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Abstract

This analysis measures the regional economic value of The University of Iowa Hospitals and Clinics (hereafter, UIHC). The assessment looks at UIHC operational expenditures using a properly specified regional input-output model that accurately reflects its major spending categories and its primary territory of economic influence.

This analysis does not contain an estimate of the regional economic boost attributable to patients or the families of patients traveling to the Iowa City metropolitan area for services or other visits. An estimate of those values would require a scientifically valid survey of visitors and patients that details average duration of stay and the amount of spending accruing regionally. This study analyzes only the economic activity associated with the operation of the UIHC as a public health care institution.

The Economic Value of The University of Iowa Hospitals and Clinics

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Introduction

This analysis measures the regional economic value of The University of Iowa Hospitals and Clinics (hereafter, UIHC). The assessment looks at UIHC operational expenditures using a properly specified regional input-output model that accurately reflects its major spending categories and its primary territory of economic influence.[1]

This analysis does not contain an estimate of the regional economic boost attributable to patients or the families of patients traveling to the Iowa City metropolitan area for services or other visits. An estimate of those values would require a scientifically valid survey of visitors and patients that details average duration of stay and the amount of spending accruing regionally. This study analyzes only the economic activity associated with the operation of the UIHC as a public health care institution.

Data Sources and Basic Analytic Assumptions

Total spending by UIHC in fiscal 2012 was obtained from the Iowa Board of Regents. As it is important to properly classify several spending categories when specifying the economic model, UIHC's annual comprehensive financial report was also consulted. [2]

All economic analysis modeling for this study was done using the IMPLAN input-output system as well as its data sets for 2012. The primary region of analysis for UIHC consisted of Johnson County, where the bulk of medical services are provided, and the contiguous counties of Cedar, Iowa, Linn, Louisa, Muscatine, and Washington. While it is the case that UIHC in some manner or other serves all counties in Iowa, and that it has satellite clinics, the vast majority of its economic activity will occur in, and its employees will come from, the designated economic region above; it is therefore not appropriate to designate the entire state as the primary economic territory for a hospital complex. Doing so would inflate the resulting multipliers and overstate the hospital' regional economic contribution.

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[1] The economic territory of the UIHC is distinct from its service territory. The institution serves patients from the entire state, but the vast majority of UIHC economic activity takes place in a tightly circumscribed area.

[2] State Auditor of Iowa audit records were used to apportion capital, depreciation, and other elements of annual operational spending between The University of Iowa and The University of Iowa Hospitals and Clinics. Final levels of spending, however, were determined from Iowa Board of Regents data.

There is not a public hospitals sector in the IMPLAN model. Public hospitals are a component of the very large state and local government non-education sector in the modeling system.[3] Accordingly, a distinct public hospital sector must be created. That is done by repurposing the Private Hospitals sector of the model to reflect only The University of Iowa Hospitals and Clinic. In so doing, that sector was modified to contain UIHC actual fiscal 2012 operations expenditures, the precise amount of payroll it paid its employees, as well as the other major expenditure components. This modification process yielded a sector in the model that closely described the expected relationship UIHC would have with the regional economy.[4]

UIHC Spending and Employment

Table 1 shows the basic expenditures of UIHC for fiscal 2012. UIHC had $1.020 billion in expenditures. For modeling purposes, those expenditures were classified into payments to value added (wages, salaries, payments to investors), all other expenses, and those for capital and equipment. It is a standard practice in input-output accounting to separate current spending from capital accounts; accordingly, payments to capital and equipment are subtracted from the total to yield a final output value of $932.03 million in initial output at the institution.[5]

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[3] In IMPLAN, the State and Local Non-Education sector contains only data pertaining to employment and payments to workers. It does not contain itemized estimates of state and local health care spending. For estimating UIHC regional economic linkages, it is therefore necessary to appropriate and modify the private hospitals component to more completely UIHC's expected relationship with the remainder of the regional economy.

[4] The most accurate method for measuring economic contributions is to use a "bill of goods" method. This involves a highly detailed itemization of all spending by that which occurred within the specified region and that that occurred outside of the region. This method is time-consuming and must depend on special data sets by institutions' accounting departments. Studies by this author have found that a "hybrid" approach to modeling public institutions that accurately specifies employment, payments to workers, other payments to value added, as well as an institution's major spending categories yields results that are very close to those resulting from more rigorous and time-consuming approaches. Accordingly, this model is a hybrid analysis that contains several major spending categories for UIHC, yet allows the model to estimate the likelihood the purchases were, in fact, made within the specified region.

[5] This study does not contain estimates of the short-term value of capital development associated with new construction or the equipping of that new construction. New construction enables an increment to output at an institution that is captured in future evaluations, and the "worth" of using that construction annually is measured appropriately, again in future years, by properly accounting interest payments on indebtedness and asset depreciation.

Table 1

The University of Iowa Hospitals and Clinics Fiscal 2012 Expenditures and Modeled Output

Total Fiscal 2012 Expenditures	1,019,765,020
All Value Added:	
Labor Payments to Employees	652,956,184
Debt Interest and Depreciation	84,767,772
All Other Operating Expenditures:	194,307,355
Less: All Capital Expenditures	87,733,709
Equals: Output to be modeled	932,031,311

Table 2 describes employment at UIHC. In October of Fiscal 2012, it had 7,595 employees, about a third of whom were full-time professionals, scientists, or administrators. Referring back to Table 1, we see that these UIHC employees were paid $652.96 million in compensation in fiscal 2012.

Table 2

The University of Iowa Hospitals and Clinics Employment

F.Y. 2012	Total
Full-time academic, admin., & institutional	60
Full-time professional and scientific	2,425
General services staff	1,378
Part-time non-students	2,382
Part-time students	969
Temporary employees	381
Total employees	7,595

Understanding Impact Analysis Terminology

The overall value of UIHC to the regional economy is measured using a properly specified input-output model (I-O) of its primary region of economic influence. I-O models produce reams of useful information, but the most salient results for decision makers are (1) total industrial output, (2) labor income (3) value added, and (4) jobs. Total output for most industries is simply gross sales. For public institutions we normally define their annual expenditures, less capital and equipment purchases, as their annual output value. Labor income includes the wages and salaries of employees, along with normal proprietor payments for the management of their businesses. Labor income also includes the value of all employer-provided benefits. Value added is the most appropriate measure of regional economic value. It includes all labor income, plus returns to investors and indirect tax payments to government that are part of the production process. Value added is the same thing as Gross Domestic Product

(GDP). <u>Jobs</u>, the fourth measure, or employment, represent the number of positions in the economy, not the number of employed persons. As many people have more than one job, there are always more jobs in the economy than employed persons.

We also get detailed breakdowns of the aforementioned economic data subdivided into their direct, indirect, induced, and total economic effects. <u>Direct effects</u> refer to the operational characteristics of the firm or institution that we are studying; in this case it is UIHC. <u>Indirect effects</u> measure the value of demands that the direct firm or institution place on supplying industries in the study region. <u>Induced effects</u> accrue when workers in the direct and indirect industries spend their earnings on goods and services in the region. Induced effects are also often called household effects. <u>Total effects</u> are the sum of direct, indirect, and induced effects. They are the total of transactions attributable to the direct activity that we are measuring.

The term multiplier is often employed when referring to economic values or economic impacts. A multiplier, simply, is the total effects divided by the direct effects. In the first instance it is a ratio that helps us to understand how strongly industries or institutions are linked with one another in a study region. In addition, a multiplier can help us to anticipate how much the overall economy is expected to change per unit change in the direct effects (a dollar of output, a dollar of personal income, a dollar of value added, or a job). Multipliers help us anticipate the potential change in the regional economy attributable to a change in direct activity in a particular industry or institution. Firms with strong linkages to area supplying firms or that pay relatively high earnings may yield high multipliers. Firms that are otherwise not connected strongly locally or that pay lower than average wages will have lower multipliers. Urban areas with their more developed economies have, on the average, much higher multipliers than rural areas.

It is conventional for many people to call the results of I-O analyses the "economic impacts." In practice, however, when measuring public institutions like hospitals, it is advisable to reserve that designation for increments to productivity that exceed the institution's primary mission of providing medical care and other health services beneficial to the state as a whole. UIHC produces increments to state productivity that otherwise would not have occurred when it serves out-of-state patients, which then results in an export sale of medical services, or when it is able to attract research or special service spending from federal or private sources. For a university hospital, it is generally the case that its primary service base is in-state residents

In lieu of determining UIHC's unique economic impact, this study measures its total economic contribution to the regional economy by virtue of all spending and activity that would be expected from a public institution and that which represents increments to productivity due to the aforementioned factors. This total amount is often called the economic value, the economic effects, the economic contribution, or the economic footprint of UIHC. <u>The total amount will not be called the economic impact of the UIHC in this study.</u>

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Table 3 displays the economic contribution of UIHC in fiscal 2012. The hospitals and clinics complex had $932.02 million in operational output, which required 7,595 workers making $652.96 million in labor income. UIHC indirectly required $113.58 million in inputs from regional suppliers, which in turn paid $36.25 million in labor income to 938 workers. When the UIHC workers and the supply sector workers converted their earnings into household consumption, they induced $399.2 million in additional output, which in turn required 3,554 jobholders earning $139.04 million in labor income. Combined, UIHC accounted for $1.44 billion in industrial output, $1.08 billion of value added (or GDP), and $828.25 million in labor income to a total of 12,087 regional jobholders.

Table 3

The University of Iowa Hospitals and Clinics Total Economic Contribution, Fiscal 2012

	Employment	Labor Income	Value Added	Output
Direct	7,595	652,956,184	737,723,956	932,031,311
Indirect	938	36,253,594	76,874,739	113,577,090
Induced	3,554	139,036,538	261,724,102	399,150,048
Total	12,087	$ 828,246,316	$ 1,076,322,797	$1,444,758,449
Total Multiplier	*1.59*	*1.27*	*1.46*	*1.55*

The table also contains a row of multipliers, which are the total values divided by the direct values. An output multiplier of 1.55 means that for every $1 of output at UIHC, $.55 in output is supported in the rest of the regional economy. A value added multiplier of 1.46 means that for every $1 of value added generated at UIHC, $.46 in value added is supported in the rest of the region. A labor income multiplier of 1.27 means that each $1 of labor income paid at UIHC results in an additional $.27 in labor income elsewhere in the area. And an employment multiplier of 1.59 means that for every job at UIHC, there is 49/100th of a job in the rest of the economy.

In interpreting the results in Table 3 it is often tempting to go with and convey the largest number, i.e., the total output value of $1.44 billion, to describe the worth of UIHC to regional economic accounts. However, standard government economic tables do not report on regional economies in terms of gross output; they measure economies based on the consequences of producing that output. Accordingly, the preferred measure of the worth of UIHC to its regional economy is that it contributes directly or indirectly to the $1.08 billion in value added (or GDP), of which $828.25 million is in the form of labor income to 12,087 employed persons.