2017-2018

ECONOMIC CONTRIBUTIONS *of* UNIVERSITY OF FLORIDA HEALTH IN JACKSONVILLE

Sponsored Project Report to UF Health in Jacksonville

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ECONOMIC IMPACT ANALYSIS PROGRAM

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UFHealth

EXECUTIVE SUMMARY

University of Florida Health in Jacksonville is an enterprise made up of 1) the University of Florida Health Science Center Jacksonville, an education and research complex with UF faculty, residents, fellows, students, staff and administrators associated with the UF Colleges of Medicine, Pharmacy and Nursing co-located with UF Health Jacksonville; 2) UF Health Jacksonville, a private, not-for-profit hospital located just north of downtown Jacksonville; 3) UF Health North, a full-service medical campus in North Jacksonville serving northeast Florida and southeast Georgia; and 4) University of Florida Jacksonville Physicians Inc., a network of more than 60 primary and specialty care practices providing patient care from UF faculty physicians based in northeast Florida. UF Health in Jacksonville is a leader in the education of health professionals, a hub for clinical research and a unique provider of high-quality patient care. In addition, the activity associated directly and indirectly with UF Health is a significant component of the regional economy.

In fiscal year, or FY, 2017-2018, the total economic contributions of UF Health in Jacksonville to the State of Florida were estimated at $2.874 billion in industry output or sales revenues, $1.706 billion in total value added and 19,842 fulltime and part-time jobs supported, as shown in Table ES.1. Total economic contributions to the Jacksonville Metropolitan Statistical Area, or MSA, which includes Duval, Nassau, Baker, Clay and St. Johns counties, were estimated at $2.718 billion in industry output or sales revenues, $1.634 billion in total value added and 18,875 fulltime and part-time jobs supported, representing 2.1% of the total workforce in the Jacksonville MSA (Table ES.2).

Table ES.1. *Summary of total economic contributions of UF Health in Jacksonville to the State of Florida, 2017-18*

Entity/Activity	Applicable expenditures	Output Cont.	Value-Added Cont.	Labor Income Cont.	Property Income Cont.	Business Tax Cont.	Employment Cont.
	---------- Million Dollars----------						(Jobs)
Hospitals, Clinics and Physician Offices	1,013	2,209	1,251	912	270	69	15,322
University Operations	190	355	282	209	63	9	2,011
Visitor Spending	119	218	128	65	48	15	1,925
Capital Expenditures	49	91	46	29	14	3	580
Student Spending	0.27	0.49	0.30	0.12	0.16	0.03	4.20
Total	**1,374**	**2,874**	**1,706**	**1,215**	**395**	**96**	**19,842**

Values in millions 2017 dollars. Employment represents fulltime and part-time jobs. Estimates include indirect and induced multiplier effects.
Source: IMPLAN© software and data (IMPLAN Group, LLC)

Table ES.2. *Summary of economic contributions of UF Health in Jacksonville to the Jacksonville MSA, 2017-18*

Entity/Activity	Applicable Expenditures	Output Cont.	Value-Added Cont.	Labor Income Cont.	Property Income Cont.	Business Tax Cont.	Employment Cont.
	---------- Million Dollars----------						(Jobs)
Hospitals, Clinics and Physician Offices	1,013	2,093	1,196	890	244	62	14,581
University Operations	189	343	277	208	60	9	1,944
Visitor Spending	113	198	117	60	43	13	1,813
Capital Spending	49	84	44	28	14	2	533
Student Spending	0.22	0.40	0.26	0.11	0.13	0.02	3
Total	**1,367**	**2,718**	**1,634**	**1,185**	**362**	**87**	**18,875**

Jacksonville MSA model contains Duval, Nassau, Baker, Clay and St. Johns counties. Values in millions of 2017 dollars. Estimates include indirect and induced multiplier effects. Source: IMPLAN© software and data (IMPLAN Group, LLC)

INTRODUCTION

University of Florida Health in Jacksonville is an enterprise made up of 1) the University of Florida Health Science Center Jacksonville, an education and research complex with UF faculty, residents, fellows, students, staff and administrators associated with the UF Colleges of Medicine, Pharmacy and Nursing co-located with UF Health Jacksonville; 2) UF Health Jacksonville, a private, not-for-profit hospital located just north of downtown Jacksonville; 3) UF Health North, a full-service medical campus in North Jacksonville serving northeast Florida and southeast Georgia; and 4) University of Florida Jacksonville Physicians Inc. (hereafter, UF Jacksonville Physicians), a network of more than 60 primary and specialty care practices providing patient care from UF faculty physicians based in northeast Florida. UF Health in Jacksonville is a leader in the education of health professionals, a hub for clinical research and a unique provider of high-quality patient care. In addition, the activity associated directly and indirectly with UF Health is a significant component of the regional economy. A map of the UF Health primary care and specialty network locations in northeast Florida and southeast Georgia is shown in Figure 1.1.

The UF Health Jacksonville campus is home to facilities and representatives of the UF Colleges of Medicine, Pharmacy and Nursing. The UF College of Medicine's graduate medical education programs support residents and fellows and host third- and fourth-year UF medical students (M.D. degree) through short-term rotations lasting between two weeks and two months. The UF College of Medicine – Jacksonville also provides required and elective clinical rotations for second-year master's degree students in the School of Physician Assistant Studies. The UF College of Pharmacy in Jacksonville provides a full four-year curriculum leading to the Doctor of Pharmacy degree and the UF College of Nursing provides of 16-month accelerated program for individuals having a four-year degree in another field, leading to a Bachelor's of Science in Nursing degree. The College of Medicine is also the sponsoring institution for a number of residency and fellowship training programs as well as postdoctoral dental training programs. Individuals in these programs complete the entire course of their postgraduate education (one to five years) in Jacksonville. In FY 2017-18, there were 369 individuals training in these programs, 22% of whom were graduates of medical schools in Florida.

In addition to educating the next generation of health professionals, UF Health in Jacksonville is also a hub for clinical research, providing a venue and resources for leading-edge research studies and protocols conducted by UF faculty that identify new medical treatments and ensuring the safety and effectiveness of patient care. The campus houses a clinical research unit and several unique research centers, including the UF Center for Health Equity and Quality Research, the Jacksonville Aging Studies Center, or JAX-ASCENT, and the UF Health Proton Therapy Institute. A complete list of clinical trials currently underway can be found at UFHealthJax.org/Research/ClinicalTrials.

The education and research components make the academic health center a unique provider of high-quality patient care. UF Jacksonville Physicians collectively offer services in more than 100 advanced specialties and subspecialties. Key program areas in the region include cardiology, interventional radiology, minimally invasive and robotic surgery, neurology and neurosurgery, obstetrics and gynecology, oncology, orthopaedic surgery, pediatrics, and trauma and critical care. The UF Health Proton Therapy Institute is one of few facilities in the nation equipped to treat

cancer with proton therapy. Additionally, the campus is home to the state's first and region's only Level I adult and pediatric trauma program, TraumaOne.

In 2015, UF Health North opened as a six-story, 210,000-square-foot outpatient medical complex in North Jacksonville that includes a 28-bed emergency room, advanced imaging, rehabilitation services and more than 20 specialty services provided by UF and community physicians. With nearly 700 beds across two hospitals and 178 individual business locations covering nearly 4 million square feet of building area in the region, UF Health in Jacksonville tallied nearly 1.5 million patient visits across all locations in FY 2017–18. Units of UF Health in Jacksonville have amassed several high-profile awards and recognitions for patient care, including appearances on the "Best Hospitals" lists of both the U.S. News & World Report and Healthgrades. Additional details on individual and unit level awards, recognitions and accreditations can be found at UFHealthJax.org/about/awards-and-recognition.

Although the current complex of locations and activity collectively known as UF Health in Jacksonville was only officially established as such in 2013, there is a long history of facilities and affiliations that have been highly influential to its current success. Additional details on this legacy and a timeline of notable firsts and events can be found at UFHealthJax.org/about/history. Throughout this history, the activity associated directly and indirectly with UF Health in Jacksonville has been a significant component of the regional economy. This study was commissioned to estimate the total economic contributions of UF Health in Jacksonville within the Jacksonville region as well as the State of Florida. The results can be used to inform public policy discussions regarding health care, higher education, medical research and economic development in the region and across the state.

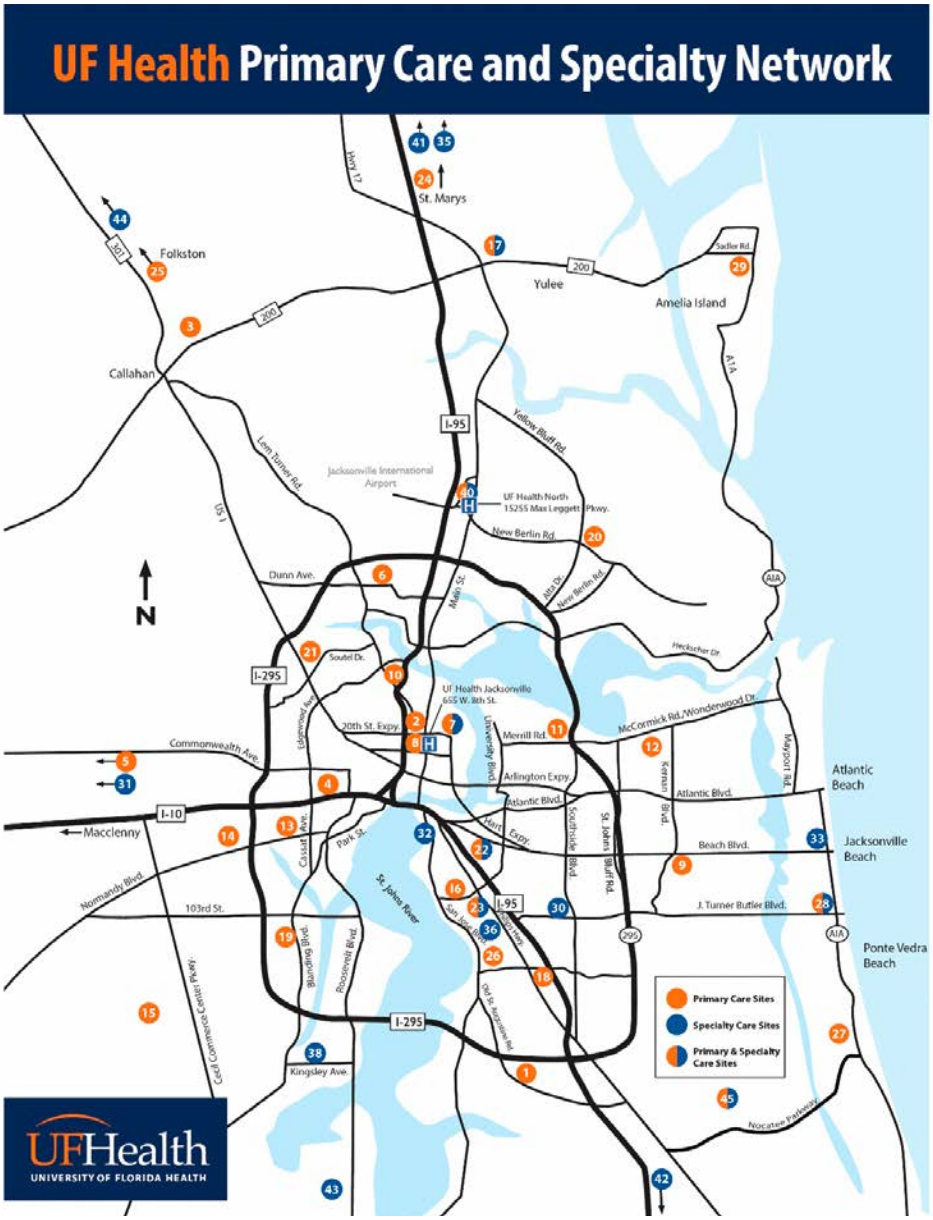

Figure 1.1 *Map of UF Health primary care and specialty network locations in northeast Florida and Southeast Georgia*
Source: UF Health in Jacksonville

Photo courtesy of City of Jacksonville

ECONOMIC CONDITIONS OF THE JACKSONVILLE METROPOLITAN STATISTICAL AREA

The City of Jacksonville is located in northeast Florida, bordering the Atlantic Ocean and straddling the northern portion of the St. Johns River, where it empties into the Atlantic. Jacksonville is situated within the "First Coast" region of Florida, named in part for the historical significance of nearby St. Augustine — the oldest continuously inhabited European settlement in Florida and the continental United States. This region is also known for pristine beaches, unique natural areas and diverse cultural offerings. Due to the consolidation of the City of Jacksonville and Duval County in 1968, Jacksonville is the largest city in the United States as measured by land area (~ 875 square miles) and is the most populous city in Florida (892,062 in 2017). Jacksonville is known for its moderate climate, abundant natural resources and trade access via river, sea, rail and interstate highways I-10 and I-95. Jacksonville boasts 22 miles of beaches, the nation's largest urban public parks system and the largest deepwater port in the southern United States (second largest on the East Coast).

Socioeconomic statistics for the Jacksonville area are often reported for the Jacksonville Metropolitan Statistical Area, or MSA. An MSA is defined by the U.S. Office of Management and Budget as a geographical region comprising a central county that contains a core urban center with a population of at least 50,000 and adjacent outlying counties with close economic and social ties to the central county as measured through commuting patterns. Jacksonville serves as the core urban center for the Jacksonville MSA, which consists of the central county of Duval and adjacent counties of Nassau, Baker, Clay and St. Johns as shown in Figure 2.1. The Jacksonville MSA is the 40th largest MSA in the United States in terms of population and the fourth largest in the State of Florida, behind the Miami, Tampa and Orlando MSAs.

According to data from the U.S. Census Bureau, the population of the Jacksonville MSA has been trending upward for the past five decades (Figure 2.2), increasing from just over 600,000 in 1969 to 1,345,596 during the 2010 Census, and was estimated to be 1,504,980 in 2017. St. John's

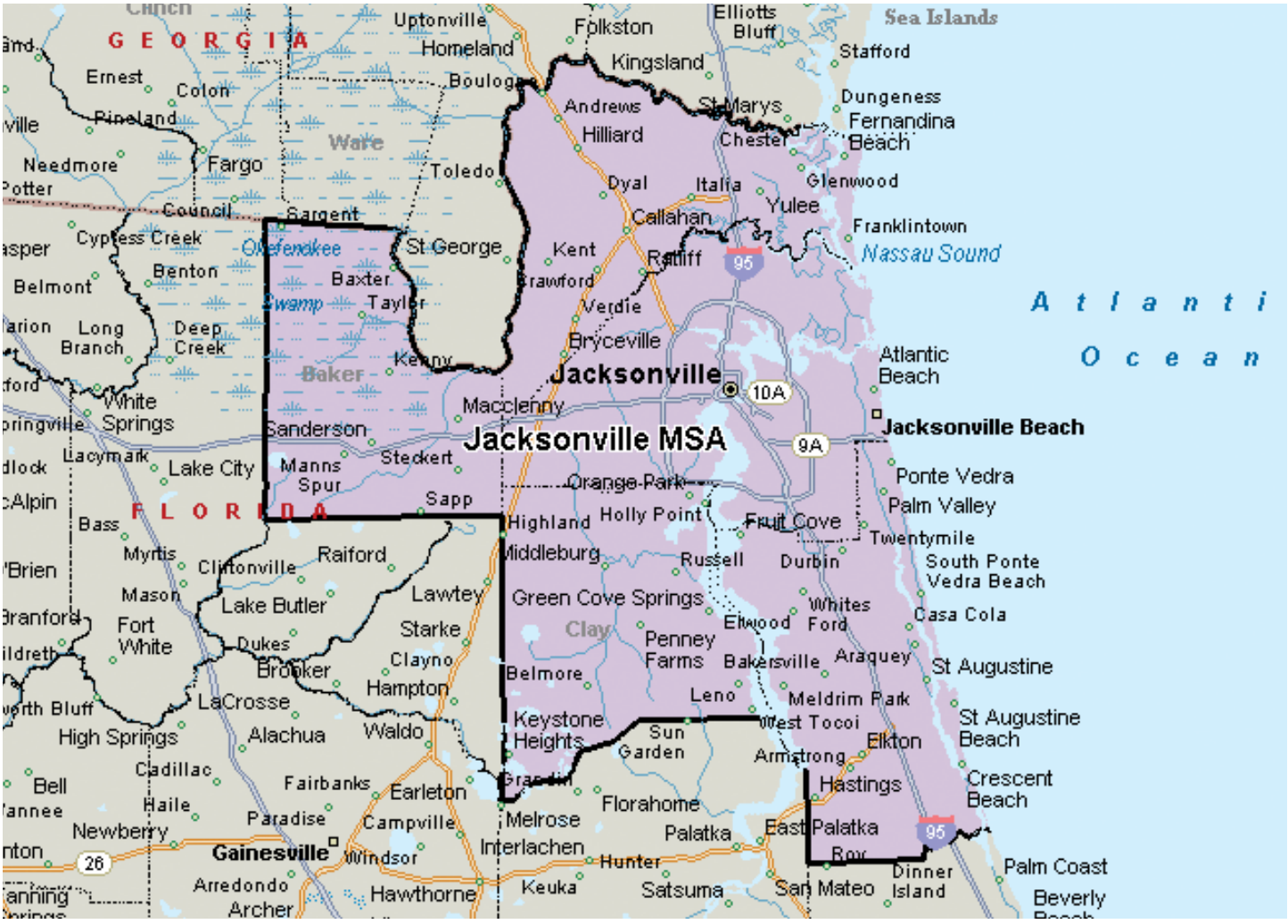

Figure 2.1. *Jacksonville MSA. Source: MapPoint Software*

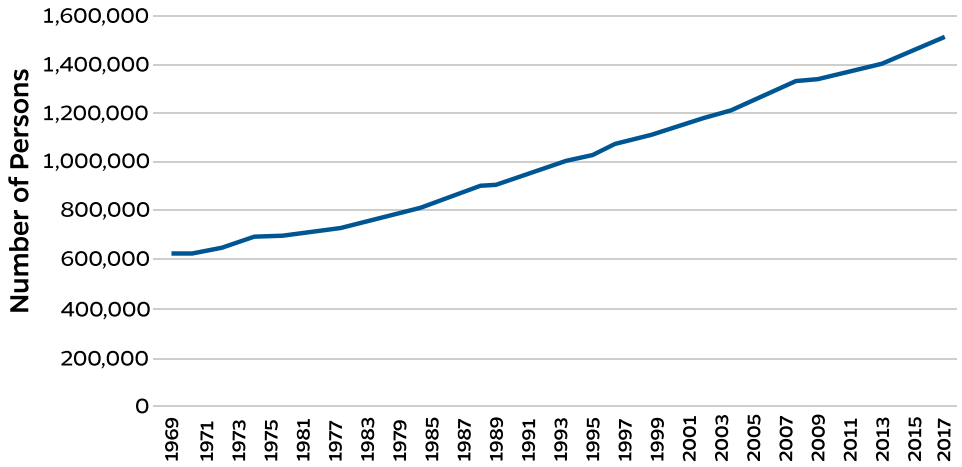

Figure 2.2. *Jacksonville MSA population, 1969-2017. Source: U.S. Census Bureau*

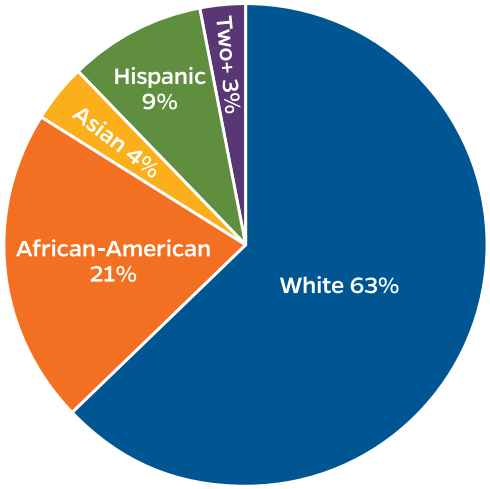

Figure 2.3. *Racial breakdown of Jacksonville MSA population, 2017. Source: U.S. Census Bureau*

County was recently identified as the eighth fastest growing county (in percentage growth) between 2017 and 2018 and has grown by 34% between 2010 and 2018 (U.S. Census Bureau, 2019). Jacksonville is often described as a "young" city as the median age in 2017 for the population was 38, slightly lower than the median age for the State of Florida, which is 42. Adults between the ages of 18 and 64 make up 62% of Jacksonville's population. The racial makeup of the Jacksonville MSA population is predominantly White (62%), with 21% African-American, 9% Hispanic or Latino, 4% Asian and 2% identifying as two or more races (Figure 2.3). In 2017, there were 560,169 households in the Jacksonville MSA with a median household income of $58,709. Educational attainment in the Jacksonville MSA is similar to Florida, with 90.4% of the population having a high school diploma or higher while 30.7% of the population has a bachelor's degree or higher.

Although many MSAs are dominated by one industry or one related industry cluster, the economy of the Jacksonville MSA is known for its broad diversification, with significant employment in health care services, real estate, finance and insurance services, wholesale and retail trade, and military and civilian government services and enterprises. According to data from the U.S. Bureau of Economic Analysis, total employment, measured as the total number of fulltime and part-time jobs, has also been trending upward since 1969, with the exception of a few recent downturns associated with the early 2000s recession (March 2001 – November 2001) and the Great Recession (December 2007 – June 2009), as shown in Figure 2.4.

Total personal income in the Jacksonville MSA, defined as income received from all sources, including wages, salaries and supplements earned from participation in production as well as transfer payments from government or business, has also followed an upward trend since 1969, with only one notable downturn associated with the Great Recession (Figure 2.5). After adjusting for inflation, total personal income has increased by 27% between its minimum during the Great Recession (2009) and 2017.

Detailed data on Gross Domestic Product, or GDP, for MSAs, a measure of total economic activity in a region, is also published by the U.S. Bureau of Economic Analysis for the period 2001–2017. Total GDP across all industries for the Jacksonville MSA is displayed in Figure 2.6 and follows a similar upward trend, except for the notable downturn associated with the Great Recession. Between its minimum during the Great Recession (2009) and 2017, GDP has grown by 22%, after adjusting for inflation.

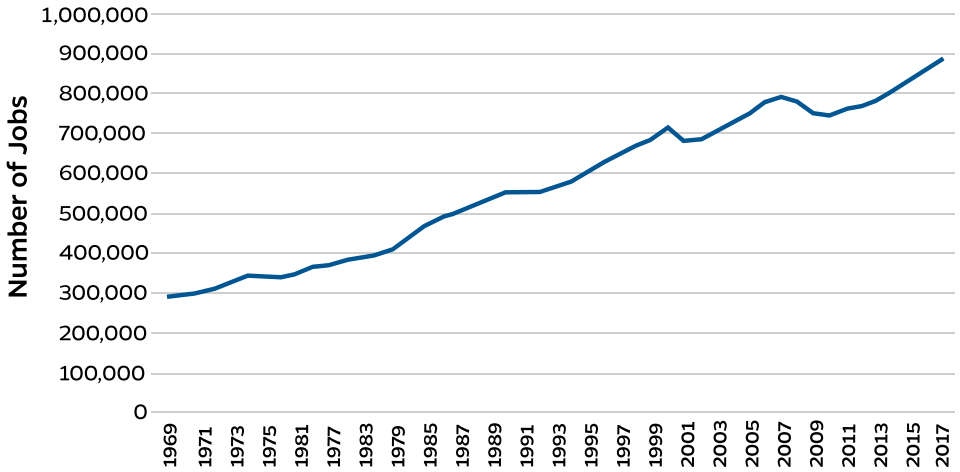

Figure 2.4. *Jacksonville MSA employment, 1969-2017. Source: U.S. Bureau of Economic Analysis*

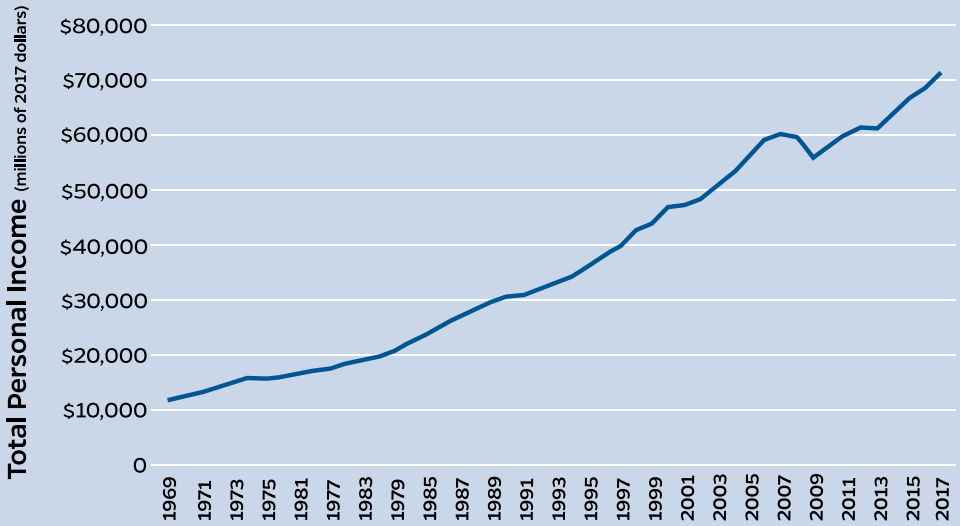

Figure 2.5. *Jacksonville MSA total personal income, 1969-2017. Source: U.S. Bureau of Economic Analysis*

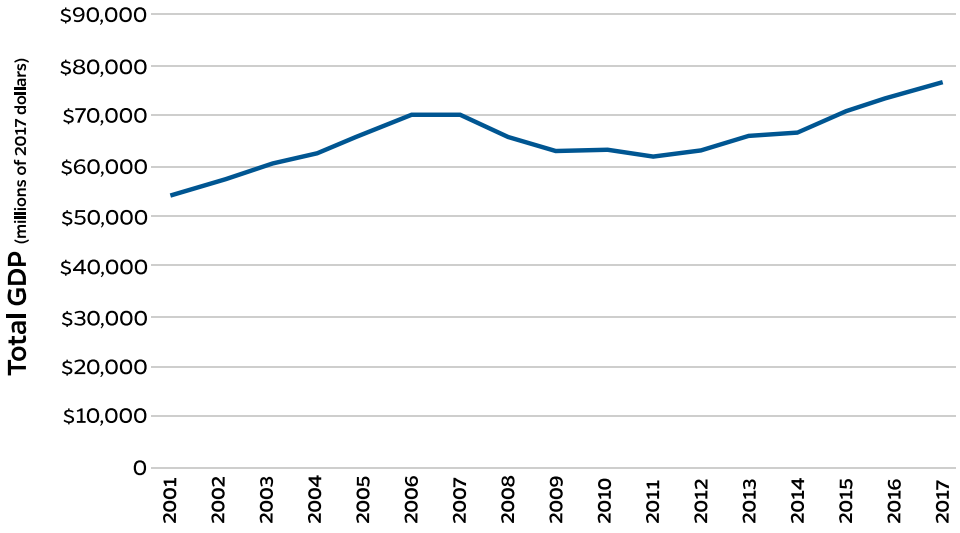

Figure 2.6. *Jacksonville MSA Gross Domestic Product, 2001-2017. Source: U.S. Bureau of Economic Analysis*

DATA SOURCES

A number of data sources were compiled as inputs to the economic contribution analysis of UF Health in Jacksonville, including information on direct expenditures and employment of UF Health entities as well as attendance and associated expenditures of both students and visitors.

UF Health in Jacksonville Operations Data

Data on revenues, expenditures and employment associated with UF Health in Jacksonville entities were provided by UF Health in Jacksonville, UF Health central administration, UF Jacksonville Physicians finance and accounting and UF Human Resources. In FY 2017-18, consolidated operating expenditures or revenues for UF Health in Jacksonville totaled $1.203 billion. A majority of the expenditures are associated with the operations of hospitals, clinics and physician offices ($1.013 billion), with an additional $190 million in expenditures for university operations in Jacksonville (Table 3.1). Within university operations employee compensation accounted for nearly all expenditures ($183 million), followed by services and supplies ($6 million).

In FY 2017-18, UF Health in Jacksonville directly supported 7,682 jobs (fulltime and part-time employees), including 4,819 hospital employees, 1,541 UF Jacksonville Physicians employees, 1,153 UF College of Medicine employees and 169 employees at the UF Health Proton Therapy Institute. A detailed breakdown is provided in Table 3.2.

UF Health in Jacksonville operations are dependent on first-class facilities. In addition to operations expenditures, capital expenditures associated with construction of new health care structures totaled $49.3 million in FY 2017-18. Although these expenditures are associated with short-term contributions, whereas operations expenditures are expected to be ongoing, they can be included in the totals of this analysis as the focus is on the economic contributions of all expenditures in FY 2017-18. The sum of operations and capital expenditures of UF Health in Jacksonville entities in FY 2017-18 was $1.252 billion.

Table 3.1. *Expenditures associated with UF Health entity operations, FY 2017-18*

Entity	Applicable Expenditures (M$)
Hospitals, Clinics and Physician Offices	1,013
University Operations	190
Total	**1,203**

Values may not sum exactly due to rounding.

Table 3.2. *Employment for UF Health in Jacksonville in 2017-18*

Entity	Employees
Hospitals	4,819
Fulltime	3,920
Part-time/Per Diem	855
Resident	20
Student	24
UF College of Medicine	1,153
Fulltime Clinical Faculty	417
Fulltime Research Faculty	8
Part-time Clinical Faculty	23
Adjunct (Academic OPS) Clinical Faculty	6
OPS (PRN) Physicians	56
UF TEAMS Staff	216
OPS (PRN) Staff	58
Residents and Fellows	369
UF Jacksonville Physicians	1,541
Fulltime	1,425
Part-time	116
UF Health Proton Therapy Institute	169
Total	**7,682**

Source: UF Health in Jacksonville

Student Attendance and Spending

UF Health in Jacksonville hosts third- and fourth-year medical students (M.D.) from the UF College of Medicine for short-term rotations. Third-year students spend 25% of their year in Jacksonville and fourth-year students spend 10% of their year in Jacksonville. In FY 2017-18, there were 135 students in each class, of which about 90% were Florida residents. The UF College of Medicine – Jacksonville also provides required and elective clinical rotations for second-year master's degree students in the School of Physician Assistant Studies. Of the 60 students in this degree program in FY 2017-18, 30 did at least one clinical rotation in Jacksonville (a total of 116 four-week rotations), spending about 20% of their time in Jacksonville. Of those students, 73% were Florida residents. Additionally, the UF College of Pharmacy provides a full four-year curriculum leading to the Pharm.D. degree. In FY 2017-18, there were 183 students in the program, 97% of whom were Florida residents. Lastly, the UF College of Nursing provides a 16-month accelerated program for individuals who already have a four-year degree in another field, leading to a B.S.N. degree. In FY 2017-18, there were 40 students in the program, 70% of whom were Florida residents. Student attendance for the 2017-18 academic year is summarized in Table 3.4.

Associated student expenditures for the 2017-18 academic year were calculated from data related to the cost of attendance and living expenses for the different groups of students and trainees using average costs for fulltime attendance available from the UF Office for Student Financial Affairs and the Florida State University System Board of Governors. In 2017-18, tuition and fees for Florida residents in these programs were $18,329 for M.D. students, $11,451 for Pharm.D. students, $27,198 for master's students in School of Physician Assistant Studies and $6,380 for B.S.N. students. Tuition and fees for nonresident students in these programs were $32,949, $23,022, $60,534 and $28,658, respectively. Costs for room and board, books and supplies, transportation and other expenses associated with the portion of time spent in Jacksonville were assumed to be equivalent to expenses incurred by students at the University of North Florida, which is also located in Jacksonville. These expenses were assumed to be the same for residents and nonresidents across all degree programs but varied by place of residence (on campus vs. off campus). Table 3.5 details student expenditures by degree program, residency and housing location.

Table 3.4. *Student attendance at UF Health in Jacksonville in the 2017-18 academic year*

Institution	Degree/Program	Total Student Enrollment	% of Year in Jacksonville
UF College of Medicine	3rd Year Medical Students	135	25%
	4th Year Medical Students	135	10%
	Clinical (2nd) Year PA Students	30	20%
UF College of Pharmacy	Pharm.D. Degree	183	100%
UF College of Nursing	16-Month Accelerated Program	40	100%
Total		**523**	

Source: UF Health in Jacksonville

Table 3.5. *Cost of attendance for students affiliated with UF Health in Jacksonville by degree program, residency and housing location in the 2017-18 academic year*

Expense Category	Residents		Nonresidents	
	On Campus	Off Campus	On Campus	Off Campus
M.D. tuition and fees	$18,329	$18,329	$32,949	$32,949
Pharm.D. tuition and fees	$11,451	$11,451	$23,022	$23,022
SPAS tuition and fees	$27,198	$27,198	$60,534	$60,534
B.S.N. tuition and fees	$6,380	$6,380	$28,658	$28,658
Books and supplies	$1,200	$1,200	$1,200	$1,200
Room and board	$9,772	$9,431	$9,772	$9,431
Transportation	$1,036	$1,026	$1,036	$1,026
Other expenses	$2,808	$2,808	$2,808	$2,808

Note: Amounts are for fulltime attendance. University of North Florida costs for books and supplies, room and board, transportation and other expenses were used as a proxy for costs incurred in the Jacksonville area. Off-campus housing assumes 5% of students live off campus, at home ($2,948), and 95% of students live off campus, not at home ($9,772, same as on campus). Sources: UF Office for Student Financial Affairs and Florida SUS Board of Governors

Table 3.6. *UF Health in Jacksonville aggregate student expenditures, 2017-18*

Budget Item	Resident Students	Nonresident Students	Total All Students
	----------Thousand dollars----------		
Tuition and fees	3,073	675	3,748
Books and supplies	303	28	332
Room and board	2,387	224	2,611
Transportation	262	25	286
Other expenses	709	67	776
Total	**6,734**	**1,018**	**7,753**

UF Health in Jacksonville hosted almost 900 short-term or fulltime students on its campus in 2017-18. Aggregate student expenditures were estimated by multiplying each expenditure category by the appropriate number of students, adjusting for the portion of the year that students spent in Jacksonville. In aggregate, students spent more than $7.7 million in Jacksonville, including $6.7 million for Florida residents and $1 million for nonresidents (Table 3.6).

Patient Volume and Visitor Spending

UF Health in Jacksonville had a total of 1,452,685 patient visits in FY 2017-18 across all hospitals, clinics and physician offices. Patients and accompanying family members incurred travel expenditures that can be attributed to UF Health in Jacksonville. To estimate the associated expenditures, it was first necessary to transform patient visits into visitor days. It was assumed that 2% of total patient visits were not Florida residents and that 65% of the Florida resident visits were not affiliated with UF Health in Jacksonville (faculty, staff, students, administrators, etc.) based on information from UF Health administration. It was also assumed that on average, each nonaffiliated Florida resident visit was associated with one visitor day and each nonresident visit was associated with two visitor days. Visits by affiliated Florida residents were not considered in the economic contribution analysis. Total applicable visitor days were estimated to be 983,468, including 925,360 for nonaffiliated Florida resident visitors and 58,107 for nonresident visitors.

Although located outside of Florida, visits and visitor days to physician offices in southeast Georgia were included in the analysis since at least a portion of the associated expenditures (direct and indirect) will likely take place within the Jacksonville MSA due to close proximity and known commuting patterns. Visitor days associated with physician offices in southeast Georgia represent only a small share of total visitor days. Also, in calendar year 2017, the UF Health Proton Therapy Institute treated 549 patients from outside of northeast Florida and southeast Georgia. On average, these patients had an eight-week length of stay. Therefore, it is assumed that our estimates of total visitor days and associated expenditures are in all likelihood conservative estimates.

Expenditures associated with the applicable visitor days were estimated using average travel expense data for domestic travelers in Florida published by VISIT FLORIDA, the state tourism promotion organization, which are based on surveys conducted at points of entry throughout the state. According to published estimates for 2016, expenditures averaged $165 per person-day (in 2017 dollars), including lodging, food and beverage, entertainment, transportation (rental car and other, excluding airfare), shopping and miscellaneous other expenses. Total visitor expenditures associated with UF Health in Jacksonville in FY 2017-18 were estimated at $188 million, including $173.5 million by Florida residents and $14.3 million by nonresidents.

Table 3.7. *Average expenditures per visitor day and aggregate spending associated with visitor days to UF Health in Jacksonville in 2017-18*

Item (industry)	Expenditure per Visitor Day	Total Expenditures (Million $)
Shopping	$19.3	$19.0
Other Expenses	$4.4	$4.4
Transportation – Airfare	$58.5	$3.4
Transportation – Other (taxi, bus fares, gas, etc.)	$15.0	$14.7
Transportation – Rental Car	$36.6	$36.0
Entertainment and Recreation	$20.3	$19.9
Lodging	$54.5	$53.6
Food and Beverage	$37.4	$36.8
Total	**$164.9**	**$187.8**

Source: Data on expenditure per visitor data come from VISIT FLORIDA, Florida Visitor Study, 2015 and 2016, and have been adjusted to 2017 dollars. Air travel expenses are included for nonresident visitors only.

Photo courtesy of City of Jacksonville

METHODOLOGY

Economic impacts and economic contributions have distinct meanings and methods of estimation; however, these terms are often conflated and methodological descriptions for a particular study are not always clear enough to determine the assumptions used and their implications for interpretation of the results. Economic impact analysis aims to determine the change in overall economic activity resulting from new economic activity in the region in specific industries or sectors, while economic contribution analysis estimates the economy-wide effects of ongoing activity (IMPLAN©, 2018; Watson et al., 2007). Similar to a recent study conducted for the University of Florida and related entities (Hodges et al., 2019), this study follows current best practices for accurately and defensibly estimating economic contributions for public university-related activity, which appear in a report published by the Association of Public and Land-Grant Universities (Ambargis et al., 2014).

Total economic contributions were estimated using regional economic input-output models constructed with the IMPLAN© software and associated data representing the structure of the Florida and Jacksonville MSA economies in 2017 (IMPLAN Group, LLC, 2018). Two separate models were created to assess economic contributions for two separate regions of analysis, the State of Florida and the Jacksonville MSA. IMPLAN© model data describe the mix of industries and institutions that make up the regional economy as well as the transactions that occur between industries, employees, households and governments (Miller and Blair, 2009). IMPLAN© models account for industrial output, employment, value added, commodity production and consumption, personal income, household and institutional spending, domestic and foreign trade, wholesale, retail, transportation margins, business inventories, capital investment, taxes and transfer payments, such as welfare and retirement pensions. IMPLAN© divides the regional economy into 536 industry sectors defined according to the North American Industrial Classification System, or NAICS, as well as consumption spending profiles for nine household income categories. IMPLAN© and other regional input-output models enable the estimation of economic activity directly attributable to spending as well as economic multiplier effects representing the "ripple" effects of supply chain spending for input purchases (indirect effects), and household spending by employees (induced effects) within the regional economy. This report employs a methodology akin to gross-base contribution analysis (IMPLAN©, 2019), similar to the methodology proposed by Watson et al. (2015). Models were not modified for multi-industry contribution analysis as

recommended by IMPLAN Group (2019) since the activities modeled often represent only a portion of the activity within an aggregate industry sector.

Economic multipliers for each industry sector were used to estimate total economic contributions in terms of a variety of measures, including output or revenue, employment (fulltime and part-time jobs), value added (Gross State Product), labor income (employee and proprietor salaries and benefits), other property income (rents, interest, dividends, royalties, etc.) and indirect business taxes to local, state and federal governments. Economic contributions were estimated for hospitals, clinics and physician offices, university operations, capital expenditures, student spending and visitor spending. Care was taken to avoid double-counting certain expenditures by the university and students, e.g., double-counting that might occur if both student expenditures on tuition and fees and university operations expenditures associated with on-campus living, dining and instructional activity were included as direct contributions in the economic contribution analysis. Adjustments were also applied to expenditures reported in purchaser prices to properly allocate expenditures to producer values in the sector of interest and the respective transportation, wholesale and retail margin sectors.

Direct contributions were also adjusted to reflect the proportion of each purchase made within the region of interest (either the State of Florida or Jacksonville MSA) using regional purchase coefficients, or RPCs, which were estimated by the IMPLAN© software using a gravity model of trade flows with households included in the Social Accounting Matrix multipliers. University operations expenditures for asset depreciation, real property purchases, interest payments and certain transfers were excluded from the analysis because these items are transfers or noncash expenses that do not generate additional economic activity.

Expenditures by Florida resident students were not included since it is assumed that any increase in their daily spending is offset by a decrease in family spending elsewhere within the state (Cheney, 2018a). Spending by nonresident students was treated as new final demand in the State of Florida and subject to the full regional multiplier effects. As the analysis is focused on gross contributions to the state economy, all nonaffiliated Florida resident and nonresident visitor spending was considered applicable in the analysis. A glossary of terminology and concepts is provided in Appendix A.

RESULTS

Economic Contributions to the State of Florida

The estimated total economic contributions to the State of Florida by UF Health in Jacksonville in FY 2017-18 are summarized in Table 5.1 and Figures 5.1 and 5.2. Total economic contribution estimates include the indirect and induced multiplier effects.

The total expenditures or revenues made within the State of Florida for all entities and activities in 2017-18 was estimated at $1.371 billion, including $1.013 billion for hospitals, clinics and physician offices, $190.1 million for university operations, $0.3 million for student spending, $118.6 million for visitor spending and $49.3 million for capital construction expenditures (Table 5.1). These values are considered the direct contributions of UF Health in Jacksonville to the State of Florida.

Total industry output or revenue contributions in the State of Florida from all activities related to UF Health in Jacksonville were estimated at $2.874 billion, including $2.209 billion from hospitals, clinics and physician offices, $355 million from university operations, $218.2 million for visitor spending, $0.3 million for student spending and $90.6 million for capital expenditures (Figure 5.1).

Total value added is composed of labor income to individuals, business profits, other property-related income

Table 5.1. *Summary of economic contributions of UF Health in Jacksonville to the State of Florida in 2017-18*

Entity/Activity	Applicable Expenditures	Output	Value Added	Labor Income	Property Income	Business Tax	Employment (Jobs)
	---------- Million Dollars ----------						
Hospitals, Clinics and Physician Offices	1,012.6	2,209.4	1,250.5	911.9	269.7	69.0	15,322
University Operations	190.1	355.0	281.7	209.2	63.2	9.4	2,011
Visitor Spending	118.6	218.2	128.0	64.9	48.0	15.1	1,925
Capital Expenditures	49.3	90.6	45.8	29.0	14.3	2.5	580
Student Spending	0.3	0.5	0.3	0.1	0.2	0.0	4
Total	**1,370.8**	**2,873.8**	**1,706.4**	**1,215.1**	**395.4**	**96.0**	**19,842**

Values in millions 2017 dollars. Employment represents fulltime and part-time jobs. Estimates include indirect and induced multiplier effects.
Source: IMPLAN© software and data (IMPLAN Group, LLC)

and business taxes, and is equivalent GDP as a broad measure of net economic activity. The total value-added contribution of UF Health in Jacksonville was estimated at $1.706 billion in FY 2017-18, representing 0.18% of Florida's total GDP in 2017. Total value-added contributions included $1.251 billion for hospitals, clinics and physician offices, $281.7 million for university operations, $128 million for visitor spending, $0.3 million for student spending and $45.8 million for capital expenditures (Figure 5.1).

Total employment contributions of UF Health in Jacksonville were estimated at 19,842 fulltime and part-time jobs supported, which represented 0.17% of the state workforce in 2017. Total employment contributions included 15,322 jobs supported by hospitals, clinics and physician offices, 2,011 jobs for university operations, 1,925 jobs for visitor spending, four jobs for student spending, and 580 jobs for capital expenditures, as shown in Figure 5.2.

Labor income is a component of value added that represents all forms of employee compensation and benefits as well as self-employed (proprietor) income. Total labor income contributions to the State of Florida associated with UF Health in Jacksonville was estimated at $1.215 billion, including $911.9 million associated with hospitals, clinics and physician offices, $209.2 million for university operations, $64.9 million for visitor spending, $29 million for capital expenditures and $0.1 million for student spending (Table 5.1).

Total property income contributions, which include rents, royalties, interest and dividends, were estimated at $395.3 million. Business taxes on production and imports include sales, excise and fuel taxes, plus property taxes, fees and licenses paid to local, state and federal governments, but do not include personal income taxes. A large share of business taxes are generated through sales taxes on retail purchases. Total business tax contributions associated with UF Health in Jacksonville activities are estimated to be $96 million.

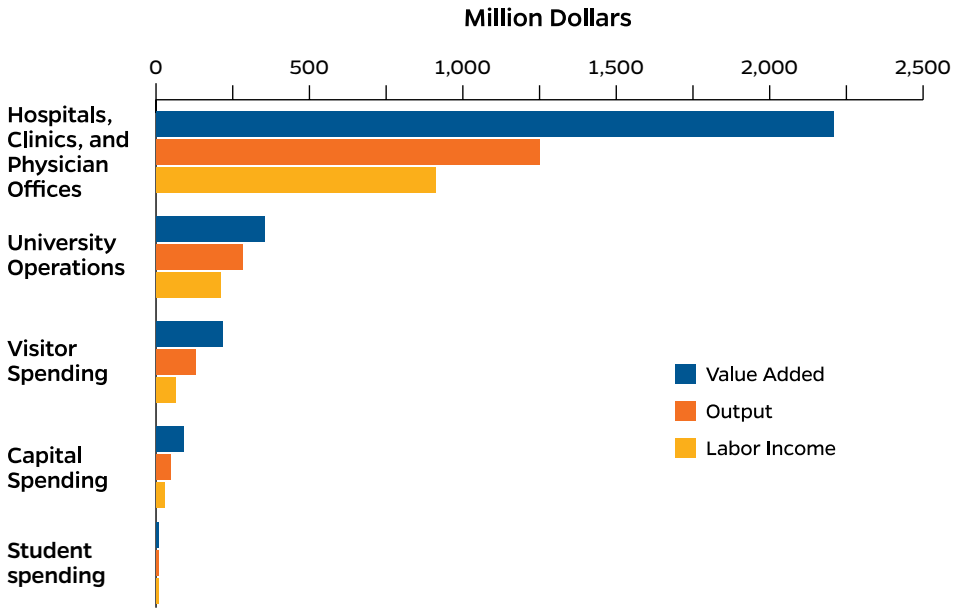

Figure 5.1. *Industry output, value-added and labor income contributions of UF Health in Jacksonville to the State of Florida in FY 2017-18*

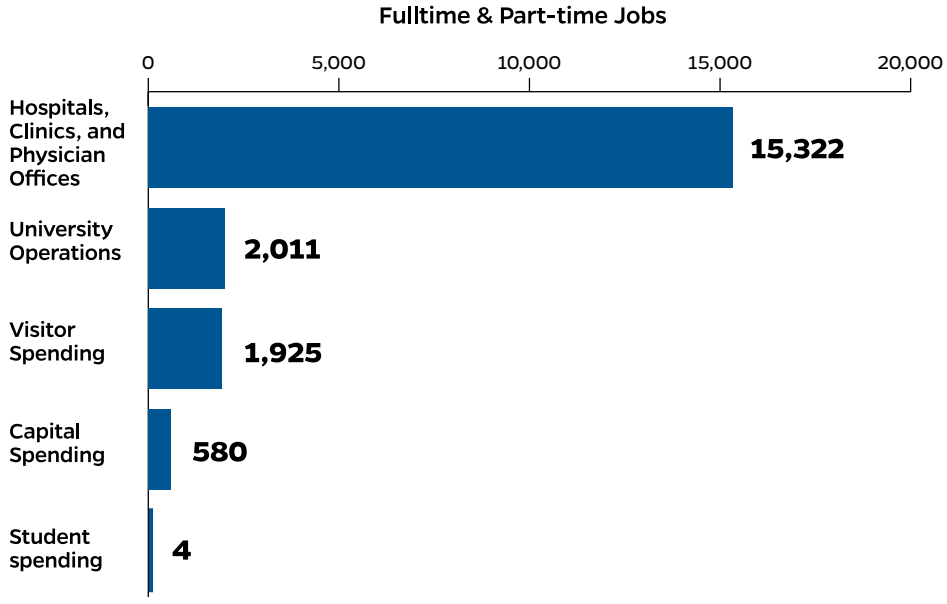

Figure 5.2. *Employment contributions of UF Health in Jacksonville to the State of Florida in FY 2017-18*

Economic Contributions to the Jacksonville MSA

The estimated total economic contributions of UF Health in Jacksonville to the Jacksonville MSA in FY 2017-18 are summarized in Table 5.2 and Figures 5.3 and 5.4. Total economic contribution estimates include the indirect and induced multiplier effects.

The total expenditures or revenues made within the Jacksonville MSA for all entities and activities in 2017-18 was estimated at $1.364 billion, including $1.013 billion for hospitals, clinics and physician offices, $189.4 million for university operations, $0.2 million for student spending, $113 million for visitor spending and $49 million for capital expenditures (Table 5.2). These expenditures are considered the direct contributions of UF Health in Jacksonville to the Jacksonville MSA.

Total industry output or revenue contributions in the Jacksonville MSA from all activities related to UF Health in Jacksonville were estimated at $2.718 billion, including $2.093 billion from hospitals, clinics and physician offices, $343.1 million from university operations, $198.2 million for visitor spending, $0.4 million for student spending and $83.8 million for capital expenditures (Figure 5.3).

The total value-added contributions of UF Health in Jacksonville to the Jacksonville MSA were estimated at $1.634 billion in FY 2017-18, representing 2.08% of Jacksonville MSA's total GDP in 2017. Total value added contributions include $1.196 billion for hospitals, clinics and physician offices, $276.9 million for university operations, $116.8 million for visitor spending, $0.2 million for student spending and $43.7 million for capital expenditures (Figure 5.3).

Total employment contributions of UF Health in Jacksonville were estimated at 18,875 fulltime and part-time jobs supported, which represented 2.09% of the Jacksonville MSA workforce in 2017. Total employment contributions included 14,581 jobs supported by hospitals, clinics and physician offices, 1,944 jobs supported by university operations, 1,813 jobs supported by visitor spending, three jobs supported by student spending and 533 jobs supported by capital expenditures, as shown in Figure 5.4.

Total labor income contributions to the Jacksonville MSA associated with UF Health in Jacksonville were estimated at $1.185 billion, including $889.7 million for hospitals, clinics and physician offices, $207.9 million for university operations, $60 million for visitor spending, $27.6 for capital expenditures and $0.1 for student spending (Table 5.2). Total property income contributions, which include rents, royalties, interest and dividends, were estimated at $362.0 million. Total business tax contributions associated with UF Health in Jacksonville activities in the Jacksonville MSA were estimated to be $86.5 million.

Table 5.2. *Summary of economic contributions of UF Health in Jacksonville to the Jacksonville MSA, 2017-18*

Entity/Activity	Applicable Expenditures	Output	Value Added	Labor Income	Property Income	Business Tax	Employment (Jobs)
	---------- Million Dollars ----------						
Hospitals, Clinics and Physician Offices	1,012.6	2,092.6	1,196.3	889.7	244.4	62.3	14,212
University Operations	189.4	343.1	276.9	207.9	60.4	8.6	2,313
Visitor Spending	113.0	198.2	116.8	60.0	43.3	13.4	1,813
Capital Spending	49.0	83.8	43.7	27.6	13.9	2.2	533
Student Spending	1.3	0.3	0.2	0.1	0.1	0.0	3
Total	**1,364.2**	**2,718.0**	**1,633.8**	**1,185.3**	**362.0**	**86.5**	**18,875**

Jacksonville MSA model contains Duval, Nassau, Baker, Clay and St. Johns counties. Values in millions of 2017 dollars. Estimates include indirect and induced multiplier effects. Source: IMPLAN© software and data (IMPLAN Group, LLC)

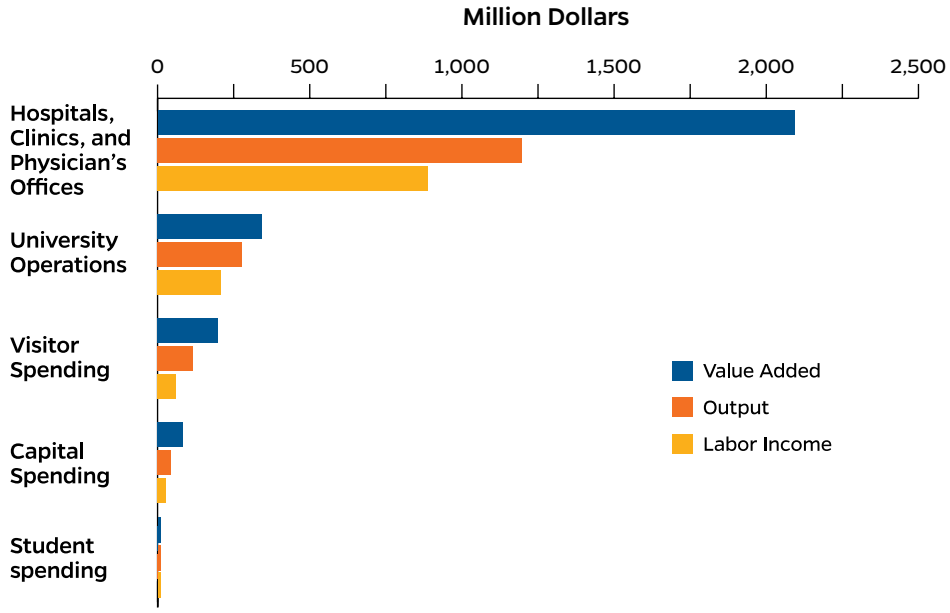

Figure 5.3. *Industry output, value-added and labor income contributions of UF Health in Jacksonville to the Jacksonville MSA in FY 2017-18*

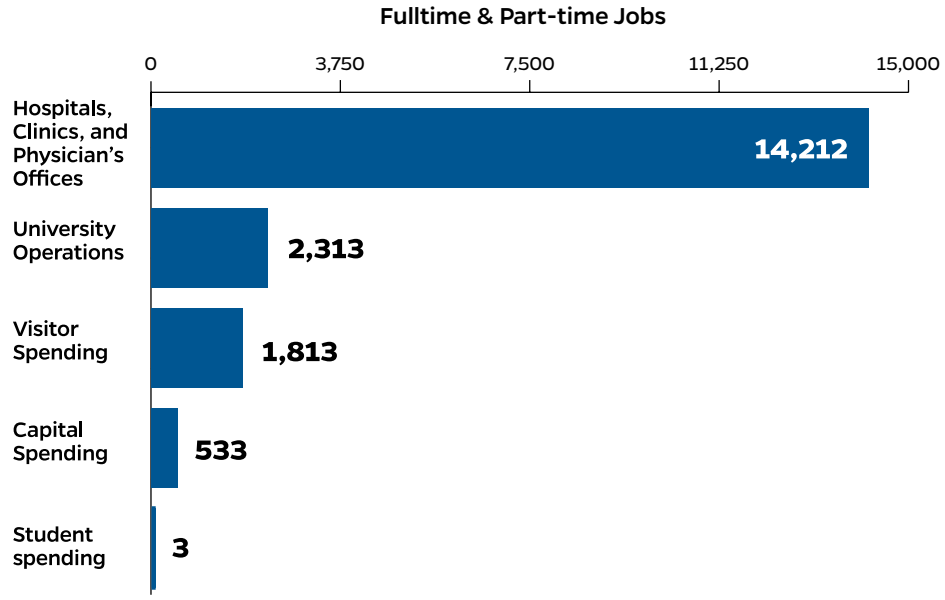

Figure 5.4. *Employment contributions of UF Health in Jacksonville to the Jacksonville MSA in FY 2017-18*

CONCLUSIONS

As part of one of the Southeast's premier academic health centers, UF Health in Jacksonville simultaneously educates the next generation of health professionals and provides leading-edge clinical research and high-quality patient care. The activities associated with UF Health in Jacksonville significantly contribute directly and indirectly to the economies of the Jacksonville area as well as the State of Florida.

The total economic contributions of UF Health in Jacksonville to the State of Florida were estimated at $2.874 billion in industry output or sales revenues, $1.706 billion in total value added and 19,842 fulltime and part-time jobs supported. Total economic contributions to the Jacksonville MSA were estimated at $2.718 billion in industry output or sales revenues, $1.634 billion in total value added and 18,875 fulltime and part-time jobs supported. The results can be used to inform public policy discussions regarding health care, higher education, medical research and economic development in the Jacksonville region and across the state.

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Photo courtesy of City of Jacksonville

APPENDIX A: GLOSSARY OF REGIONAL ECONOMIC ANALYSIS TERMS

Applicable expenditures are the expenditures by entity that have been adjusted for local purchase percentages and transformed from purchaser prices to producer prices, where applicable, and to avoid double-counting.

Employee compensation is composed of wages, salaries, commissions and benefits, such as health and life insurance, retirement and other forms of cash or noncash compensation.

Employment is a measure of the number of jobs involved, including fulltime, part-time and seasonal positions. It is not a measure of fulltime equivalents, or FTEs.

Exports are sales of goods to customers outside the region in which they are produced and represent a net inflow of money to the region. This also applies to sales of services to customers visiting from other regions.

Final demand represents sales to final consumers, including households and governments, and exports from the region.

Gross Domestic Product is a measure of total economic activity in a region, or total income generated by all goods and services. It represents the sum of total value added by all industries in that region.

IMPLAN© is a computer-based input-output modeling system that enables users to create regional economic models and multipliers for any region consisting of one or more counties or states in the U.S. The current version of the IMPLAN© software, version 3, accounts for commodity production and consumption for 440 industry sectors, 10 household income levels, taxes to local/state and federal governments, capital investment, imports and exports, transfer payments and business inventories. Regional datasets for individual counties or states are purchased separately.

Impact or total impact is the change in total regional economic activity (e.g., output or employment) resulting from a change in final demand, direct industry output or direct employment, estimated based on regional economic multipliers.

Imports are purchases of goods and services originating outside the region of analysis.

Income is the money earned within the region from production and sales. Total income includes labor income such as wages, salaries, employee benefits and business proprietor income, plus other property income.

Indirect business taxes are taxes paid to governments by individuals or businesses for property, excise and sales taxes but do not include income taxes.

Input-Output (I-O) model and Social Accounting Matrix (SAM) is a representation of the transactions between industry sectors within a region that captures what each sector purchases from every other sector in order to produce its output of goods or services. Using such a model, flows of economic activity associated with any change in spending may be traced backward through the supply chain.

Intermediate sales are sales to other industrial sectors. The value of intermediate sales is netted-out of Total Value Added.

Local refers to goods and services that are sourced from within the region, which may be defined as a county, multicounty cluster or state. Non-local refers to economic activity originating outside the region.

Margins represent the portion of the purchaser price accruing to the retailer, wholesaler and producer/manufacturer in the supply chain. Typically, only the retail margins of many goods purchased by consumers accrue to the local region, as the wholesaler, shipper and manufacturer often lie outside the local area.

Multipliers capture the total effects, both direct and secondary, in a given region, generally as a ratio of the total change in economic activity in the region relative to the direct change. Multipliers are derived from an I-O model of the regional economy. Multipliers may be expressed as ratios of sales, income or employment, or as ratios of total income or employment changes relative to direct sales. Multipliers express the degree of interdependency between sectors in a region's economy and therefore vary considerably across regions and sectors. A **sector-specific multiplier** gives the total changes to the economy associated with a unit change in output or employment in a given sector (i.e., the **direct economic effect**) being evaluated. **Indirect effects multipliers** represent the changes in sales, income or employment within the region in backward-linked industries supplying goods and services to businesses (e.g., increased sales in input supply firms resulting from more industry sales in the directly affected industry). **Induced effects multipliers** represent the increased sales within the region from household spending of the income earned in the direct and supporting industries for housing, utilities, food, etc. An **imputed multiplier** is calculated as the ratio of the total impact divided by direct effect for any given measure (e.g., output, employment).

Other property income represents income received from investments, such as corporate dividends, royalties, property rentals or interest on loans.

Output is the dollar value of a good or service produced or sold and is equivalent to sales revenues plus changes in business inventories.

Output-consumption ratio is the total industry output divided by the apparent consumption, for any given commodity or industry, and is a measure of the degree to which local demands are met by local production.

Producer prices are the prices paid for goods at the factory or point of production. For manufactured goods, the purchaser price equals the producer price plus a retail margin, a wholesale margin and a transportation margin. For services, the producer and purchaser prices are equivalent.

Proprietor income is income received by nonincorporated private business owners or self-employed individuals.

Purchaser prices are the prices paid by the final consumer of a good or service.

Region defines the geographic area for which impacts are estimated, usually an aggregation of several counties defined on the basis of worker commuting patterns.

Sector is an individual industry or group of industries that produce similar products or services or have similar production processes. Sectors are classified according to the North American Industrial Classification System, or NAICS.

University Operations expenditures include faculty and staff salaries, scholarships, utilities and services and supplies for the educational and research-oriented facilities. Services and supplies include categories such as facility maintenance, printing, office equipment and supplies, computers, medical equipment and supplies, laboratory equipment and supplies, patient care costs, laundry, facilities support services, travel, space rentals, etc.

Value Added is a broad measure of income, representing the sum of employee compensation, proprietor income, other property income, indirect business taxes and capital consumption (depreciation). Value added is the basis for calculation of Gross Domestic Product and is a commonly used measure of the contribution of an industry to regional economy because it avoids double-counting of intermediate sales.

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On the cover: *Surgery room (top circle), UF Health North (bottom circle) and UF Health TraumaOne helicopter (middle circle) in Jacksonville, Florida*