mahdi Fallahi of the Department of Agricultural and Resource Economics, and Steven Lanza of the Department of Economics, at the request of the Office of Budget and Planning. The authors have no financial interest in, or benefit from, the application of this research. The views expressed herein are the authors' and do not represent the policies or views of the sponsoring organization. Errata are the sole responsibility of the authors.

- For every dollar spent by UConn, 77 cents were generated elsewhere in the state economy. Moreover, the statewide output traced to UConn amounted to approximately \$1,500 per Connecticut resident.

The economic impacts of each UConn campus and UConn Health are summarized as follows:

- The Storrs campus contributed \$2.7 billion to state output, over 13,000 jobs, \$1.2 billion in labor compensation, and \$1.4 billion in value added to the economy, making it the lead campus in terms of total impacts.
- UConn Health contributed \$2.2 billion to state output, over 10,000 jobs, \$1.2 billion in labor income, and \$1.2 billion in value added—a close second to Storrs in terms of impacts.
- Regional campuses (Greater Hartford, Stamford, Avery Point and Waterbury) contributed \$383 million in statewide output, over 2,100 jobs, \$187 million in labor income, and \$224 million in value added.
- Greater Hartford (including the downtown campus, School of Law and School of Social Work) accounted for 62% of the combined regional campuses' output impact, followed by Stamford (19%), Avery Point (13%), and Waterbury (6%).

UConn is an important engine of Connecticut's economy, as the impacts of its teaching, research, clinical, and public service activities are felt throughout the state. Beyond the spending that creates measurable economic impacts, the teaching mission contributes to the economy by producing an educated workforce prepared for modern job requirements, and the research mission generates innovation and discovery that lead to business start-ups and new solutions to societal problems. The clinical mission helps sustain the health of the workforce, and the University's public service activities directly assist state and local organizations improve their service offerings. Thus, the impacts in this report are conservative estimates of UConn's overall economic impact in the state.

ECONOMIC IMPACTS OF THE UNIVERSITY OF CONNECTICUT

1. INTRODUCTION

Since its founding in 1881 as an agricultural school, UConn has contributed to the economic transformation of the state from an agricultural to a post-industrial economy. While fulfilling its mission of teaching, research, service and outreach, UConn has been a key economic driver of the state for nearly 140 years. UConn is leading the way into a knowledge-based economy with investments in research, education of the labor force, and performing arts—all of which increase the quality of life for state residents. Moreover, UConn regularly engages in strategic collaborative initiatives with leading businesses in the state, such as United Technologies and the Jackson Laboratory, which recognize the University's critical role in generating innovation and economic activity.

The spending of any large business or non-profit organization creates economic impacts that cascade throughout an economy just as a rock thrown into a pond creates concentric waves that ripple throughout the pond. As a large non-profit organization, UConn is the rock and its indirect and induced impacts are the ripples in the pond. These indirect and induced impacts derive from the University's direct spending on employees and vendors, who then pay mortgages/rent, buy groceries, shop in retail stores, and hire employees. Without such direct spending, these dollars would not circulate throughout the state economy.

The purpose of this study is to ascertain and document the significance of UConn to the State of Connecticut's economy as measured by the chain of spending linked to UConn's programs and activities. The University draws its revenues from state funding, student tuition and fees, external research grants, donations, hospital and health services, and proprietor's income from various commercial activities. Expenditures include the hiring of local labor as well as the purchasing of goods and services from vendors in other sectors of the state economy. The economic impacts of these expenditures cascade throughout the entire economy. In addition, student spending beyond that which accrues to the University generates economic impacts.² Finally, FY 2018 marked a robust period of capital spending for UConn, generating additional

² This is off-campus spending by enrolled students for rent, clothes, food, and other living expenses.

impacts on the Connecticut economy. This capital spending accrues to contractors that hire local labor at prevailing wages to build buildings, laboratories, and other University facilities.

Specifically, this study measures the economic contribution of UConn in terms of statewide output (sales or revenues), jobs, salaries and benefits, and the value added to the economy. While the study includes the operational and capital spending of the University as well as students' non-university spending, it excludes the impact of visitors' spending and the imputed value of volunteer work, making the estimate of overall economic impact a conservative one. In addition, we provide separate estimates of the impact of University research spending and of University contributions to state and local taxes, both of which are included in the aggregate estimates presented.

2. DATA AND METHODOLOGY

Before discussing the details of the specific economic model used in this study, it is instructive to highlight the economic activities attributable to a flagship public university such as UConn, and how those activities affect the local and state economies. Following previous economic impact studies of public universities with a similar mission,³ these activities can be categorized as:

1. Academics: This mission provides instruction, which requires spending on faculty and staff salaries as well as facilities and equipment to deliver this portion of its mission.
2. Research: This mission conducts basic and applied research, not just in STEM fields, but also across disciplines, including the social sciences and humanities.
3. Community Engagement: UConn provides direct funding through community engagement and other activities, such as extension programs, performing arts events, education services to communities, and state policy advice and engagement.
4. Health Services: UConn Health has a dual role as a hospital/health center as well as an academic institution. Delivery of those services and the way they are funded, mostly through clinical fees, have a substantial impact on the state economy.

³ See Swenson (2019) on Penn State University, Economic & Planning System (2016) on the University of California-Davis, UMass Donahue Institute (2016) for the University of Massachusetts, and Umbach (2014) on UConn.

5. Administration: Expenditures on staff are required to support teaching, research, service and outreach programs, as well as administrative functions such as compliance, finance, planning, facility management, and human resources.
6. Student Spending: Although not part of the UConn budget, students spend money in their campus communities, which constitute an economic contribution attributable to the presence of UConn. This is non-university spending by enrolled students on off-campus housing, local restaurants, entertainment, and other outlays, excluding any payments to UConn for things such as tuition, dining halls, or on-campus housing.
7. Capital Spending: Expenditures on construction have been significant at UConn since the beginning of the UCONN 2000 program. This capital spending includes new and renovated buildings, infrastructure improvements, and maintenance.
8. Visitor Spending: Local expenditures stemming from visiting lecturers and researchers, sports and cultural activities, and visits by families of potential students.

This study does not consider visitor spending (Activity 8), however, because of the lack of reliable data to properly include it. For similar reasons, volunteer work by faculty and students is not considered. Following Swenson (2019), we re-categorize Activities 1-7 into three components of UConn economic contributions and proceed with the following data to estimate statewide impacts:

- 1) University Operations: This includes Activities 1-5. The source of data for operational spending was the UConn Office of Budget and Planning. Table 1 frames all University operations spending in FY2018 in terms useful for economic impact analysis: by campus, employment (number of UConn jobs), labor income (salaries and fringe benefits), and value added to the economy.
- 2) Student Non-University Spending: This is Activity 6. These data are not readily available. Therefore, the standard procedure for their estimation in economic impacts was followed, as explained below, described in detail in Appendix A, and summarized in Table 2.
- 3) Capital Spending: This is Activity 7. These data include FY 2018 construction and renovation spending and were provided by UConn's Office of Budget and Planning for

each campus. Capital spending was reduced by 10% to reflect the fact that approximately 10% of capital contracts went to out-of-state vendors, and do not accrue directly to the businesses within the state.

Thus, we estimate the total economic impact of UConn as the sum of the economic impacts of operations, student spending and capital spending.⁴ For UConn operations, we use the full information on direct spending, employment, and labor income in the analyses for each of the University’s campuses (Storrs, UConn Health, Greater Hartford, Stamford, Avery Point and Waterbury).⁵ This information is shown in Table 1.

Table 1: Financial Data of UConn Operations

Campus	Employment	Labor Income	Value Added	Output
<i>Main Campus</i>				
Storrs	6,359	\$733,479,040	\$736,397,668	\$1,184,203,583
<i>UConn Health</i>				
Farmington	5,474	\$719,862,346	\$720,530,746	\$1,149,029,726
<i>Regional Campuses</i>				
Greater Hartford	414	\$52,266,387	\$52,572,762	\$67,353,675
Stamford	108	\$17,752,427	\$17,977,803	\$22,679,958
Avery Point	143	\$18,109,951	\$18,404,252	\$24,886,684
Waterbury	59	\$8,308,680	\$8,368,013	\$9,972,182
<i>All Campuses</i>				
Total	12,557	\$1,549,778,831	\$1,554,251,244	\$2,458,125,808

For student non-university spending, we combined data on the number of graduate and undergraduate students from the University’s *2018 Fact Sheet* developed by the Office of Institutional Research and Effectiveness with estimated spending information supplied by the Office of Student Financial Aid Services. Given the number of undergraduate, graduate/professional, and on- and off-campus student non-university spending, we further

⁴ For student and capital spending, it is important to clarify that no direct figures for employment and payroll were provided, and generally these data are not available or observable in economic impact studies. However, as is standard in such studies, employment and payroll impacts consistent with the economic model and spending data can be recovered, and are reported here. See Umbach (2015), Swenson (2019), Economic & Planning System (2016), and UMass Donahue Institute (2016).

⁵ The Greater Hartford campuses include the new downtown campus, affiliated University buildings (such as that of the Business School), the Law School, and the School of Social Work.

adjusted spending using five categories: housing, food, transportation, books and supplies, and miscellaneous (see Appendix A for detail). Downward adjustments were made to account for the portion of student spending that does not accrue to the state or university, and retail margins for imported goods. Table 2 shows the student and capital spending data used. We estimate that UConn students contributed \$211 million directly to their campus communities,⁶ and that \$317 million in capital spending remained in the state.⁷

Table 2: Financial Data of UConn Student Non-University and Capital Spending

Campus	Student Spending Non-University	Capital Spending	
		Total	Adjusted
<i>Main Campus</i>			
Storrs	\$144,445,829	\$212,961,492	\$191,665,343
<i>UConn Health Center</i>			
UConn Health	\$10,983,747	\$92,642,858	\$83,378,572
<i>Regional Campuses</i>			
Greater Hartford	\$36,333,220	\$39,286,663	\$35,357,996
Stamford	\$14,266,727	\$5,606,263	\$5,045,636
Avery Point	\$1,836,265	\$804,681	\$724,212
Waterbury	\$3,272,638	\$829,465	\$746,518
<i>All Campuses</i>			
Total	\$211,138,426	\$352,131,422	\$316,918,277

Note: Capital spending on the Greater Hartford Campus includes the construction costs of the new campus in downtown Hartford.

Measuring the economic impacts requires an appropriate input-output model that captures the interlinkages among sectors of an economy. To this end, we use the most widely accepted input-output model, IMPLAN (IMPact analysis for PLANning), which allows one to examine the impacts of changes in sectoral activity via built-in multipliers based on input-output tables of the economy.⁸ The input-output tables show how much businesses in one sector purchase goods and

⁶ This equates to about \$7,000 per student at UConn, which is reasonably comparable to the \$6,000 per student at Penn State estimated by Swenson (2019). The difference is explained in part due to the lower cost of living in Penn State communities.

⁷ For capital spending, we consider only the adjusted capital since it involves state contractors.

⁸ See IMPLAN (2017). Although IMPLAN is the most widely used input-output model, particularly for university impact studies, two other popular models are RIMS II and REMI. RIMS II is essentially a set of industry multipliers that can offer serviceable estimates of industry impacts, but it is limited because users cannot modify industry production functions or trade flows. REMI is a dynamic general-equilibrium model of the economy that is

services in another sector. The multipliers identify the change in output, jobs, and value added in all sectors of the economy associated with change in direct spending in a specific sector or industry of the economy.

University activities have both direct and secondary economic impacts. The *direct* impacts refer to the initial injections of spending into the state economy. These are the total operational spending of the University and associated capital and student non-university spending. This spending produces two spillover impacts: 1) *indirect impacts*, which are business-to-business spending in other sectors of the economy as a result of UConn direct spending, and 2) *induced impacts*, which are spending by UConn employees and employees in the affected businesses. For example, UConn has a direct impact on the economy when it purchases catering services from a local vendor. This direct spending produces indirect impacts when the caterers increase their demand for food, equipment and supplies from other businesses. These direct and indirect impacts then produce induced impacts when the employees of UConn and the affected businesses spend their UConn-related income on food, clothing, housing, and other items. The total economic impact is the sum of the direct, indirect, and induced impacts.

Economic impact multipliers are often used to estimate these economic impacts. Because these multipliers measure the magnitude of the total impact relative to the direct impact, it can be used to indicate the total economic impact on the Connecticut economy for every dollar UConn spends.⁹ The University's direct impacts, or initial injections of spending into the economy, are what become "inputs" into IMPLAN, which then produce the following four "outputs," or total economic impacts:¹⁰

- *Total impact on economic output* – statewide sales generated directly from UConn plus the indirect business and induced household impacts.
- *Total impact on employment* – full-time and part-time jobs supported in the state.

particularly useful for forecasting the impacts of policy changes far into the future, but it is inordinately complex and expensive for simple impact study work.

⁹ The estimated impacts are limited to the state's economy; leakages of spending into surrounding states are excluded. The study region was modeled both as a set of interlinked counties and as the state as a whole with little difference in results.

¹⁰ We conducted separate analyses for each UConn campus to estimate their respective economic impacts, which are then aggregated to arrive at the total impact estimates.

- *Total impact on labor income* – associated employees’ salaries and benefits, along with normal proprietor payments for the management of their businesses.¹¹ Labor income includes the value of employer-provided health insurance, retirement benefits, and contributions to Social Security.
- *Total impact on value added* – the difference between the value of output and the cost of raw materials, which measures the contribution to gross state product.¹²

Thus, the total economic impacts are the sum of the direct impacts of UConn, the indirect impacts from affected businesses in other Connecticut economic sectors, and the induced impacts from affected employee spending. These impacts are summarized in the next section. Detailed impact results are presented in Appendices B and C.

3. RESULTS

Using FY 2018 data on UConn operations, student non-university spending and capital spending in Tables 1 and 2 as well as Appendix A, we estimated UConn’s direct, indirect, induced and total impacts for output, employment, labor income and value added. Tables 3 through 6 present these results along with the associated multipliers.

3.1 Impacts on Statewide Output

As indicated in Table 3, the FY 2018 *direct* impacts of UConn on the state economy amounted to nearly \$3.0 billion in output due to the University’s own activity. In addition, UConn’s activity affects other sectors and employees in Connecticut’s economy with \$913.6 million of indirect impacts on other business sectors and \$1.4 billion of induced impacts on

¹¹ Proprietor income includes payments received by self-employed individuals and unincorporated business owners.

¹² The concept of value added is a useful measure of economic contribution and is analogous to the contribution to GDP by an industry. It measures the difference between gross output (sales) and intermediate inputs (goods and services purchased from other industries). In IMPLAN, it is measured as employee compensation, proprietor income, other property income (such as rental of retail space), and taxes on production and imports (Clouse, 2019). To illustrate, consider this simple example: a miller buys wheat from a farmer for \$1 and sells flour to a baker for \$2, who sells a loaf of bread for \$3. Although the value of output of the baker is \$3, the value added is \$1 (\$3 paid for the loaf of bread minus the \$2 paid for the flour—the intermediate good).

employees' earnings in the sectors affected. The total economic impact of UConn on statewide economic output was \$5.3 billion.

- **\$5.3 billion in total impact on statewide output equates to nearly \$1,500 per Connecticut resident.**¹³
- **For every dollar spent by UConn, 77 cents in output** were generated elsewhere in the Connecticut economy.¹⁴
- Of the additional 77 cents in additional output, **31 cents is due to affected businesses (indirect impact) and 46 cents is due to affected households (induced impact).**

Table 3: Impacts on Output

Campus	Direct	Indirect	Induced	Total Impact
<i>Main Campus</i>				
Storrs	\$1,520,314,755	\$431,671,328	\$727,294,225	\$2,679,280,308
<i>UConn Health Center</i>				
UConn Health	\$1,243,392,045	\$417,953,279	\$574,095,921	\$2,235,441,245
<i>Regional Campuses</i>				
Greater Hartford	\$139,044,891	\$40,102,958	\$58,107,548	\$237,255,397
Stamford	\$41,992,321	\$12,080,597	\$17,603,025	\$71,675,943
Avery Point	\$27,447,161	\$7,780,876	\$13,960,149	\$49,188,186
Waterbury	\$13,991,338	\$4,052,363	\$6,707,539	\$24,751,240
<i>All Campuses</i>				
Total	\$2,986,182,511	\$913,641,401	\$1,397,768,407	\$5,297,592,319
Multiplier	1	0.31	0.46	1.77

3.2 Impacts on Statewide Employment and Labor Income

As indicated in Table 4, FY 2018 *direct* impacts of UConn on employment due to its own activity consisted of providing over 16,000 jobs. However, including the indirect and induced

¹³ The population count for FY 2018 is estimated at 3,580,424, computed as the average of the July 1, 2017, and the July 1, 2018, populations (Connecticut Department of Public Health, 2019).

¹⁴ This refers to the total output multiplier in Table 3 and is in line with recent studies of public universities—and a bit on the conservative side. For example, Swenson (2019) estimates an output multiplier of 1.79 for Penn State, the UMass Donahue Institute (2016) estimates it at 2.09 for the UMass system, and EPS (2016) estimates it at 1.8 for the University of California-Davis. Umbach (2014) estimated it at 2.1 for the University of Connecticut for FY 2013.

impacts on other sectors and employees, the total impact of UConn on statewide employment was much larger—close to 26,000 jobs. UConn’s spending supported nearly 10,000 non-UConn jobs.

- UConn helps generate **nearly 10,000 additional jobs** in the state’s economy beyond its own employees.
- For every **100 jobs at UConn**, **61 additional jobs** are supported elsewhere in the state’s economy.
- Of the additional 61 jobs, **22 jobs are due to affected businesses**, and **39 jobs are due to affected households**.

Table 4: Impacts on Employment

Campus	Direct	Indirect	Induced	Total Impact
<i>Main Campus</i>				
Storrs	8,652	1,549	3,046	13,247
<i>UConn Health Center</i>				
UConn Health	5,989	1,796	2,730	10,515
<i>Regional Campuses</i>				
Greater Hartford	901	169	293	1,363
Stamford	248	44	74	366
Avery Point	174	28	59	261
Waterbury	106	16	31	153
<i>All Campuses</i>				
Total	16,070	3,602	6,233	25,905
Multiplier	1	0.22	0.39	1.61

As indicated in Table 5, FY 2018 *direct* impacts of UConn on labor income (including salaries and benefits) due to its own activity exceeded \$1.7 billion. However, including the indirect and induced impacts on other sectors and employees, the total impact of UConn on statewide labor income was \$2.6 billion. Using the induced impacts from Tables 4 and 5, we estimate that UConn generated an average of \$88,540 of labor income per affected non-UConn employee in FY 2018.¹⁵

¹⁵ \$551,868,735 in induced labor income divided by 6,233 induced jobs = \$88,540.

- For every dollar spent by UConn on labor income, **53 cents in labor income are supported** elsewhere in the state’s economy.

Table 5: Impacts on Labor Income

Campus	Direct	Indirect	Induced	Total Impact
<i>Main Campus</i>				
Storrs	\$846,591,907	\$131,718,719	\$258,320,787	\$1,236,631,413
<i>UConn Health Center</i>				
UConn Health	\$755,911,874	\$207,415,473	\$254,537,620	\$1,217,864,967
<i>Regional Campuses</i>				
Greater Hartford	\$74,539,775	\$13,350,045	\$23,141,005	\$111,030,825
Stamford	\$22,800,737	\$3,806,636	\$7,016,893	\$33,624,266
Avery Point	\$19,268,851	\$2,764,813	\$5,827,846	\$27,861,510
Waterbury	\$9,917,047	\$1,533,620	\$3,024,584	\$14,475,251
<i>All Campuses</i>				
Total	\$1,729,030,191	\$360,589,306	\$551,868,735	\$2,641,488,232
Multiplier	1	0.21	0.32	1.53

3.3 Impacts on Statewide Value Added

As indicated in Table 6, FY 2018 *total* impacts of UConn on **value added to the Connecticut economy amounted to \$2.8 billion**. This is UConn’s contribution to gross state product, which is the difference between the value of output and the cost of intermediate materials. In other words, **this is the money left in the hands of residents and state business owners** (plus business taxes) because of UConn.

- For every dollar that UConn contributes to the state gross domestic product, **62 additional cents are contributed to the state gross domestic product elsewhere in the economy**.

Table 6: Impacts on Value Added

Campus	Direct	Indirect	Induced	Total Impact
<i>Main Campus</i>				
Storrs	\$859,200,355	\$186,315,943	\$326,921,253	\$1,372,437,551
<i>UConn Health Center</i>				
UConn Health	\$758,640,775	\$218,115,159	\$268,779,982	\$1,245,535,916
<i>Regional Campuses</i>				
Greater Hartford	\$76,823,157	\$20,865,221	\$32,592,906	\$130,281,284
Stamford	\$23,633,867	\$6,976,445	\$11,033,912	\$41,644,224
Avery Point	\$19,733,043	\$6,034,547	\$9,864,641	\$35,632,231
Waterbury	\$10,221,233	\$2,333,644	\$4,061,186	\$16,616,063
<i>All Campuses</i>				
Total	\$1,748,252,430	\$440,640,959	\$653,253,880	\$2,842,147,269
Multiplier	1	0.25	0.37	1.62

3.4 Total Economic Impacts by Campus

As indicated in Tables 3 through 6, the economic impacts of UConn’s regional campuses and UConn Health are summarized as follows:¹⁶

- The Storrs campus contributed \$2.7 billion to state output, over 13,000 jobs, \$1.2 billion in labor income and \$1.4 billion in value added, making it the lead campus in terms of total economic impacts.
- UConn Health contributed \$2.2 billion to state output, over 10,000 jobs, \$1.2 billion in labor income and \$1.2 billion in value added—a close second to Storrs in terms of total economic impacts.
- The regional campuses (Greater Hartford, Stamford, Avery Point and Waterbury) combined contributed \$382.9 million in statewide output, over 2,100 jobs, \$187.0 million in labor income and \$224.2 million in value added to the state economy.

¹⁶ Detailed results of the separate campus impacts of operations, student spending, and capital spending are found in Appendices B and C.

- Greater Hartford is ranked first among regional campuses, accounting for 62% of the combined regional campuses' output impact, followed by Stamford (19%), Avery Point (13%), and Waterbury (6%).¹⁷

3.5 State and Local Taxes

Like many universities, UConn is a non-profit organization and thus not subject to federal, state or local taxes. However, the University does generate tax payments through the industries it affects. It is important to note that these are not additional impacts as state and local taxes are already included in the output and labor impacts reported above, which are measured on a pre-tax basis.

Table 7 shows that UConn's economic activity generates \$276.8 million in state and local taxes; \$144.1 million by Storrs, \$111.6 million by UConn Health, \$13.5 million by Greater Hartford, \$3.9 million by Stamford, \$2.3 million by Avery Point and \$1.2 million by Waterbury. These tax impacts are significant, not only at the state level, but also, and perhaps even more importantly, at the local level.

Table 7: Impacts on State and Local Taxes Generated

Campus	State/Local Tax Impact
<i>Main Campus</i>	
Storrs	\$144,148,818
<i>UConn Health Center</i>	
UConn Health	\$111,623,335
<i>Regional Campuses</i>	
Greater Hartford	\$13,505,024
Stamford	\$3,942,611
Avery Point	\$2,289,216
Waterbury	\$1,243,297
<i>All Campuses</i>	
Total UConn	\$276,752,301

¹⁷ Although some of the total output impact of Greater Hartford is due to significantly higher capital spending (over \$35M, as indicated in Appendix C), most of the differentials relative to other regional campuses are due to operating spending. For instance, operating spending was nearly three times larger for Greater Hartford than for Stamford during FY 2018.

3.6 Economic Impacts of Research Spending

The impact of research and development (R&D) expenditures is already accounted for in University operations spending contained in Tables 3 through 6. However, R&D is a unique and complex function of major research universities that is often not well understood. The U.S. Department of Education classifies universities based on the amount of research performed as “Research 1” (highest research activity), “Research 2” (high research activity) or “Research 3” (moderate research activity). UConn is classified as a “Research 1” university.

This section presents the estimated impact of UConn research on output and jobs generated in Connecticut. The expenditures considered here include direct expenditures from external grants and contracts for FY 2018 (81% of the total) as well as internal research expenditures primarily funded from recovered facilities and administration (F&A) costs charged on grants and contracts. The latter provides funding for internal research competitions, startups for new faculty and other research investments. The Office of the Vice President for Research (OVPR) provided the National Science Foundation’s FY 2018 Higher Education Research and Development (HERD) survey results for UConn.¹⁸

As shown in Table 8, UConn spent nearly \$270 million on research in FY 2018, which translated into \$485 million in statewide economic impact. Approximately 63.5% of the total impact of research spending (\$307.9 million) came from the Storrs and regional campuses and the remaining 36.5% came from UConn Health.

- **For every research dollar that UConn attracts in externally sponsored research and spends within the state, 80 cents are generated elsewhere in the state economy.**

¹⁸ The R&D expenditures used here were reported to the HERD survey, which ranks institutions based on R&D expenditures. Externally funded sponsored program expenditures totaled \$219M in FY 2018 (OVPR, 2019). The HERD survey included only externally funded R&D expenditures, a portion of the \$219M, plus internally funded R&D costs. For more details on the NSF survey for FY17, see NSF (2018).

Table 8: Research Spending Impacts on Output

Campus	Direct	Indirect	Induced	Total Impact
<i>Main and Regional Campuses</i>				
Storrs & Regional	\$171,155,000	\$47,923,400	\$88,829,445	\$307,907,845
<i>UConn Health Center</i>				
UConn Health	\$98,530,000	\$27,588,400	\$51,137,070	\$177,255,470
<i>All Campuses</i>				
Total UConn	\$269,685,000	\$75,511,800	\$139,966,515	\$485,163,315
Multiplier	1	0.28	0.52	1.80

As shown in Table 9, UConn’s R&D expenditures supports a total of 2,149 jobs in the state, including direct jobs at UConn, indirect jobs created by supplying businesses, and induced jobs created by spending of employees. Two-thirds of these jobs stem from R&D expenditures at Storrs and regional campuses with the remaining one-third from R&D at UConn. Health.¹⁹

Table 9: Research Spending Impacts on Employment

Campus	Total Impact
<i>Main and Regional Campuses</i>	
Storrs & Regional	1,426
<i>UConn Health Center</i>	
UConn Health	723
<i>All Campuses</i>	
Total UConn	2,149

4. CONCLUSION

UConn is an important engine of Connecticut’s economy. The University’s FY 2018 total economic impacts on the state were significant: \$5.3 billion in output, 26,000 jobs and \$2.8 billion

¹⁹ The total number of jobs from research spending are 3.26% higher than those estimated by Umbach (2014) for FY 2013.

in value added to the state economy. The impacts of UConn as an institution are felt throughout the state in terms of business and household income. **For every dollar spent by UConn, 77 cents are generated elsewhere in the state's economy—31 cents from businesses and 46 cents from households.** Overall, UConn's impact on statewide output amounted to nearly \$1,500 per state resident, attesting to UConn's importance to the economy and its key role as an economic driver and job creator. In addition, UConn is leading the way into a knowledge-based economy with investments in the education of a modern labor force, cutting-edge research, and high quality performing arts—all of which enhance the quality of life of Connecticut residents.

REFERENCES

- Clouse, C. 2019. *Value Added*. Minnesota IMPLAN Group, Inc.
<https://implanhelp.zendesk.com/hc/en-us/articles/115009498847-Value-Added>
- Connecticut Department of Public Health, Health Statistics and Surveillance. 2019. *Estimated Populations in Connecticut as of July 1, 2017. Estimated Populations in Connecticut as of July 1, 2018.* <http://www.ct.gov/dph/PopulationData>
- Economic & Planning System, Inc. 2016. *UC Davis Economic Impact Analysis*.
<https://www.ucdavis.edu/sites/default/files/upload/files/uc-davis-economic-impact-report.pdf>
- IMPLAN. 2017. *Economic Impact Analysis for Planning*, Minnesota IMPLAN Group, Inc.
<https://www.implan.com/>
- National Science Foundation. 2018. *Higher Education Research and Development Survey (HERD)*. <https://www.nsf.gov/statistics/srvyherd/>
- Swenson, D. *The Economic Contribution of Pennsylvania State University*, February 2019
https://www.psu.edu/ur/newsdocuments/Penn-State_Economic-Contribution-Study_February-2019.pdf
- UMass Donahue Institute. *University of Massachusetts Economic Contribution Analysis FY 2015*.
http://www.donahue.umassp.edu/documents/FY_2015_UMass_Economic_Contributions_-_FINAL.pdf
- Umbach, Tripp. *The Economic and Social Contribution of the University of Connecticut*, September 2014.
<https://economicimpact.uconn.edu/>
- University of Connecticut, *2018 Fact Sheet*
<https://uconn.edu/content/uploads/2018/07/INS-004-Fact-Sheet-070918-FY19.pdf>
- University of Connecticut, Office of the Vice President for Research. (OVPR). 2019. *Proposals, Awards & Expenditures FY2015-2019 Q3*, Volume 19.3.
<http://content.research.uconn.edu/pdf/storrs/sps/reports/quarterly/OVPR-FY19Q3-Quarterly-Report.pdf>
- University of Connecticut, Office of Student Financial Aid Services, *2017-2018 Estimated Direct Costs and Cost of Attendance*.
<https://financialaid.uconn.edu/cost/>
- US Department of Labor. (2018). *Occupational Employment Statistics*.
<https://www.bls.gov/oes/home.htm>

APPENDIX A

DETAILS ABOUT STUDENT NON-UNIVERSITY SPENDING

This section presents estimates of non-university spending by both residential and non-residential students. The reason to estimate only non-university spending is because what students spend on University services (fees, housing, dining halls, etc.) has already been included in University operations. The University Office of Student Financial Aid Service provides estimates of the cost of attending college by considering major items such as housing, food, transportation, books and supplies. The cost of attendance was calibrated to estimate expected student spending in these five broad categories for both fall and spring semesters.

Table A.1 shows that for an academic year, undergraduate on-campus students are expected to spend \$3,800, undergraduate off-campus students to spend \$18,852, undergraduate regional campus students to spend \$5,400 and graduate students to spend \$20,152. Multiplying these figures by the number of students in each group results in a total of \$322.3 million in student non-university spending for FY 2018. This spending is broken out into five broad categories presented in Table A.2.

Table A.1: Estimated Total Non-University Spending by UConn Students FY 2018

Group of Student	Number of Students	Annual Spending ¹	Estimated Spending
Undergraduate-On campus	12,547	\$3,800	\$47,678,600
Undergraduate-Off campus	6,952	\$18,852	\$131,059,104
Undergraduate Regional campus	4,346	\$5,400	\$23,468,400
Graduate	5,957	\$20,152	\$120,045,464
Total	29,802		\$322,251,568

¹Source: UConn Office of Student Financial Aid Services and UConn *2018 Fact Sheet*.

Note: The total Cost of Attendance (COA) includes estimated direct educational costs and an estimate of indirect costs based on full-time attendance for both the fall and spring semesters. The COA is the Office of Student Financial Aid Services' estimate of students' educational expenses for the aid year. Indirect costs, such as books and supplies, transportation, and miscellaneous expenses, do not appear on the fee bill and are not payable to UConn.

Table A.2: Estimated Itemized Non-University Spending by UConn Students FY 2018

Item	Est. Spending	Adj. Spending
Housing	\$127,823,208	\$127,823,208
Food	\$82,312,092	\$52,204,550
Transportation	\$33,226,722	\$7,446,344
Books and Supplies	\$27,182,488	\$13,008,686
Miscellaneous	\$51,707,058	\$10,655,638
Total	\$322,251,568	\$211,138,426

Note: Adjusted values reflect the portion of spending that contributes to Connecticut output.

It is important to note that a considerable fraction of student spending is for retail food and that most non-food retail goods are likely manufactured outside the state of Connecticut. Thus, the value of the retail goods sold should not be considered an output of the economy of Connecticut. Accordingly, retail and wholesale goods are “margined” before running IMPLAN models. By applying margins to the appropriate categories, the direct output decreases from \$322.3 million to \$211.1 million.

Table A.3: Total Economic Impact from Non-University Spending by UConn Students FY 2018²⁰

Impact	Direct	Indirect	Induced	Total Impact
Employment	1,874	282	348	2,504
Labor Income	\$50,109,439	\$13,021,025	\$16,529,712	\$79,660,176
Value Added	\$58,218,954	\$15,705,339	\$21,780,460	\$95,704,753
Output	\$211,138,426	\$63,236,773	\$62,425,791	\$336,800,990

²⁰ To calculate economic impact from student spending, we used occupational employment statistics (USDLE 2018) and IMPLAN data.

APPENDIX B

DETAILS ABOUT TOTAL ECONOMIC IMPACTS OF UNIVERSITY OPERATIONS, STUDENT SPENDING, AND CAPITAL SPENDING

Table B.1: Direct Economic Impacts of UConn on University Operations, Student Spending, and Capital Spending

Campus	Employment	Labor Income	Value Added	Output
Storrs	8,652	\$846,591,907	\$859,200,355	\$1,520,314,755
UConn Health	5,989	\$755,911,874	\$758,640,775	\$1,243,392,045
Greater Hartford	901	\$74,539,775	\$76,823,157	\$139,044,891
Stamford	248	\$22,800,737	\$23,633,867	\$41,992,321
Avery Point	174	\$19,268,851	\$19,733,043	\$27,447,161
Waterbury	106	\$9,917,047	\$10,221,233	\$13,991,338
Total	16,070	\$1,729,030,191	\$1,748,252,430	\$2,986,182,511

Table B.2: Total Economic Impacts from University Operations

Campus	Employment	Labor Income	Value Added	Output
Storrs	9,793	\$1,054,742,859	\$1,127,877,840	\$2,130,382,246
UConn Health	9,699	\$1,162,337,735	\$1,179,146,157	\$2,080,126,814
Greater Hartford	638	\$75,159,065	\$82,702,017	\$121,169,261
Stamford	166	\$25,527,990	\$31,076,747	\$40,801,244
Avery Point	220	\$26,042,109	\$33,287,800	\$44,771,145
Waterbury	91	\$11,947,882	\$13,408,660	\$17,939,955
Total	20,607	\$2,355,757,640	\$2,467,499,221	\$4,435,190,665

Table B.3: Total Economic Impacts from Student Spending

Campus	Employment	Labor Income	Value Added	Output
Storrs	1,737	\$55,597,216	\$66,938,115	\$230,925,258
UConn Health	114	\$3,339,837	\$3,874,194	\$17,156,137
Greater Hartford	408	\$12,573,815	\$14,812,030	\$57,427,221
Stamford	155	\$4,771,626	\$5,891,546	\$22,503,989
Avery Point	35	\$1,342,206	\$1,673,284	\$3,215,573
Waterbury	55	\$2,035,476	\$2,515,584	\$5,572,812
Total	2,504	\$79,660,176	\$95,704,753	\$336,800,990

Impacts of UConn capital spending by state contractors are presented in Table B.4:

Table B.4: Total Economic Impacts from Capital Spending

Campus	Employment	Labor Income	Value Added	Output
Storrs	1,717	\$126,291,338	\$177,621,596	\$317,972,804
UConn Health	702	\$52,187,395	\$62,515,565	\$138,158,294
Greater Hartford	317	\$23,297,945	\$32,767,237	\$58,658,915
Stamford	45	\$3,324,650	\$4,675,931	\$8,370,710
Avery Point	6	\$477,195	\$671,147	\$1,201,468
Waterbury	7	\$491,893	\$691,819	\$1,238,473
Total	2,794	\$206,070,416	\$278,943,295	\$525,600,664

As shown in Table B.4, the FY 2018 total impact of UConn’s capital spending was also significant and included the following:

- \$525.6 million impact on statewide output, as measured by statewide sales generated directly from UConn and through spillover effects on other industries.
- Nearly 2,800 jobs supporting \$206.1 million in labor income, not just at UConn but throughout many sectors such as real estate, hospitality, and health.
- \$278.9 million in value added (the difference between the value of output and the cost of raw materials). Value added measures the contribution of UConn capital spending to gross state product.

Table B.5: Total Economic Impacts of UConn from University Operations, Student Spending, and Capital Spending

Campus	Employment	Labor Income	Value Added	Output
Storrs	13,247	\$1,236,631,413	\$1,372,437,551	\$2,679,280,308
UConn Health	10,515	\$1,217,864,967	\$1,245,535,916	\$2,235,441,245
Greater Hartford	1,363	\$111,030,825	\$130,281,284	\$237,255,397
Stamford	366	\$33,624,266	\$41,644,224	\$71,675,943
Avery Point	261	\$27,861,510	\$35,632,231	\$49,188,186
Waterbury	153	\$14,475,251	\$16,616,063	\$24,751,240
Total	25,905	\$2,641,488,232	\$2,842,147,269	\$5,297,592,319
Multiplier	1.61	1.53	1.62	1.77

APPENDIX C

DETAILS ABOUT ECONOMICS IMPACTS FOR EACH CAMPUS

C.1: Storrs Campus

Table C.1.1: Storrs Campus Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	6,359	1,075	2,359	9,793
Labor Income	\$733,479,040	\$100,486,628	\$220,777,191	\$1,054,742,859
Value Added	\$736,397,668	\$131,911,496	\$259,568,676	\$1,127,877,840
Output	\$1,184,203,583	\$331,577,003	\$614,601,660	\$2,130,382,246

Table C.1.2: Storrs Campus Total Economic Impact from Student Spending²¹

Impact	Direct	Indirect	Induced	Total Impact
Employment	1,302	194	241	1,737
Labor Income	\$35,010,617	\$9,051,052	\$11,535,547	\$55,597,216
Value Added	\$40,684,519	\$10,963,937	\$15,289,659	\$66,938,115
Output	\$144,445,829	\$43,361,383	\$43,118,046	\$230,925,258

Table C.1.3: Storrs Campus Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	991	280	446	1,717
Labor Income	\$78,102,250	\$22,181,039	\$26,008,049	\$126,291,338
Value Added	\$82,118,168	\$43,440,510	\$52,062,918	\$177,621,596
Output	\$191,665,343	\$56,732,942	\$69,574,519	\$317,972,804

Table C.1.4: Storrs Campus Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	8,652	1,549	3,046	13,247
Labor Income	\$846,591,907	\$131,718,719	\$258,320,787	\$1,236,631,413
Value Added	\$859,200,355	\$186,315,943	\$326,921,253	\$1,372,437,551
Output	\$1,520,314,755	\$431,671,328	\$727,294,225	\$2,679,280,308

²¹ As mentioned before, direct employment, labor income, and value added impacts from student spending are not observed but rather provided by IMPLAN based on direct output impacts and the IMPLAN economic model for the economic sector in question, as done in previous economic impact models of universities. The direct impacts for employment for Storrs are consistent with previous estimates for other university campuses. For example, while this report estimates 1,737 jobs are supported by student spending at the Storrs campus, the report by Swenson (2019) estimates 3,408 jobs are supported by student spending at Penn State's main campus (University Park), almost twice the figure of Storrs. In fact, the Penn State campus has twice the number of students as Storrs (47,095 at Penn State University Park v. 23,590 at UConn Storrs). Proportional estimates for the direct job impacts also hold for the two campuses.

C.2: Avery Point Campus

Table C.2.1: **Avery Point Campus** Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	143	24	53	220
Labor Income	\$18,109,951	\$2,481,063	\$5,451,095	\$26,042,109
Value Added	\$18,404,252	\$5,609,483	\$9,274,065	\$33,287,800
Output	\$24,886,684	\$6,968,272	\$12,916,189	\$44,771,145

Table C.2.2: **Avery Point Campus** Total Economic Impact from Student Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	27	3	5	35
Labor Income	\$863,789	\$199,938	\$278,479	\$1,342,206
Value Added	\$1,018,506	\$260,923	\$393,855	\$1,673,284
Output	\$1,836,265	\$598,237	\$781,071	\$3,215,573

Table C.2.3: **Avery Point Campus** Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	4	1	1	6
Labor Income	\$295,111	\$83,812	\$98,272	\$477,195
Value Added	\$310,285	\$164,141	\$196,721	\$671,147
Output	\$724,212	\$214,367	\$262,889	\$1,201,468

Table C.2.4: **Avery Point Campus** Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	174	28	59	261
Labor Income	\$19,268,851	\$2,764,813	\$5,827,846	\$27,861,510
Value Added	\$19,733,043	\$6,034,547	\$9,864,641	\$35,632,231
Output	\$27,447,161	\$7,780,876	\$13,960,149	\$49,188,186

C.3: Greater Hartford Campuses

Table C.3.1: Greater Hartford Campuses Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	414	70	154	638
Labor Income	\$52,266,387	\$7,160,495	\$15,732,183	\$75,159,065
Value Added	\$52,572,762	\$10,417,261	\$19,711,994	\$82,702,017
Output	\$67,353,675	\$18,859,029	\$34,956,557.33	\$121,169,261

Table C.3.2: Greater Hartford Campuses Total Economic Impact from Student Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	304	47	57	408
Labor Income	\$7,865,259	\$2,097,641	\$2,610,915	\$12,573,815
Value Added	\$9,101,418	\$2,434,151	\$3,276,461	\$14,812,030
Output	\$36,333,220	\$10,777,963	\$10,316,038	\$57,427,221

Table C.3.3: Greater Hartford Campuses Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	183	52	82	317
Labor Income	\$14,408,129	\$4,091,909	\$4,797,907	\$23,297,945
Value Added	\$15,148,977	\$8,013,809	\$9,604,451	\$32,767,237
Output	\$35,357,996	\$10,465,966	\$12,834,953	\$58,658,915

Table C.3.4: Greater Hartford Campuses Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	901	169	293	1,363
Labor Income	\$74,539,775	\$13,350,045	\$23,141,005	\$111,030,825
Value Added	\$76,823,157	\$20,865,221	\$32,592,906	\$130,281,284
Output	\$139,044,891	\$40,102,958	\$58,107,548	\$237,255,397

C.4: Stamford Campus

Table C.4.1: Stamford Campus Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	108	18	40	166
Labor Income	\$17,752,427	\$2,432,082	\$5,343,481	\$25,527,990
Value Added	\$17,977,803	\$4,827,829	\$8,271,115	\$31,076,747
Output	\$22,679,958	\$6,350,388	\$11,770,898	\$40,801,244

Table C.4.2: Stamford Campus Total Economic Impact from Student Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	114	19	22	155
Labor Income	\$2,992,249	\$790,633	\$988,744	\$4,771,626
Value Added	\$3,494,284	\$1,005,034	\$1,392,228	\$5,891,546
Output	\$14,266,727	\$4,236,701	\$4,000,561	\$22,503,989

Table C.4.3: Stamford Campus Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	26	7	12	45
Labor Income	\$2,056,061	\$583,921	\$684,668	\$3,324,650
Value Added	\$2,161,780	\$1,143,582	\$1,370,569	\$4,675,931
Output	\$5,045,636	\$1,493,508	\$1,831,566	\$8,370,710

Table C.4.4: Stamford Campus Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	248	44	74	366
Labor Income	\$22,800,737	\$3,806,636	\$7,016,893	\$33,624,266
Value Added	\$23,633,867	\$6,976,445	\$11,033,912	\$41,644,224
Output	\$41,992,321	\$12,080,597	\$17,603,025	\$71,675,943

C.5: Waterbury Campus

Table C.5.1: Waterbury Campus Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	59	10	22	91
Labor Income	\$8,308,680	\$1,138,289	\$2,500,913	\$11,947,882
Value Added	\$8,368,013	\$1,768,999	\$3,271,648	\$13,408,660
Output	\$9,972,182	\$2,792,211	\$5,175,562	\$17,939,955

Table C.5.2: Waterbury Campus Total Economic Impact from Student Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	43	5	7	55
Labor Income	\$1,304,166	\$308,938	\$422,372	\$2,035,476
Value Added	\$1,533,378	\$395,448	\$586,758	\$2,515,584
Output	\$3,272,638	\$1,039,183	\$1,260,991	\$5,572,812

Table C.5.3: Waterbury Campus Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	4	1	2	7
Labor Income	\$304,201	\$86,393	\$101,299	\$491,893
Value Added	\$319,842	\$169,197	\$202,780	\$691,819
Output	\$746,518	\$220,969	\$270,986	\$1,238,473

Table C.5.4: Waterbury Campus Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	106	16	31	153
Labor Income	\$9,917,047	\$1,533,620	\$3,024,584	\$14,475,251
Value Added	\$10,221,233	\$2,333,644	\$4,061,186	\$16,616,063
Output	\$13,991,338	\$4,052,363	\$6,707,539	\$24,751,240

C.6: UConn Health

Table C.6.1: UConn Health Total Economic Impact from University Operations

Impact	Direct	Indirect	Induced	Total Impact
Employment	5,474	1,691	2,534	9,699
Labor Income	\$719,862,346	\$199,401,870	\$243,073,519	\$1,162,337,735
Value Added	\$720,530,746	\$206,680,913	\$251,934,498	\$1,179,146,157
Output	\$1,149,029,726	\$392,968,166	\$538,128,922	\$2,080,126,814

Table C.6.2: UConn Health Total Economic Impact from Student Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	84	14	16	114
Labor Income	\$2,073,359	\$572,823	\$693,655	\$3,339,837
Value Added	\$2,386,849	\$645,846	\$841,499	\$3,874,194
Output	\$10,983,747	\$3,223,306	\$2,949,084	\$17,156,137

Table C.6.3: UConn Health Total Economic Impact from Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	431	91	180	702
Labor Income	\$33,976,169	\$7,440,780	\$10,770,446	\$52,187,395
Value Added	\$35,723,180	\$10,788,400	\$16,003,985	\$62,515,565
Output	\$83,378,572	\$21,761,807	\$33,017,915	\$138,158,294

Table C.6.4: UConn Health Total Economic Impact from University Operations, Student Spending, and Capital Spending

Impact	Direct	Indirect	Induced	Total Impact
Employment	5,989	1,796	2,730	10,515
Labor Income	\$755,911,874	\$207,415,473	\$254,537,620	\$1,217,864,967
Value Added	\$758,640,775	\$218,115,159	\$268,779,982	\$1,245,535,916
Output	\$1,243,392,045	\$417,953,279	\$574,095,921	\$2,235,441,245

About the Authors

For the Department of Agricultural and Resource Economics:

Rigoberto A. Lopez (team leader) is the Richard DeFavero Professor of Agricultural Economics in the Department of Agricultural and Resource Economics. He is the co-editor of *Agribusiness: An International Journal* and was part of the Gov. Lamont policy transition team for agriculture. His areas of expertise include food policy, industrial organization, and economic development. He has led research teams for multiple economic impact reports, including the Connecticut dairy industry, Connecticut's agricultural industries, Northeastern food, fish, and forestry industries, and, more recently, the economic impact of the Connecticut green industry. At UConn, he served as department head for ten years and co-founder and director of the Zwick Center for Food and Resource Policy for nine years. Prior to UConn, he served as assistant and associate professor at Rutgers University.

Mahdi Fallahi is a Ph.D. student in the Department of Agricultural and Resource Economics. His areas of expertise include data analysis, quantitative methods, and applied econometrics. Mr. Fallahi managed the data, conducted the computations with IMPLAN, and assembled the tables for this report.

For the Department of Economics:

Steven P. Lanza is an Associate Professor in Residence in UConn's Department of Economics, where he teaches economic principles, regional analysis, and other courses emphasizing applied economic analysis. For over 20 years, he served as an editor of *The Connecticut Economy*, a quarterly review that provided objective analyses of data, issues, and developments in the state's economy. Cited by the *Wall Street Journal* and the *New York Times*, his research has also appeared in *Economic Development Quarterly*, *Applied Economics Letters*, and elsewhere. Dr. Lanza has advised the Connecticut Department of Labor on current economic trends and prospects and has served on the governor's Council of Economic Advisors and Business Tax Task Force. He is past president of the Hartford Area Business Economists and an active economic consultant. Steven Lanza received his B.A. from Union College, an M.B.A. from Cornell University, and a J.D. and Ph.D. from the University of Connecticut.