

Health Care Clinic Regional Economic Values for Cedar Rapids / Linn County

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Introduction

This is an evaluation of the regional economic value of a new primary care health care clinic in the Cedar Rapids area. The new clinic is assessed using an input-output (I-O) model of the Linn County economy. The elements of analysis include the temporary impacts of constructing the clinic in a downtown Cedar Rapids location, the annual value of the clinic to the Cedar Rapids economy once construction is completed, and the potential economic impact the clinic might yield were it able to expand services at a future date.

Health Industry Overview

Table 1 indicates the metropolitan area had 487 health care establishments in 2007. Of that total, there were 373 ambulatory care establishments, within which were 89 offices of physicians and 21 outpatient care centers. Ambulatory care centers made up nearly 77 percent of the region's health care establishments.

Table 1

Cedar Rapids Metropolitan Area Health Services Establishments in 2007		Establishments
Total		487
Ambulatory Health Care Services		373
Offices of Physicians		89
Offices of Dentists		97
Offices of Other Health Practitioners		119
Outpatient Care Centers		21
Medical and Diagnostic Laboratories		9
Home Health Care Services		24
Other Ambulatory Health Care Services		14
Hospitals		4
Nursing and Residential Care Facilities		110

Source: County Business Patterns, 2007

The degree to which the region serves as a health delivery center to its resident population as well as to external populations can be assessed. Table 2 provides those estimates. Of the 12,077 total jobs identified in the modeling system, a third are in the offices of physicians, dentists, and other health professionals. A location quotient of the county's total employment in each major category relative to local population was compared with the national value for the same ratio. A location quotient (LQ) greater than 1.0 indicates the county is producing health care services in excess of population demand; a value less than one means county residents may seek categories of health services delivery from sources external to the county. The location quotient can be used to give an estimate of the fraction of jobs in a category that are considered producing for external demand (i.e., export jobs) using the formula:

$$\text{Export Jobs} = (1 - 1/\text{LQ}) \times \text{employment in the industry of measure}$$

The LQ of 1.29 for physician and dentist offices translated into 869 export services producing jobs, 23 percent of the total in that category. That means that 2,985 jobs were required to satisfy resident demand for those services. Hospital services had an LQ of 1.46, of which 1,391 or 32 percent were serving demand external to the county. Last, area nursing and residential care facilities had an LQ of 1.32 with 653 or 24 percent producing for export demand. In all, among just those categories producing for external demand, 2,912 jobs or 27 percent were export jobs.

Table 2

Linn County Health Care Employment and Measures of Specialization

	Jobs	Location Quotient	Export Jobs	Percent Export*
Offices Of Physicians, Dentists, and Other Health Professionals	3,854	1.29	869	23%
Home Health Care Services	551	0.71	N/A	N/A
Medical and Diagnostic Labs and Other Outpatient Services	607	0.77	N/A	N/A
Private Hospitals	4,390	1.46	1,391	32%
Nursing and Residential Care Facilities	2,675	1.32	653	24%
Total Jobs	12,077	N/A	2,912	27%

* Total export percentage based only in categories with export jobs

Source: Input - Output model of the Linn County Economy

When categories of economic activity produce in excess of residential demand, they are classified as basic industries or export-oriented industries. Higher quality services like health, professional and business services, and education are often concentrated in major population centers, and they serve an extended service territory that is greater than the political boundary of the area. Because a meaningful portion of the local health care industry is producing for export, we would conclude that changes in employment in that industry would have a discernible economic impact in the region if that change in employment exceeded rates of population growth. If overall external demand expanded or declined, one would expect there to be a concomitant changes in health care services and jobs, to include all indirect impacts that would be measured using an I-O modeling structure.

Calculating the Economic Value of Physicians’ Clinics in Linn County

The economic scenario for this study involves the consolidation of Physicians’ Clinics of Iowa into one central location in the City of Cedar Rapids. Total facility construction costs were \$44 million, and the facility once constructed would employ 350 existing workers with a total declared payroll of \$38.0 million. The temporary economic impacts of the construction activity are measured first, followed by the regional economic value of the clinics once in operation. Next, a growth scenario will be estimated that projects regional job gains from incremental gains. Last, sets of local government fiscal impacts will be summarized to demonstrate the value of this enterprise to local government tax collections.

Understanding Economic Impact Terminology

Input-output models (I-O) generate a wide variety of information that can be useful for industrial analysis or economic development planning. In analyzing typical firms or classes of industrial activity, it is often most useful to focus on industrial output, labor income, value added, and jobs.

Industrial output represents the annualized value of all goods or services produced by the entity being studied. For most industries it is analogous to gross sales. For public or quasi-public institutions we include all public outlays, along with the value of government sales and other subsidies received, to isolate the current economic value of their output to the citizens or the area served.

Labor income includes the wages and salaries of employees in all of the industries that we study along with an estimate of the cash value of all regular employee benefits. It also includes normal profits to sole proprietors. Labor income is important because it represents the bulk of income that will find its way into regional household spending.

Value added is a measure of regional product, and when aggregated to the state or national level is the same thing as gross domestic product (GDP). It includes all employment compensation, incomes to sole proprietors, property incomes (dividends, interests, and rents), and indirect tax payments that are considered normal costs of doing business (primarily property, excise and sales taxes paid by individuals to businesses). It is important to remember that value added already includes labor income.

Jobs, the last measure, represent the number of positions in the economy, not the number of employed persons. The distinction is important. Many industries produce full-time jobs primarily. Professional services firms, for example, tend to hire full-time, full-year positions primarily. Other industries, like recreational services, retail sales, and dining and drinking establishments may hire a preponderance of part time or seasonal workers. The jobs value represents the number of jobs required on an annual basis to accomplish the activities measured.

The modeling process also provides detailed measures of the direct, indirect, induced, and total economic effects of the industry of scrutiny.

Direct effects refer to the operational characteristics of the activities, firms, or industries that we are studying directly.

Indirect effects measure the value of additional economic demands that the direct firms or institutions place on supplying industries in the region. When firms conduct business or public

entities provide public goods, they must make many purchases from a wide variety of commodity and service suppliers in the area. Public utilities, communications systems, fuel, wholesale goods and services, manufactured goods, financial and legal services, and an array of professional services are necessary, for example, health services.

Induced effects accrue when workers in the direct and indirect industries spend their earnings on goods and services in the region as part of their household spending. Induced effects can also be called household effects.

Total economic effects are the sum of direct, indirect, and induced effects. They are all of the transactions attributable, either directly or indirectly, to the activities that we are measuring.

The term *multiplier* or *multiplier effect* is used when describing economic effects or economic impacts. There are different kinds of multipliers, but in this study a multiplier is the simple ratio of the total value in a particular category divided by the direct value. The multiplier tells how much the overall economy changes (or is otherwise dependent) per one unit change in the direct effects (e.g., how much the remaining economy changes per change in a dollar of output, a dollar of labor income, or per job in the direct industries or institutions that we are analyzing). Multipliers help us to anticipate the potential change in the regional economy attributable to a change in direct activity in a particular industry. They also indirectly help us gauge the implicit worth of firms or industries. All things equal, firms with comparatively high income and job multipliers are preferred over firms with comparatively low multipliers.

Multipliers can be instructive for anticipating economic growth, in the case of a new or expanding firm, and economic decline, in the case of a plant closing. Firms with strong linkages to area supplying firms or paying comparatively higher earnings than others in a study area may yield higher multipliers. Firms that are otherwise not linked strongly to local suppliers or that pay lower than average wages will usually produce lower multipliers. Urban areas with their more highly developed and diversified economies have, on the average, much higher multipliers than rural or smaller urban areas.

Temporary Construction Effects

The consolidation of Physicians' Clinics of Iowa (PCI) operations into one central facility will require \$44 million in construction expenditures. The regional effects of construction activity must be carefully summarized and circumscribed. Ongoing firms in a region periodically reinvest in capital facilities. As a consequence, a portion of a region's construction industry exists to provide replacement capital to homes, businesses, industries, and public infrastructure. Accordingly, in this instance, it is not assumed that capital investment will result in an expansion of the region's construction capacity: to the contrary, it would represent a normal use of existing regional construction capacity.

The short term value of that investment can be estimated, however, with an I-O model. The regional economy was boosted by \$44 million in the commercial construction category. Table 3 provides the results and will be used to demonstrate the interpretation of the different values.

Demand for construction services was \$44 million. In so doing, those construction firms would be expected to require 277 workers who would make \$16.23 million in labor incomes. Area construction firms would procure \$8.86 million in inputs from the regional economy, supplying which would require 66 jobs making \$3.38 million in labor incomes. When the workers in the direct and the indirect sectors converted their labor incomes into household purchases, they would induce another \$11.59 million in output in the region, and that would require 110 workers making \$3.66 million in labor incomes. Combined, the construction activity would result in \$64.45 million regional output, \$30.3 million in area value added (which is the same thing as gross domestic product), \$23.27 million in labor income (which is already included in value added), and 453 jobs.

Table 3

PCI Construction Economic Values					
	Direct	Indirect	Induced	Total	Multiplier
Output	44,000,000	8,858,663	11,587,114	64,445,776	1.46
Value Added	18,548,740	4,853,457	6,897,585	30,299,782	1.63
Labor Income	16,229,549	3,380,554	3,659,004	23,269,106	1.43
Jobs	277	66	110	453	1.64

Multipliers are also displayed. A multiplier is the ratio of the total value to the direct amount. An output multiplier of 1.46 means that for every dollar’s worth of direct output, \$.46 in output was supported in the rest of the economy. The labor income multiplier of 1.43 means that for every dollar’s worth of labor income in the direct industry, \$.43 in labor income is supported in the rest of the economy. The jobs multiplier of 1.64 means that for every job in the construction industry, 64/100th of a job is maintained in the rest of the economy.

Table 3 assumes all of the activity is accomplished in one calendar year. If the project takes more than a year, then the values must be divided by that number to get the annualized worth of the activity to the regional economy. For example, if the project took the better part of two years to compete, then all of the financial and job values would be divided by two to estimate the annual value of the activity. Furthermore, when construction ends, all the values in Table 3 necessarily end. In effect, absent new capital investment, the construction industry must contract, and in so doing, so too would the indirect industries and the induced sectors.

PCI Regional Economic Effects

The regional economic value of all Linn County medical professionals clinics was first analyzed to understand the overall size and value of this service industry to the entire regional economy. The economic data for the PCI analysis indicated substantially higher labor incomes per job than the regional average. The regional average labor income for all jobs at medical clinics was \$78,500. For PCI, the specifications for this research indicated that average earnings for the 350 PCI workers would be \$108,570 per job. Accordingly, the baseline tables were adjusted to reflect what one must assume to be higher levels of productivity per worker in the PCI operations as compared to the regional average to produce the values in Table 4.

Adjusted such, the consolidated clinic would be expected to produce \$63.5 million in output with its 350 existing workers who are compensated a total of \$38.0 million in labor incomes. PCI would be expected to stimulate \$10.8 million in indirect activity among all suppliers to the clinic, which would support 68 area jobs and \$3.76 million in labor incomes. Those direct and indirect labor incomes would further demand \$25.1 million in induced transactions in the Linn County economy, which would boost employment by 239 jobs receiving \$7.92 million in labor incomes. In all, the clinic would support \$99.4 million in regional output, \$65.1 million in value added, of which \$49.7 million would be labor income going to 657 jobs.

Table 4

Physicians' Clinics of Iowa Regional Economic Values

	Direct	Indirect	Induced	Total	Multiplier
Output	63,466,631	10,781,213	25,103,332	99,351,176	1.57
Value Added	44,078,287	6,045,410	14,944,745	65,068,442	1.48
Labor Income	38,000,000	3,760,554	7,918,859	49,679,413	1.31
Jobs	350	68	239	657	1.88

The output multiplier of 1.57 means that for every dollar’s worth of PCI output, the regional economy sees an additional \$.57 of output. The labor income multiplier of 1.31 means that for every dollar’s worth of labor income paid at PCI, \$.31 in labor income is supported regionally. The jobs multiplier of 1.88 means that for every job at the clinic, 88/100th of a job is supported in the regional economy.

Growth Scenarios

The values in Table 4 assume the continued employment of all PCI workers that are currently in various locations, albeit now consolidated into one central facility. Except for the short term construction

activity that would be ended at this stage, there is no expansion in regional productivity; hence, there is no economic impact change in the region. As the region is a net exporter of clinical services provided by physicians, expansion in employment at PCI, were it to result in an increase in regional clinical services capacity would constitute net gains in regional economic activity provided those expansions did not come at the expense of other clinical services providers' sales. Were it the case that PCI indeed could expand in the future, the multiplier values in Table 4 could be used to estimate those impacts.

Table 5 demonstrates the potential regional economic impacts that could be attributed to PCI were it to increase employment by 50 jobs. This assumes existing physician to staff relationships remain constant in the expansion. Were PCI to add 50 jobs and that expansion resulted in a net increase in medical services in the region, it would produce a projected \$14.2 million in additional regional output, \$9.3 million in regional value added, \$7.1 million in labor incomes, and 94 total jobs.

Table 5

Physicians' Clinics of Iowa Impacts Per 50 New Employees

	Direct	Indirect	Induced	Total
Output	9,066,662	1,540,173	3,586,190	14,193,025
Value Added	6,296,898	863,630	2,134,964	9,295,492
Labor Income	5,428,571	537,222	1,131,266	7,097,059
Jobs	50	10	34	94

A Short Discussion of Economic Impacts Through Reduced Imports

Linn County, as has already been determined, is a net exporter of many categories of medical services. It of course has intense regional competition from The University of Iowa Hospitals and Clinics, all Des Moines area medical facilities and specialties, as well as the internationally potent medical agglomeration in Rochester, Minnesota. If area medical providers are able over time to reduce resident population dependence on these external, competing medical services, then each increment of service provided locally that previously had been provided externally constitutes an economic impact to the region. The term for that is import substitution. To measure that potential, one would evaluate regional location quotient performance (as demonstrated in Table 2) over an extended period of time, say in 5 year increments. If LQs were indeed increasing consistently, one would conclude that the region is either increasing exports or reducing the need to import medical care. Either phenomenon results in boosts to regional value added and can be counted as an economic impact. Sorting out which is occurring,

however, would prove to be exceedingly difficult without conducting an extensive and prohibitively expensive multi-year survey of regional medical services consumers.

Fiscal Impacts

There are two measures of regional fiscal impacts that can be evaluated. The first merely looks at the short term increment to regional property tax receipts from the construction of a new clinic. This evaluation assumes the clinic results in a net gain in regional commercial taxable valuation and that all existing clinic space does not lose value as a consequence of the consolidation. Were that the case, then it is reasonable to assume that the initial taxable valuation of the new facility plus its land area would be \$44.0 million.

Consequently,

\$44.0 million in taxable valuation for the PCI clinic

X Cedar Rapids tax rate of 15.21621 per \$1,000 of taxable valuation

= \$669,513 in city property taxes

X Cedar Rapids consolidated tax rate of 36.31263 per \$1,000 of taxable valuation

= \$1.598 million total property taxes to all local governments

This business level property tax summary of course assumes that there are no property tax offsets, such as tax abatements or full or partial refunds of tax increments within a tax increment finance district as are often the case in new urban developments.

The second manner in which regional fiscal impacts can be calculated would be to use the labor incomes in Table 4 and a portion of the value added amount in excess of labor income to estimate the levels of local government own source receipts (for all Linn County local governments) that would be expected as well as state government tax receipts given the levels of economic activity and the likely locally taxable incomes that are generated as a result. The following example would subsume a portion of the values listed above, but provides an alternate measure of potential total local government support as a consequence of the economic activity in the region attributable to PCI operations.

Those values are found in Table 6. Existing PCI employment plus all of their multiplied-through contributions to the Linn County economy would be expected to support \$2.91 million in local government own-source revenues, about 53 percent of which would be property taxes. State government tax receipts would amount to \$2.39 million. As local and state governments must operate on balanced budgets and do not generate surpluses, especially in the current economic situation, it is assumed that all local and state government receipts are consumed as local and state government services and that there are no surplus resources remaining.

Table 6

**Local and State Government Fiscal Impacts From Existing
PCI Economic Effects***

All Local Governments	
Property Taxes	1,540,823
Other Local Taxes	248,737
Charges and Fees	1,115,503
Subtotal Local	\$2,905,063
State Government	
Sales Taxes	762,326
Income Taxes	1,323,358
All Other Taxes	304,712
Subtotal State	\$2,390,396
Total State and Local	\$5,295,458

**As not all job holders would be Linn County residents, 85 percent of labor incomes were used for this calculation.*