

THE ECONOMIC IMPACT OF SOUTH BEND'S MEMORIAL HOSPITAL

A Report

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June, 2015

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The Economic Impact of Memorial Hospital

A Report

Section I. Introduction and Summary

What is Economic Impact?

There are many dimensions to economic impact. Consider the case of Memorial Hospital in South Bend, Indiana. As in most communities, the local hospital is a key component of the local economy. First and foremost, of course, is recognition that a viable economy is synonymous with one served well in terms of health care – a factor known to affect not only the capability of workers and consumers, but also location decisions of both businesses and households. In this regard, Memorial is obviously of vital importance to the St. Joseph County economy. In addition, Memorial provides stable jobs and compensation topping \$133 million to county residents for some 2,321 employees, helps support hundreds of local supplier firms, provides millions of dollars worth of charity care, and serves as a medical treatment center for 751 area physicians. Total employment of 2,818 ranks the Hospital as the second largest employer in the whole of St. Joseph County.

In analyzing Memorial's 2013 impact-related income, it will be shown in the pages to follow that another especially vital aspect of economic impact is at work in Memorial's operations. That is, nearly one-third of inpatient and outpatient revenues and Hospital jobs associated with these dollars are directly attributable to services delivered to patients who reside outside of St. Joseph County. While still recognizing the large economic impact of the in-county revenues, labor income, and jobs, the emphasis here will be on the flow of that portion of revenues, labor income, and jobs from outside that makes Memorial a *principle contributor to the continuing economic development* of the area. Since it is not as easily recognized as the others, this latter impact requires some examination, and that is the main focus of this report.

The methodology used in the study, then, described in detail beginning on page 4, is based on the premise that the *driving force* in the *economic development* of a local economy is its *export sector* where, in this case, some goods and services produced within St. Joseph County are sold to users from outside the County. Local firms that attract this outside income then funnel a portion of those dollars into the area through payroll expenditures and the purchases of local supplies and services that create more local income and jobs in a process referred to as a multiplier or economic “ripple” effect.

A number of studies provide evidence of the economic development impact of health care providers in large metropolitan areas. For example, it was found that academic based health centers in major U.S. cities like Boston, New York, Baltimore, Pittsburgh, Indianapolis, St. Louis, and Los Angeles channel a large stream of outside income into the community. The total income resulting from commuting patients amounted to over \$1 billion per community and, in the cases of New York and Boston, the figures exceeded \$4 and \$3.5 billion, respectively.¹ The impacts of smaller institutions like Memorial have gone largely unnoticed in the literature, but as will be seen in the pages to follow, the relative impact of Memorial Hospital to the local area is also very impressive.

Memorial’s Economic Development Impact

The findings of this study of Memorial’s economic development impact are covered in considerable detail in Section IV of the report. In summary, however, the findings show that in part, and on the basis of operations in the year 2013, Memorial accounts for a yearly economic development impact in the St. Joseph County area economy, considering both the multiplier effect and an average year of significant construction activity, of \$187 million in area income (or, \$397.8 million in new revenues/sales) and the equivalent of 3,215 full-time local jobs. These are dollars and jobs that would not otherwise exist locally in the absence of Memorial Hospital.

Section II: The Health Care Industry – Dimensions and Trends²

National and State Dimensions of the Health Care Industry

In viewing health care activity as an industrial component of the U.S. economy, it becomes evident that this industry is a major player. It employs 10.6 percent of all workers, accounts for about 7.9 percent of all business establishments, and produces 16.6 percent of the total dollar value of the nation's output, the Gross Domestic Product. Given changing demographics and great technological advances affecting the delivery of quality medical care, forecasters expect the industry to continue to be an important contributor to the nation's economy.

The State of Indiana shares in this dynamic industry profile. Health care is the third largest employer in the State. 4 percent more workers are employed in health care as are employed in the hotel/motel and food service sector. In a state where manufacturing is dominant, 5.1 percent of Indiana's Gross State Product is accounted for by a combination of education and health services.

The St. Joseph County, Indiana Area

As is the case in Indiana as a whole, health care is a major component of the St. Joseph County local economy. The industry employs 10.1 percent of the County's workers, and is fourth in total only to the manufacturing, retail, and educational services industries. While the nation as a whole was experiencing little economic expansion, the local health care industry witnessed job growth of 4.3 percent over the last five years. And, both St. Joseph County and the State of Indiana can expect to share in the continued growth of the health care industry that is predicted for the nation as a whole.

Memorial Hospital

Employing a total of some 2,818 persons in 2013, Memorial Hospital, as cited in the preceding introduction, was St. Joseph County's second largest employer. Patient days served in 2013 totaled 103,191, and net revenues analyzed in this study³ exceeded \$438.9 million in total.

Memorial Health System, a not for profit entity, includes a variety of associated health care business units including: Memorial Hospital of South Bend, Memorial Medical Group, MedPoint Urgent Care Centers offering walk-in physician care, MedPoint Express offering walk-in nurse practitioner care, Memorial Center for Occupational Health, Memorial Venture Center, and the for-profit Memorial Home Care division which includes five retail home care stores and comprehensive home health visit services such as in-home IV therapy, nurse/aide home visits, home delivery, and maintenance of medical equipment and a retail pharmacy. Memorial also is a founding partner of Community Health Alliance health insurance PPO.

Memorial Hospital of South Bend, which dates back to 1892, is an independent, not-for-profit, community-owned hospital and was the first hospital in the US to adopt an official tithing policy to directly invest in community health enhancement efforts. In addition to the traditional hospital operation, Memorial operates a freestanding fitness center, outpatient physical therapy centers, a senior health center, 24 hour nurse call center, a children's health museum, a Family Practice Residency Program, Sports Medicine Fellowship Program, and a Health Foundation where donations to the organization are processed.

Section III: Study Methodology

The methodology employed in this study is an application of the *Export Base Model*⁴ that is often used in economic impact analysis. Some basic elements of the model are as follows:

Outside Income – A Flow of Dollars from Outside the Community. Income resulting from the purchase of local goods and services that flows into the community from outside St. Joseph County is referred to as *outside income*. This income fosters local economic development since the dollars that are retained locally support the creation of additional new dollars and jobs throughout the community.

Traditionally, area exports were associated with the shipment of manufactured goods to outlying areas. In recent years, however, after a century in which manufacturing

was dominant, the nation has witnessed the emergence of services as the major source of metropolitan growth. On the other hand, not all services generate economic growth. In fact, few services give rise to outside income due to two basic economic considerations – access and cost. Understandably, consumers dislike spending time and money traveling long distances to make purchases. They prefer to have services as accessible as possible. In addition, most service activities do not enjoy substantial economies of scale and consequently do not benefit from large-scale operation. As a result, even relatively small communities have resident plumbers, barbers, and dry cleaners, to cite just a few. Such services rarely bring a community outside income since they are also available in nearly every neighboring community.

On the other hand, as will be shown in the paragraphs to follow, a select group of services that includes major health care providing institutions like Memorial act as a source of outside income and employment to their communities and, therefore, are important contributors to local economic development.

Saved Income – Capturing Dollars Previously Spent Outside the Community. Early in a community’s existence, in the absence of broad-based service and goods-producing sectors, much outside income earned leaves a community for purchases of goods and services from outside the local area, which creates little or no additional area income. As the community prospers and grows, however, markets expand and firms that can supply needed goods and services find it profitable to locate and produce locally. The resulting substitution of outside purchases has the effect of *saving income* that had previously leaked out of the area, and therefore, fosters expanding local economic development. In Memorial’s case, with continuing economic growth of the area, it became feasible over time to locally offer a broader range of increasingly specialized medical services.

This study quantifies two important sources of saved income attributable to the operations of Memorial: The Hospital’s offering of unique services locally; and, the attraction of medical specialists to the area.

- **Unique Services.** Certain specialized service activities requiring large market areas not only provide local communities a source of outside income, but also

allow residents to purchase locally what they could only obtain elsewhere before. A few examples of services associated with Memorial that are unique to St. Joseph County include the Neonatal Intensive Care Unit, the Pediatric Intensive Care Unit, the Bariatric Program, and the Trauma Center Level II.

- **Medical Specialists Attracted.** Through the years, the Hospital has been an attraction for physicians to St. Joseph County in many fields including physical medicine/rehabilitation/physiatry, pediatric hematology-oncology, and bariatric surgery, to cite but a few. The income that derives from the private practices of these specialists also captures dollars that would otherwise have flowed to outside areas.

The Multiplier Effect. As the community acquires new outside and saved income, a complementary *multiplier effect* takes place. That is, newly acquired dollars are now income for local producers who in turn spend a portion of their dollars locally in a second round of spending. Those expenditures generate still more income for other producers in successive additional but declining rounds of spending. By the time the effect has run its course, the original dollars and jobs have expanded by a multiple.

The Export Base Model provides a means of measuring all of these elements of the economic development impact covered in the study, and are addressed in Section IV as they relate to Memorial Hospital. For purposes of the study, the “local area” is defined as *St. Joseph County*. Data from *calendar year 2013*, the last full year of available data, were used to compute estimates of yearly impact. In addition, the one-time economic impact derived from Memorial’s yearly construction activity is covered in Section IV.

Section IV: Findings – Economic Development Impact

Memorial’s Revenues

As will be noted in Table 1, Memorial brought nearly \$158 million of outside revenues into the area in 2013, an impressive amount by any standard, and a full 36 percent of total revenues. These outside revenues arise from a variety of sources. By far the largest share was derived from servicing inpatients and outpatients from outlying

areas. 35.8 percent of inpatient and outpatient revenue credited to these two sources was outside income.

Table 1
Sources of Outside Revenues

	Total	Outside (Non-Local)	Outside Percentage
Inpatient Revenues	\$245,438,437	\$ 91,367,152	37.2%
Outpatient Revenues	136,921,696	45,736,761	33.4%
Other Revenues*	56,583,574	20,861,943	36.9%
TOTAL	\$438,943,703	\$157,965,856	36.0%

*Other Revenues include those of Memorial Medical Groups

In analyzing some *inpatient* procedures, it is interesting to note the contribution that *outside revenue* made to the Hospital's total revenue. In the following sampling of four relatively large revenue producing Diagnosis Related Groups (DRGs are individual diagnosis classifications that constitute a method of payment defined by Medicare), 58.0% of total revenue was derived from servicing outside residents – 8.6 percentage points greater than the inpatient percentage shown in Table 1.

<u>DRG</u>	<u>Description</u>	<u>Total Revenue</u>	<u>Outside %</u>
470	Major Joint Replacement or Reattachment Of Lower Extremity W/O MCC	\$23,884,114	62.7%
460	Spinal Fusion Except Cervical W/O MCC	12,460,680	58.8%
885	Psychoses	8,388,743	49.2%
3	ECMO or Trach W MV 96+ Hrs or PDX Exc FA	6,596,231	50.8%

Many such procedures that could not be economically provided in smaller communities served as major attractions for patients residing in these outlying areas and, therefore, provided a substantial flow of outside income to the St. Joseph County area.

It is noted that still other indirect revenues that occur as a by-product of Memorial's activities are important but *are not included in this study*. For example, out-

of-area patients are often accompanied by relatives or friends who remain in the community for some days; and, vendors, salespersons, and other visitors call on the Hospital each week. The expenditures made by these visitors for hotel rooms, transportation, meals, and other items also contribute significantly to the area economy.

Leakages

While Memorial was responsible for generating a total of \$158 million in outside income during 2013, not all of these dollars remained in the local area. For example, 26.3 percent of the Hospital's employees reside outside of St. Joseph County, and a large share of their salaries was spent and saved in their resident communities. In addition, a large proportion of Memorial's expenditures for specialized supplies, equipment, and services that cannot be obtained locally went to vendors located in other communities. Still other outside dollars went for federal and state payroll taxes, pension programs, discounts to some commercial payers, bad debts, depreciation, interest, and so forth. These leakages were lost to the local income stream. *The income and job multipliers that are employed in this report take into account the extent to which outside income earned leaks out of St. Joseph County in the hospital and health care industries.*

Saved Income

As was indicated in the earlier description of saved income, the presence of Memorial Hospital has permitted virtually thousands of area residents over the years, who would have otherwise had to travel beyond St. Joseph County to neighboring communities in order to avail themselves of certain medical services, to acquire this care without having to leave their own community. Eleven examples of saved income arising from *unique services*, where Memorial is the sole provider in St. Joseph County, are listed in Table 2.

Table 2
Saved Income from Unique Services

<u>Service</u>	<u>St. Joseph County Revenue</u>
NICU	\$11,315,427
PICU	4,698,672
Peds Rehab ST	6,259,187
Peds Rehab OT	5,447,409
Epworth Adult Acute (EC3)	6,922,108
Peds Rehab PT	2,021,222
Peds Oncology	2,353,643
Epworth Older Adults (GP2/3)	3,065,147
Helicopter Services	753,039
Peds Psych (EC2)	951,638
Adult Depression (2N)	274,624
Driver's Educ	126,050
 Total from Unique Services	 <u>\$44,188,166</u>

Again, Memorial is the only health care provider in St. Joseph County delivering these services. Since the *outside revenue portion* of these services was included in Table 1's computations, it is appropriate here to add back \$44.2 million of revenues *originating from within St. Joseph County* as dollars contributing to the local economy in 2013 before considering multiplier effects.

The second area of saved income, *the attraction of medical specialists*, contributes to the growth of income in St. Joseph County in a similar manner. Using regional estimates of the amounts earned in the practices of area physicians⁵, it is estimated that the impact to the local community, before considering multiplier effects, was \$17.5 million in 2013.

Multiplier Effects

Each dollar of Memorial's revenues shown in Tables 1 and 2 leads to about \$0.52 of labor income, thereby generating \$82.1 million of direct labor income from outside inpatient and outpatient revenues, \$23 million from saved unique services revenues, and \$9.1 million from saved physicians' income. In total, then, this combination of outside and saved income made a direct economic development contribution of \$114.2 million to the St. Joseph County income stream in 2013. In addition, 1,676 direct jobs were

attributed to an infusion of that amount. As described previously, the *multiplier effect* magnifies the local impact of that income and of its resulting job creation.

Estimates of income and employment multipliers vary from place to place, where the size of the community, the value added (the amount of income created per employee in the sector), and the type of industry are important determinants of the size of the multipliers. Data associated with the income, revenue, and employment multipliers exclusive to St. Joseph County’s hospital and physician offices sectors were obtained from IMPLAN Group, LLC of Huntersville, NC.⁶ Multipliers applicable to this study are as follows:

	<u>Income Multipliers</u>	<u>Revenue (Sales) Multipliers</u>	<u>Employment Multipliers</u>
Hospital Sector	1.48	1.64	1.77
Physician Office Sector	1.41	1.68	1.72

An income multiplier of 1.48 suggests that for each \$100 of direct income generated by the Hospital, an additional \$48 of indirect and induced income is produced by the multiplier effect throughout the broader local economy.⁷ Similarly, an employment multiplier of 1.72 suggests that for each 100 direct jobs created by the practices of area physicians, the multiplier effect will generate another 72 indirect and induced jobs throughout the broader local economy.

Total Economic Development Impact

After applying the appropriate income multipliers, the \$ 114.2 million of outside plus saved income added a total of \$171.3 million to the area’s income stream in 2013. Further, this infusion of income created a total equivalent of 2,959 new full-time jobs in the community, 1,283 of which were the result of the employment multiplier effect. It is important to note that these increases in income and employment represent dollars and jobs that would not otherwise exist locally in the absence of Memorial Hospital.

To more fully illustrate the breadth of this economic development impact, Table 3 provides estimates of a breakdown of additional expenditures that could be expected to result from an infusion of \$171.3 million. Then, by making some rough assumptions

about per unit purchase costs, it is also possible to convert the dollar figures in Table 3 to quantity equivalents. These calculations reveal that various components of the total \$171,290,530 expenditures went, for example, to pay for an estimated 818 thousand meals away from home, 614 rental apartment units, 167 new vehicle purchases, 2.7 million gallons of gasoline, 145 thousand entertainment fees and admissions, and 943 major appliance purchases.⁸ While local firms such as pharmacies and home medical providers are the most visible beneficiaries, the demand for virtually every consumer product and service provided by firms in the St. Joseph County area is enhanced by Memorial's presence in the local community.

Expenditure	Percent	Additional Expenditure
Total Expenditure	100.00%	\$ 171,290,530
Food	12.67%	21,707,343
Food away from home	4.77%	8,175,247
Alcoholic beverages	0.84%	1,437,572
Housing	32.60%	55,845,903
Rented dwellings	4.30%	7,365,667
Major appliances	0.41%	707,437
Apparel and services	3.26%	5,576,268
Men and boys	0.73%	1,244,635
Women and girls	1.33%	2,284,983
Transportation	15.95%	27,321,441
Cars and trucks, new	2.15%	3,684,725
Gasoline and motor oil	4.66%	7,974,744
Health care	7.21%	12,351,773
Entertainment	5.63%	9,639,301
Fees and admissions	1.27%	2,171,491
Audio and visual equipment and services	2.01%	3,446,391
Personal care products and services	1.14%	1,959,638
Reading	0.22%	382,092
Education	2.55%	4,361,897
Tobacco products and smoking supplies	0.84%	1,441,355
Miscellaneous	1.71%	2,924,325
Cash contributions	3.51%	6,011,322
Personal insurance and pensions	11.86%	20,318,950

Impact of Construction, Renovation, and Repair

When assessing the overall economic impact of Memorial Hospital, one should also consider the contribution made by periodic construction, renovation, and repair projects. These projects not only enhance Memorial's ability to better serve the health needs of the community, but they also provide many opportunities for economic

interaction with the businesses of local contractors. Since the volume of such activity within the Hospital varies greatly from year to year, project expenses over the past four years were averaged to provide a “typical” yearly expenditure of \$23 million resulting in \$10 million of direct labor income. After applying the appropriate income multipliers for the building industry, this expenditure created a total yearly income stream of \$15.6 million. These local dollars also provided income to create 256 additional FTE jobs yearly in construction and in the broader local economy after applying the building industry employment multiplier.

Section V: Other Impacts

Government Sector Impact

Previously discussed multiplier effects spill over into the government sector. Local government services include a variety of activities closely associated with consumer and business needs, such as police and fire protection and operation of the public schools, to mention a few. As economic development resulting from Memorial’s income creating activities occurs, an inevitable increase in the demand for government services occurs as well. In short, new jobs are generated in the local government sector as well as in the local private sector.

In quantifying the government sector multiplier effect as it relates to Memorial’s presence in the area, it was found that the ratio of population to employment in the area is 2.01. Consequently, the 3,215 additional jobs resulting from Memorial’s economic impact added 6,591 persons to the area’s population base. Many of these persons own property, pay property taxes, and hence support various local government services. Table 4 shows the impact on the demand for local government services like police, fire, parks, education, libraries, etc. resulting from Memorial’s local presence.⁹ In total, these 6,591 added individuals helped finance \$23.2 million of local government expenditures leading to 206 additional local government jobs in the community.¹⁰

Table 4				
Local Area Government Goods Expenditures Supported by				
Memorial Hospital's Economic Development Impact				
Expenditure Category			per capita Expenditures	Additional Expenditures Supported by Memorial Hospital's Impact
Direct general expenditure			\$ 3,529.23	\$ 23,260,599
Education			1493.39	9,842,689
Libraries			62.58	412,473
Public welfare			10.72	70,661
Hospitals			507.32	3,343,657
Health			57.21	377,089
Highways			91.78	604,932
Police protection			142.57	939,663
Fire Protection			102.42	675,055
Correction			53.45	352,274
Protective inspection and regulation			2.88	19,002
Natural resources			6.45	42,532
Parks and recreation			98.94	652,090
Housing and community development			66.63	439,124
Sewerage			183.23	1,207,624
Solid waste management			39.33	259,234
Financial administration			35.86	236,321
Other governmental administration			102.57	676,017
Interest on general debt			148.13	976,279
General expenditure, n.e.c.:			232.14	1,530,021.78
Insurance trust expenditure			16.58	109,304.18

Tax Impact

As is apparent in the preceding section, a major hospital complex like Memorial also makes a significant contribution to the various tax bases that support government services for the entire community. Although most of Memorial's real property is tax exempt, Memorial's not-for-profit entities frequently pay a voluntary tax-equivalent amount into community funds, some \$150,000 in 2013. And, the Hospital's for-profit operations account for significant local property tax obligations. Real estate taxes paid in 2013 totaled \$615,000, with an additional amount estimated to be \$246,600 that was included in the rental payments for the many properties occupied by Memorial in the local area. Most of the employees living in the area were also sources of individual real

property tax revenue for local government; and, over the year, the hospital’s employees paid nearly \$53 million in federal, state, and county taxes withheld from wages.

Community Contributions

Although the principal benefits are undoubtedly non-economic in nature, a number of education and community service related programs provided by Memorial produced economic benefits as well. While the economic impact of these programs is less tangible and, in some cases difficult to quantify, it is felt that in any analysis of the Hospital’s impact, they deserve acknowledgment. Table 5 lists a number of these activities as well as some areas where monetary donations on the part of Memorial and its employees were involved in 2013.

Table 5
Partial List of Community Contributions

<u>Education & Community Service Programs</u>	
Medical education & training Programs (e.g. medical education, sports medicine, surgical tech)	
Medical & health research	
Community health education (e.g. Health Discovery, Nurse Call Center, Leighton Center, The Hispanic Initiative)	
Healthy Communities, Hospice, Community Partnerships	
 <u>Charity Care & Other Contributions</u>	
Charity Care	\$ 7,752,000
Bad Debts	\$38,970,521
Various donations (System and employees) ¹¹	\$5,097,480

Section VI: Conclusion

The process of economic development depends in large part upon those activities in the community that lead to: 1) the creation of outside income, that is, income flowing from outlying areas; and, 2) the local production and substitution of goods and services

that were previously imported from outside. Both of these activities create still additional income and jobs in the local economy through a multiplier effect.

For the most part, outside income in a community is created by manufacturing goods that are shipped for sale outside of the area. As a rule, only a small portion of service-producing activity is exported and, therefore, is capable of providing the impetus for economic development. It is the finding of this study, however, that Memorial Hospital, a principal provider of health care services locally, is an exception to the rule.

The economic impact of Memorial has been shown in this study to include, in part, elements of both Memorial's ongoing contribution to the economic development of the community and the periodic one-time impact of construction activity associated with the physical development of the institution. The Summary Table on page 16 provides the findings that were reported in preceding paragraphs, and indicates that ***during 2013, Memorial was instrumental in producing a total \$187 million in new income (or, \$397.8 million in new revenues/sales) and the equivalent of 3,215 new full-time jobs in the local area – income, sales, and jobs that would not otherwise exist locally in the absence of Memorial Hospital.*** This performance is very impressive and certainly exceeds the economic impact of the vast majority of businesses or governmental entities found in the local community and, from the standpoint of supporting economic development, is comparable to that of many manufacturers of like size.

Finally, underlying trends evident in this analysis suggest that both the health care industry overall, and Memorial Hospital in particular, are *growing* economic forces in the area. A comparison of current findings to those of three previous Memorial impact studies is found in Appendix I, page 18. These trends lead to the conclusion that the economic development impact of Memorial should continue to play an *increasing role* in the economic well-being of the St. Joseph County, Indiana area for years to come.

Table 6 Summary of Economic Impacts¹²: Memorial Hospital

Revenues (Sales)			
Source	Direct Impact	Revenue Multiplier	Total Impact
System Outside Revenues	\$157,965,856	1.64	\$259,296,846
Saved Revenues	44,188,166	1.64	72,533,726
Save Income Physicians	17,494,232	1.67	29,267,448
Total Revenues	\$219,648,254		\$361,098,019
Labor Income			
Source	Direct Impact	Income Multiplier	Total Impact
System Outside Revenues	\$ 82,142,245	1.48	\$121,570,523
Saved Revenues	22,977,846	1.48	34,007,213
Save Income Physicians	11,143,826	1.41	15,712,794
Total Labor Income	\$114,217,092		\$171,290,530
Employment			
Source	Direct Impact (Jobs)	Employment Multiplier	Total Impact (Jobs)
System Outside Revenues	1,194	1.77	2,114
Saved Revenues	334	1.77	591
Saved Income Physicians	148	1.72	254
Total Employment	1,676		2,959
Construction			
Source	Direct Impact	Multiplier	Total Impact
Construction Revenue	\$23,021,000	1.59	\$36,699,249
Construction Income	\$10,038,186	1.55	\$15,564,609
Construction Jobs	143	1.78	256
Total Impact All Sources			
	Direct Impact	Total Impact	
Revenue	\$219,648,254	\$361,098,019	
Labor Income	\$114,217,092	\$171,290,530	
Employment	1,676	2,959	
Construction Labor Income	\$10,038,186	\$15,564,609	
Construction Jobs	143	256	

* Because the multipliers have been rounded to two digits after the decimal point, the direct impact times the multiplier does not exactly match the Total Impact numbers in the table. For example, the actual computation for the System Outside Revenues is: (\$157,965,856) times (1.641474) = \$259,296,846.

Outside Revenues= revenues generated by patients residing outside of St. Joseph County.
 Saved Revenues = revenues from services that otherwise would be purchased outside of St. Joseph County.
 Saved Income Physicians = income generated by physicians recruited to St. Joseph county by Memorial Hospital.
 Construction = three year average of construction expenditures made by Memorial Hospital in St. Joseph County.

ENDNOTES

¹ Contributing to the Community: The Economic Significance of Academic Health Centers and Their Role in Neighborhood Development, (The Commonwealth Fund, 1987, p. IV/11).

² Statistics cited in Section II are taken from: the Chamber of Commerce of St. Joseph County's web site www.sjchamber.org; County Business Patterns, U.S. Census Bureau; Survey of Current Business, Bureau of Economic Analysis; and, Annual Reports (Beacon Health System).

³ Revenues considered in this study are those of the System derived through such offerings as inpatient and outpatient services at Memorial Hospital, Memorial Medical Group, MedPoints, Memorial Home Care, Community Health Alliance, cafeteria, educational programs, and so forth.

⁴ In mathematical terms: $\Delta \text{Regional Income} = (\Delta \text{Exports} + \Delta \text{Imports})(\text{Multiplier})$. That is, changes in regional income derive from the sum of dollar increases in exports and decreases in imports (import substitution) times the multipliers applicable to St. Joseph County. In this report, export income is referred to as "outside income" and import substitution is referred to as "saved income."

⁵ On the recommendation of the client, data covering physician compensation were obtained in publications of the Medical Group Management Association. Where specialties cited in MGMA's survey were broader than those reported by Memorial, conservative estimates were made. In addition, two assumptions were made. First, it was assumed that an additional 25 percent of these revenues went to local labor income (receptionists, nurses, etc.). Second, it was assumed that the outside St. Joseph county income of these doctors was the same average (36%) of all other Memorial Hospital activities.

⁶ IMPLAN is a recognized source for these data that are producible for every county in the United States.

⁷ *Direct effects* are changes associated with the institution's activities – like an addition of new employees to the overall staff. *Indirect effects* are changes incurring in backward linking industries – like additional purchases from vendors that are required to produce additional output. *Induced effects* are changes in regional household spending patterns caused by changes in income coming from the direct and indirect effects.

⁸ In estimating these quantities, the following per unit costs were assumed: meals away from home -- \$15; annual apartment rent -- \$12,000; new vehicle purchase -- \$22,000; a gallon of gasoline -- \$3.00; fees and admissions -- \$15; and, a major appliance -- \$750.

⁹ 1997 represents the latest detailed county government expenditures that combine various sources of government spending (local, county, school corporations, etc.) were for St. Joseph County. Using information from the 2012 Census of Governments these figures were updated. The updated information must be considered rough estimates of the actual St. Joseph county expenditure distribution since the relative relationship among expenditures categories has most likely changed over time.

¹⁰ According to the 2012 Census of Governments, Indiana local governments have, on average, 311.8 employees per 10,000 persons in the population. Memorial's population impact of 6,591 persons thus adds 206 local government jobs.

¹¹ The \$5,097,420 results from employee contributions, Memorial tithing plan, and funding of community based organizations and projects.

¹² Once Memorial's direct impact has been derived, as in the body of the report, it is possible to apply either revenue or income multipliers to compute total impact. "Revenues" measure the value of output Memorial sells to inpatients, outpatients, and others who purchase its services. Each dollar of output sold by Memorial requires purchases of output from other St. Joseph County vendors, leading to spillover revenues of about \$0.72. "Labor income", on the other hand, measures the compensation to employees plus proprietor's income from a dollar of output. Each dollar of Memorial's output produces \$0.516 of direct labor income and another \$0.246 of spillover labor income. The spillover labor income results from payments to workers in St. Joseph County who produce goods and services purchased by Memorial. The labor income multiplier in Table 6 is the total direct and spillover effect divided by the direct effect ($(\$0.516 + \$0.246) / \$0.516 = 1.48$).

Memorial Economic Impact Comparisons

Memorial Economic Impacts			
Year	Revenues	Labor Income	Employment
1988	\$100,648,071	\$43,342,408	1,635
1991	\$106,772,644	\$49,961,599	1,860
1998	\$168,410,366	\$92,265,544	3,208
2005	\$239,396,539	\$103,489,698	2,629
2013	\$397,797,268	\$186,855,138	3,215
Year	% Change Revenues	% Change Labor Income	% Change Employment
1988-1991	6.09%	15.27%	13.72%
1991-1998	57.73%	84.67%	72.46%
1998-2005	42.15%	12.17%	-18.04%
2005-2013	66.17%	80.55%	22.29%

Impacts are based on outside revenues, saved revenues, recruited physician income and construction. Multiplier and direct impacts are standardized to make results comparable.

