

Economic Impact of Medical West Hospital on the Economy of City of Hoover, Jefferson County, Alabama



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This report attempts to estimate the economic impact of a major investment toward the creation of a health care facility on the economy of the city of Hoover, Alabama. The variables of interest to be analyzed are employment, earnings, and final demand (output).

This economic report is an estimate based on the sound theoretical foundation of the region's economy and the most updated socioeconomic, demographic, retail, and general business climate information available.

This study estimates possible changes to the regional economy predicated on an existing economic operation and does not consider the presence of any externalities, either positive or negative, in its computation.

The premise of this analysis is that there will be no major event to change the short or long term economic foundation of the region, and there will be no other competing investment in the area in the future.

Every attempt has been made to use the most recent information. The author, however, does not assume responsibility for any changes or revisions that may be made to the source data.

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Executive Summary

Purpose

- The purpose of this report is to estimate the economic impact of construction and operation of a new campus for Medical West Hospital Authority, an Affiliate of UAB Health System (MWH) (if located in the city of Hoover), on the economy of Hoover, Alabama.
- The new MWH facility will be a full-service hospital with in-patient and out-patient medical care capability.
- The facility will have 220 total private in-patient care beds with allocations for obstetrical/nursery and pediatric care, acute care, intermediate care, critical care and neonatal intensive care and will incorporate community meeting rooms and retail support space.
- Imaging/diagnostic services, surgical services, emergency services and observation, in-patient treatment modalities, and ancillary support functions supporting all services will be provided.
- A parking deck and a medical office building will also be constructed adjacent to the hospital.
- The parking deck, the hospital, and the medical building will be interconnected.
- The total square footage of the entire project will be more than 500,000 and will cost approximately \$412 million.

Economic Impact

Construction

- Estimates indicate the total annual output impact of construction of MWH on the City's economy would be more than \$177.6 million.
- The total impact of output of construction, over a period of two years, would add up to \$355 million on a cumulative basis.
- It is estimated that the construction spending will be responsible for 1,707 full time equivalent (FTE) jobs each year in the city.

Operation – Five Year Horizon- Net Addition Basis

- The results presented here are based on “net addition basis”. That is, we only estimated the economic impact of the net additions to the employment and output after MWH relocation from Bessemer (current facility) to Hoover (new site).
- The output impact of the net addition solely attributable to the MWH Hoover operation is expected to grow from \$27.8 million in the first year of the operation to \$101 million by the fifth year of operation.
- The average annual addition to the city's output is projected to be \$23 million per year.

- Regarding employment impact, the number of FTE jobs attributable to the new MWH facility is projected to increase from 186 in the first year to a total of 576 by the fifth year.
- Average annual additional number of jobs for the first five years of the operation is estimated at 115 FTE employment.

Fiscal Impact

- It is our estimate that the sales and property taxes for Hoover will grow from \$1.2 million during construction to a total of \$2.2 million by the fifth year of operation.
- It is important to note that these estimates do not take into account all possible taxes levied by the municipality referenced above.

Purpose

Medical West Hospital Authority (MWH), an affiliate of the UAB Health System, is a 310-bed community hospital. It is currently located in the city of Bessemer, Jefferson County. MWH and its hospital-owned primary care physician clinics provide comprehensive health care services for residents living on the west side of Jefferson County.

MWH proposes to replace and relocate the existing 310-bed hospital at its current location in Bessemer with a new facility on a site located in west Jefferson County along the Interstate 459 corridor. The new hospital will include the relocation of its current services and physician practices. The new facility includes a 220-bed inpatient hospital, a medical office building, and a parking deck. Total square footage of the entire project will be more than 500,000 ft² and will require an investment of approximately \$412 million.

The decision to relocate and replace the hospital is an economic decision which is based on a cost-benefit analysis of the renovation of the existing facility versus the construction of a new hospital. The new hospital should provide MWH with increased efficiency, expansion in necessary services, lower operational cost, and long-term business viability. The Bessemer facility will be re-purposed and used in some health care delivery mode. Preliminary evaluation for possible alternative options will be weighted once the decision regarding MWH relocation is firmed.

This report seeks to estimate the economic impact of construction and operation of MWH's new campus if located in the City of Hoover on the economy of Hoover, Alabama.

Introduction

MWH has served the communities of west Jefferson County for more than fifty years. It first opened as Bessemer Memorial in 1964 on Ninth Avenue in the city of Bessemer. In 1973, Carraway bought the hospital, and the facility became known as Bessemer Carraway. In 2002, the hospital became UAB Medical West when it joined the UAB Health System. In 2006, the hospital became a healthcare authority.

In 2017, the hospital became a university hospital authority and is now known as Medical West, an affiliate of the UAB Health System. Medical West's current key service lines include two busy Level III emergency departments (one at the hospital campus and one free standing), general acute care, intensive care, imaging, labor and delivery, catheterization laboratory, geriatric psychiatric, acute rehabilitation, wound care, and surgical services.

The original hospital was designed and constructed in the early 1960's. Subsequent expansions in the 1970's included the fifth and sixth floor inpatient care areas and the first professional office building.

There have been several efforts to renovate portions of the facility over the years. These projects were more limited in addressing issues when and where needed. Examples of these renovation projects include: emergency room renovations and expansion; outpatient surgery relocation to

the professional office building; endoscopy lab expansion; intensive care unit expansion; psychiatric unit expansion, minor repair; refurbishment and maintenance (paint, wallpaper, furnishings) to each patient floor.

These limited efforts could not address the more comprehensive and costly solutions to slow the deterioration of the aging facility and mechanical systems. Some of the issues related to an aging facility and inadequate design include: undersized patient rooms and bathrooms; some areas with obsolete mechanical systems; inadequate accommodation for outpatients; multiple leaks in roofing and expansion joints throughout the building; lack of a pneumatic system, thus requiring hospital employees physical delivery of supplies and specimens; small and inadequate elevators; inefficiency in operations (kitchen and cafeteria located in separate buildings, diagnostic imaging modalities located in several areas and buildings, departments separated in multiple locations due to size constraints); undersized and outdated surgical suites and recovery areas; inadequate storage throughout the facility.

The current facility is unable to accommodate patients' expectations for private room demand. The ultimate result of these operational and design limitations has resulted in a history of declining inpatient volumes.

Methodology - Economic Impact

The methodology employed to estimate the impact of MWH's investment on the region's economy is derived from regional economic models. The basic premise is that the MWH's construction and capital investment along with its operation will stimulate various sectors in the local economy, as the transaction activities by MWH increase the demand for goods and services in the region. In turn, the affected sectors will increase their demand from their suppliers throughout the region to respond to the demand for their output by MWH.

Classifying the impacts into three broad categories facilitates an understanding of how an initial change in the demand for goods and services in the economy, due to an economic activity, is multiplied into additional impacts.

The three categories of impact are:

Direct: The direct impacts of MWH are the additional demand and expenditures in the local economy that are directly attributable to the regular and day-to-day operation of the MWH.

Indirect: To the extent that direct purchases of goods and services, by MWH, reverberate throughout the economy and result in further increases in business transactions, there will be indirect impacts. An indirect impact, for example, results when a business needs additional resources to service the increased demand directly attributable to the operation of MWH. The suppliers of these items find their sales increasing and, in turn, need more input to meet the new demand. This process continues, yielding a multiplier effect on the output of the local economy. Whenever the extra demands are met by industries outside the local economy, there are **leakages** from the flow of products and income from the local economy. **The greater the number of**

leakages, the lower the indirect impacts and the lower the multiplier. On the other hand, the more diversified the local economy, the higher the value of multipliers.

Induced: Additional indirect effects are induced by the change in income in the economy. For example, when a business hires an additional worker to meet the demand caused by MWH, the worker's spending further enhances economic activity in the region.

Determining multipliers is a fundamental step toward conducting an economic impact analysis. The term multiplier refers to the ratio of all direct, indirect, and induced effects to the direct effects. Once the total direct impact of MWH operations — specifically the earnings, employment, and output directly attributable to — are estimated, they are linked to other relevant criteria to estimate the pursuant demand on housing, labor force, and any addition to sales tax, property tax, and income tax revenues realized by the local officials.

For the purpose of estimating the economic impact of this project, economic, demographic, and housing market information was gathered from:

The U.S. Department of Labor
The U.S. Census Bureau
The U.S. Bureau of Economic Analysis
Alabama Department of Revenue
Economic Development Partnership of Alabama

Notes about the Model

The following observations should be noted about the model that has been used for conducting the analysis in this study:

- The Input-Output model used for this study deals with readily available quantifiable impacts such as dollars of spending or employment.
- The model does not consider social costs or benefits of economic activities.
- The model used is a static process that does not take into effect changes over time in a dynamic economy. This suggests that the relationships between economic sectors are fixed, as of the date of the model's underlying database, and do not account for adjustments that may take place over time.
- The model assumes a linear relationship between changes in demand for products and services and the resulting changes in income and employment. It does not consider the changes in productivity over time.
- The model assumes that a response to any incremental change in demand for goods and services is at the average rather than the marginal rate.
- The model does not take into consideration the additional capital expenditures required to support indirect and induced effects on the local economy.

Primary Direct Data

Primary direct data are economic additions to the local economy that are solely attributable to the operation of the MWH and its affiliated centers. Examples are net additions to the local area's economy resulting from expenditures on infrastructure, construction, operation and maintenance expense, and payroll. In absence of the aforementioned entities, such additions will be null and void.

As reported in Table 1, the total investment by MWH is estimated to be \$412 million. From that total, \$245 million will be spent on the new MWH hospital and \$50 million will be spent on equipment.

Table 1: Construction Cost Net of Equipment

Main Hospital	\$245,570,312.00
Add - Offsite & Onsite	\$45,565,781.00
Add - Medical Office Building	\$46,656,029.00
Add - Parking Deck	\$24,198,239.00
Add - One Time Equipment	\$50,000,000.00
Construction Budget	\$411,990,361.00
Construction Budget Net of Equipment	\$361,990,361.00

Table 1 highlights the construction spending for the near-future (a 30-month time horizon). This includes spending on labor and material expenses directly associated with the construction phase of the project. In order to derive this estimate, we subtracted equipment expenditure from the total budgeted construction investment. This figure is estimated to be \$362 million over a period of two years. Next, in Table 2, we divided the short-term construction budget into categories of labor and material spending. These figures are estimated to be \$144.8 million and \$217.2 million for construction, labor, and material spending over a period of two years, respectively.

Table 2: Construction Cost – Labor and Material

Labor	\$144,796,144
Material	\$217,194,217

Next, we highlight employment, and payroll and total spending attributes of the core and supporting operation of the MWH.

As is highlighted in Table 3, total employment at the current facility is projected to be 1,000 full time equivalent (FTE) jobs in 2018. If expansion and replacement plans are not implemented, employment will remain at this level for the foreseeable future. With the relocation, projected employment will increase incrementally from 100 additional employees in 2021 (post-construction) to 248 more FTE employees by the fifth year of operation. The incremental increase is due to the fact that the additional capacity and built-to-purpose facility will add more efficiency and facilitate provision of additional health services during the next five years.

Table 3: Primary Data- Employment Projection

	Projected 2018	Year 1	Year 2	Year 3	Year 4	Year 5
Current Facility	1000	1000	1000	1000	1000	1000
Incremental - New Facility & MOB	0	100	153	190	222	248
Total Hospital and Clinic FTE's	1000	1100	1153	1190	1222	1248
Net New Addition relative to 2018	NA	100	153	190	222	248

Likewise, the projected payroll, as highlighted in Table 4, is expected to increase from a total of \$82.5 million annually in 2018 to \$118.1 million by the fifth year of operation. This signifies a net increase of \$35.6 million relative to the 2018 payroll. It is important to note that the 2018 data is being used as the benchmark for the no-relocation scenario.

Table 4: Primary Data – Payroll Projection

	Projected 2018	Year 1	Year 2	Year 3	Year 4	Year 5
Salaries & Wages	\$36,450,000	\$40,500,000	\$43,826,220	\$46,466,856	\$48,813,393	\$50,901,982
Benefits	\$6,096,498	\$13,500,000	\$14,608,740	\$15,488,952	\$16,271,131	\$16,967,327
Total Payroll	\$42,546,498	\$54,000,000	\$58,434,960	\$61,955,808	\$65,084,524	\$67,869,309
Medical Office Building	\$40,000,000	\$40,000,000	\$43,285,156	\$45,893,191	\$48,210,758	\$50,273,562
Net Addition-Relative to 2018	\$0	\$11,453,502	\$19,173,618	\$25,302,502	\$30,748,784	\$35,596,374

The data pertaining to total spending is presented in Table 5. Total spending is defined as the sum of payroll and non-payroll expenditures. Non-payroll spending captures expenditures such as supplies, purchased services, repairs and maintenance, utilities, and other similar expenditures in support of the MWH's day-to-day operation. The net increase in total spending is projected to increase from \$15 million in the year immediately following the completion of the first phase of expansion to \$59.2 million by the fifth year of operation.

Table 5: Primary Data – Total Spending

	Projected 2018	Year 1	Year 2	Year 3	Year 4	Year 5
Total Non-Payroll	\$32,040,000	\$35,600,000	\$40,119,051	\$44,872,321	\$50,035,130	\$55,645,431
Payroll	\$82,546,498	\$94,000,000	\$101,720,116	\$107,849,000	\$113,295,282	\$118,142,872
Total Spending	\$114,586,498	\$129,600,000	\$141,839,167	\$152,721,320	\$163,330,412	\$173,788,302
Net Addition – Relative to 2018	\$0	\$15,013,502	\$27,252,669	\$38,134,822	\$48,743,914	\$59,201,804

Economic Impact

Construction

Construction of the new hospital and other core support centers are scheduled to take 24 to 30 months. The total construction budget, including contingencies and reserves, is estimated at \$362 million.

To prepare the data for the economic impact analysis, we allocated 40% of the construction budget to labor and the remaining 60% to materials. The expenditures on construction materials spending (non-payroll expenditure) totals to \$217.2 million over a period of two years. The labor cost (payroll) of the project is projected to amount to \$144.8 million. It is our estimate that 639 construction workers will be working on the site on a full time equivalent (FTE) basis.

The economic impact of the construction phase is estimated as follows:

The first aspect of the construction phase economic impact works through the salaries and wages (gross payroll) that are paid directly to the workers employed at the site. These workers will spend their realized income and will, in turn, create taxes and additional income as the multiplier process continues to complete its cycle.

The second aspect of the construction phase economic impact is through the purchase of construction materials (industry value in place). This expenditure creates direct demand and additional sales revenue for locally-based companies. These additional revenues, following the national income and product mechanism, will trickle throughout the economy in the form of earnings for the firms and the workers who provided the material and services. The additional earnings, so generated, will become purchasing power which in turn will be spent on the purchase of goods and services. These purchases will create taxes and additional income as the multiplier process works through its cycle.

In Table 6, we show the output impact of the construction-related direct payroll spending in the region's economy. The construction phase is projected to inject a total of \$72.4 million of annual direct wages and salaries in the city's economy for two years. This income (earned income) will be spent on the purchase of goods and services (output) throughout city's economy. The total output impact is estimated as follows:

- ✓ Withholdings and spending leakages are subtracted from the gross payroll. This provides us with "contributory direct payroll"
- ✓ The output multiplier for payroll spending is 2.599.

Applying this multiplier to the contributory direct payroll yields an annual output impact contribution from payroll of \$99.3 million for the construction phase of this project.

We then concentrate on the output contribution from non-payroll expenditures. In addition to the

payroll spending, construction companies also purchase materials and services in support of their operation. This includes purchases of heavy machinery, construction materials, and other supplies. This non-payroll spending, in turn, will boost sales and revenues for the local suppliers of such products and services and also supports additional employment. The output impact of this category of spending is in the lower section of Table 6.

Table 6: Construction – Output Impact

	Year 1	Year 2
Gross payroll	\$72,398,072	\$72,398,072
Withholding	\$17,811,186	\$17,811,186
Leakages	\$16,376,066	\$16,376,066
Contributory Payroll	\$38,210,820	\$38,210,820
Weighted Average Sales Multiplier	2.599	2.599
Total Economic Contribution from Wages & Salaries	\$99,300,469	\$99,300,469
Industry Value Put in Place	\$180,995,181	\$180,995,181
Industry Payroll	\$72,398,072	\$72,398,072
Non-Payroll Expenditure	\$133,597,108	\$133,597,108
Leakage	\$80,158,265	\$80,158,265
Total In-State Non-Payroll Expenditures	\$53,438,843	\$53,438,843
Multiplier	1.465	1.465
Total Economic Contribution from (non-payroll) Expenditures	\$78,277,218	\$78,277,218
Total Economic Contribution	\$177,577,687	\$177,577,687

As is presented in Table 6, the construction’s non-payroll expenditure should total \$53.4 million, annually. This figure is estimated by subtracting the payroll expenditure from the construction’s value in place (added contribution to the City’s GDP). We applied a leakage factor of 60% in order to estimate the in-city portion of construction spending. Finally, we applied a multiplier of 1.465 to this class of spending. This resulted in an estimate of \$78 million of annual output impact from non-payroll expenditure.

The total output impact of the construction phase of this project on the city’s economy is the sum of these two subcomponents. Our calculation indicates the total output impact of construction of MWH on the city’s economy to be in excess of \$177 million. Please note that \$177.6 million is an annual impact. The total construction impact, over a period of two years, would add up to \$355.2 million.

Next, we concentrate on the employment impact. Similar to the output case, we compute the employment impact using both the payroll and non-payroll spending. It is important to note that these two classifications of spending have their own distinct multipliers. The exact process and results are in Table 7. As reported, it is our estimate that the construction spending associated with this project will be responsible for 1,707 full time equivalent (FTE) jobs each year in the

city.

Please note that the economic impact of the construction is non-recurring or transitory in nature.

Table 7: Construction – Employment Impact

	Year 1	Year 2
Total In-State Non-Payroll Expenditures	\$53,438,843	\$53,438,843
Employment Multiplier	11.9526	11.9526
Added Jobs	639	639
		0
Direct Job	759	759
Direct Employment Multiplier	1.4077	1.4077
Jobs Created	1068	1068
Total Employment Impact	1707	1707

Operation

In terms of the economic impact of the operation of MWH, we used the same procedure as outlined earlier. We first concentrated on the gross payroll of the operation then moved to the non-payroll expenditure. Appropriate multipliers and leakage factors were applied for each case. For example, a leakage factor of 30% was applied to the MWH's annual non-payroll expenditures. In this context, the total economic contribution was defined as the sum of the economic contributions from wages and salaries and non-payroll expenditures. Finally, for the employment impact analysis, a similar practice, as described for the construction investment, was followed.

This practice was repeated for the first five years of the operation of MWH following the completion of the construction phase. The results for output and employment are reported in Tables 8 and 9.

It is important to highlight that the results presented here are based on a “net addition basis”. That is, we only estimated the economic impact of the net additions to the current hospital and the new facilities. These added capacities are above and beyond the current hospital's ability and reach.

Table 8: Operation – Output Impact- Net Addition Basis (Cumulative)

	Year 1	Year 1,2	Year 1,2,3	Year 1,2,3,4	Year 1,2,3,4,5
Gross payroll	\$11,453,502	\$19,173,618	\$25,302,502	\$30,748,784	\$35,596,374
Withholding	\$2,817,761	\$4,717,044	\$6,224,856	\$7,564,736	\$8,757,327
Leakages	\$423,336	\$708,682	\$935,213	\$1,136,515	\$1,315,688
Contributory Payroll	\$8,212,405	\$13,747,892	\$18,142,433	\$22,047,533	\$25,523,358
Weighted Average Sales Multiplier	2.864508737	2.864508737	2.864508737	2.864508737	2.864508737
Total Economic Contribution from Wages & Salaries	\$23,524,506	\$39,380,957	\$51,969,158	\$63,155,352	\$73,111,883
Industry Value Put in Place	\$15,013,502	\$27,252,669	\$38,134,822	\$48,743,914	\$59,201,804
Industry Payroll	\$11,453,502	\$19,173,618	\$25,302,502	\$30,748,784	\$35,596,374
Non-Payroll Expenditure	\$3,560,000	\$8,079,051	\$12,832,321	\$17,995,130	\$23,605,431
Leakage	\$712,000	\$1,615,810	\$2,566,464	\$3,599,026	\$4,721,086
Total In-State Non-Payroll Expenditures	\$2,848,000	\$6,463,241	\$10,265,856	\$14,396,104	\$18,884,345
Multiplier	1.5033	1.5033	1.5033	1.5033	1.5033
Total Economic Contribution from (non-payroll) Expenditures	\$4,281,398	\$9,716,190	\$15,432,662	\$21,641,663	\$28,388,835
Total Economic Contribution	\$27,805,904	\$49,097,147	\$67,401,820	\$84,797,015	\$101,500,718

Table 9: Operation – Employment Impact- Net Addition Basis (Cumulative)

Employment Impact	Year 1	Year 1,2	Year 1,2,3	Year 1,2,3,4	Year 1,2,3,4,5
Total In-State Non-Payroll Expenditures	\$2,848,000.00	\$6,463,240.84	\$10,265,856.44	\$14,396,103.88	\$18,884,344.55

Employment Multiplier	9.5592	9.5592	9.5592	9.5592	9.5592
Added Jobs	27	62	98	138	181
Direct Job	100	154	190	222	249
Direct Employment Multiplier	1.5896	1.5896	1.5896	1.5896	1.5896
Jobs Created	159	244	303	353	396
Total Employment Impact	186	306	401	491	576

The output impact of the net addition to MWH’s operation is expected to grow from \$27 million in the first year of the operation to \$101.5 million by the fifth year of operation. The average annual addition to the city’s GDP is projected to be \$23 million per year. In terms of employment impact, the number of FTE jobs attributable to MWH expansion is projected to grow from 186 in the first year to a total of 576 by the fifth year. Average annual additional number of jobs for the first five years of the expanded operation is estimated at 115 FTE employment.

The overall output and employment impacts of the MWH, defined as the sum of the construction of the new and expanded facilities and their respective ongoing operations, are presented in Tables 10 and 11.

It is our estimate that the output impact of the construction will total to \$177.6 million for two years. This will be followed by a solid and impressive trajectory of growth solely attributable to the operation of MWH. We estimate the average annual GDP level for the first seven years will be approximately at \$67.3 million per year. The average annual overall employment level for the first seven years is expected to be 768 FTE jobs.

Table 10: Overall Output Impact (Cumulative) – Construction and Operation -Net Addition Basis relative to Benchmark

	Construction Year 1	Construction Year 2	Operation - Year 1	Operation Year 1,2	Operation Year 1,2,3	Operation Year 1,2,3,4	Operation Year 1,2,3,4,5
Construction	\$177,577,687	\$177,577,687					
Operation			\$27,805,904	\$49,097,147	\$67,401,820	\$84,797,015	\$101,500,718
Total	\$177,577,687	\$177,577,687	\$27,805,904	\$49,097,147	\$67,401,820	\$84,797,015	\$101,500,718

Table 11: Overall (Cumulative) Employment Impact – Construction and Operation -Net Addition Basis

	Construction Year 1	Construction Year 2	Operation - Year 1	Operation Year 1,2	Operation Year 1,2,3	Operation Year 1,2,3,4	Operation Year 1,2,3,4,5
Construction	1,707	1,707					
Operation			186	306	401	491	576
Total	1,707	1,707	186	306	401	491	576

Fiscal Impact

In this section of the report, we attempt to highlight the estimated increase in the tax collection for the city of Hoover. More specifically, we computed sales and residential property taxes attributable to the relocation of MWH. These estimates are reported in Table 12.

Table 12: Fiscal Impact – Estimates of Sales Tax and Property Tax Collection for Hoover

	<i>Construction -Year 1</i>	<i>Construction -Year 2</i>	<i>Operation - Year 1</i>	<i>Operation - Year 2</i>	<i>Operation - Year 3</i>	<i>Operation - Year 4</i>	<i>Operation - Year 5</i>
Non-educational Residential Property	NA	NA	\$24,960	\$41,041	\$53,719	\$65,777	\$77,253
Educational - residential Property	NA	NA	\$145,538	\$239,301	\$313,226	\$383,530	\$450,442
Sales Tax	\$1,243,044	\$1,243,044	\$678,722	\$967,308	\$1,213,584	\$1,446,265	\$1,668,321
Total	\$1,243,044	\$1,243,044	\$849,221	\$1,247,650	\$1,580,529	\$1,895,572	\$2,196,016

It is our estimate that the sales and property taxes for Hoover will grow from \$1.2 million during the construction years to a total of \$2.2 million by the fifth year of operation. It is important to note that these estimates do not capture all possible taxes levied by the municipality referenced above.