



# **MARICOPA INTEGRATED HEALTH SYSTEM: *Part 1: Economic Impact Analysis, 2013***

**Dr. Anthony Evans and Professor Tim James,  
L William Seidman Research Institute,  
W. P. Carey School of Business,  
Arizona State University**

**August 27, 2014**

## L. WILLIAM SEIDMAN RESEARCH INSTITUTE

*The L. William Seidman Research Institute serves as a link between the local, national, and international business communities and the W. P. Carey School of Business at Arizona State University (ASU).*

*First established in 1985 to serve as a center for applied business research and a consultancy resource for the Arizona business community, Seidman collects, analyzes and disseminates information about local economies, benchmarks industry practices, and identifies emerging business research issues that affect productivity and competitiveness.*

*Using tools that support sophisticated statistical modeling and planning, supplemented by an extensive understanding of the local, state and national economies, Seidman today offers a host of economic research and consulting services, including economic impact analyses, economic forecasting, general survey research, attitudinal and qualitative studies, and strategic analyses of economic development opportunities.*

*Working on behalf of government agencies, regulatory bodies, public or privately-owned firms, academic institutions, and non-profit organizations, Seidman specializes in studies at the city, county or state-wide level. Recent and current clients include:*

- *Arizona Commerce Authority (ACA)*
- *Arizona Corporation Commission (ACC)*
- *Arizona Department of Mines and Mineral Resources*
- *Arizona Hospital and Healthcare Association*
- *Arizona Investment Council (AIC)*
- *Arizona Mining Council*
- *Arizona Public Service Corporation (APS)*
- *Arizona School Boards Association*
- *Arizona Town Hall*
- *ASU Athletics*
- *The Boeing Company*
- *The Central Arizona Project (CAP)*
- *DeMenna & Associates*
- *Epic Rides/City of Prescott*
- *Envision Healthcare/AMR*
- *Excelsior Mining*
- *Executive Budget Office State of Arizona*
- *First Things First*
- *Freeport McMoran*
- *Glendale Community College*
- *Goodwill Industries*
- *Maricopa Integrated Health System*
- *Intel Corporation*
- *iState Inc.*
- *The McCain Institute*
- *The Morrison Institute*
- *Navajo Nation Div. Economic Development*
- *Phoenix Convention Center*
- *Phoenix Sky Harbor International Airport*
- *Public Service New Mexico (PNM)*
- *Raytheon*
- *Rosemont Copper Mine*
- *Salt River Project (SRP)*
- *Science Foundation Arizona (SFAZ)*
- *The Tillman Foundation*
- *Turf Paradise Valley METRO Light Rail*
- *Twisted Adventures Inc.*
- *Vote Solar Initiative*
- *Waste Management Inc.*

**INTRODUCTION**

This is the first of three reports quantifying the economic impact of Maricopa Integrated Health System (MIHS).

An economic impact analysis can be approached in at least 6 different ways, demonstrated in Figure 1 below.

**Figure 1: Seidman’s 3 x 2 Classification of Economic Impact Models**

	<i>Level of Sophistication</i>		
<i>Degree of Completeness</i>	<b>COUNT GROSS</b>	<b>PARTIAL GROSS</b>	<b>MACROECONOMIC GROSS</b>
	<b>COUNT NET</b>	<b>PARTIAL NET</b>	<b>MACROECONOMIC NET</b>

Figure 1 illustrates two key distinctions.

The first distinction is between gross studies and net economic impact studies.

Studies that are **Gross** in nature only consider the positive impacts of increased economic activity – in this case, the employment and supplier purchases of Maricopa Integrated Health System.

**Net** studies represent a more thorough form of economic modeling because they also account for the trade-offs in the economy which result from incentivizing one specific sector, such as the increase in state taxes required to finance healthcare services.

The second key distinction is between counts, partial (equilibrium) modeling, and macroeconomic (or general equilibrium) modeling.

**Counts** are typically simple tallies of direct measures of economic activities, such as jobs, investments, or sales, without any attempt to capture the impacts of the inter-relationships with other economic sectors.

**Partial models** consider the wider effects of levels of activity in a specific economic sector, because they take into account the indirect and induced effects of the direct changes associated with a business or enterprise in a particular geography. Despite being the most common commercial approach to economic modeling, partial models do not consider the feedback effects of changed levels of an investment or activity, such as the implications for alternative non-healthcare federal and state initiatives if a greater share of tax revenue is diverted to universal healthcare insurance.

Only one type of model attempts to account of every economic interconnection and feedback effect associated with a specific business activity or investment. This is a **Macroeconomic** model, which is often based upon a computable general equilibrium (CGE) model. To the best of the research team’s knowledge, a CGE model currently does not exist for Maricopa County and the State of Arizona.

This report therefore estimates the economic impact of MIHS in 2013 using an Arizona-specific REMI model.<sup>1</sup>

---

<sup>1</sup> REMI is a dynamic forecasting and analysis tool, developed by Regional Economic Models Inc., containing detailed industries and incorporates complete inter-industry relationships. Widely recognized by the business and academic communities as the leading economic modeling tool

REMI is a commercial, partial form of economic impact modeling which traces the full impact - direct, indirect and induced - of a single economic activity (MIHS) on jobs and incomes in a defined economy (in this instance, Maricopa County and the State of Arizona).

The operation of MIHS directly affects the host county and state economy through its employment of physicians, nurses, clinical staff, technicians, administrative and support staff, and management. Direct effects also arise through MIHS' purchase of pharmaceuticals, medical equipment and other supplies.

Indirect effects occur when MIHS' suppliers place upstream demands on other suppliers, or increase their number of employees to meet MIHS' purchasing requirements. These second round impacts only occur because of the existence and operation of MIHS.

Induced effects occur when workers either directly or indirectly associated with the operation of MIHS spend their incomes in the local economy. The sales, income, and jobs that result from household spending of added wage, salary, or proprietor's income are all induced effects.

The cumulative changes in jobs and incomes associated with MIHS' operation are a multiple of the initial direct effects.

The economic impacts in this study are expressed in terms of five key measures: Total Employment; Total Private Non-Farm Employment; Gross State Product (GSP); Real Disposable Personal Income (RDPI); and State Revenues.

Total employment is an estimate of the total number of full-time (or equivalent) jobs in a specific county or state, encompassing every sector and industry, including government and farm workers.

Total private non-farm employment is an estimate of the total number of full-time (or equivalent) jobs in a specific county or state, encompassing all sectors and industries but excluding government and farm workers.

Gross State Product (GSP) is the market value of goods and services produced by labor and property in a specific county or state.<sup>2</sup> It is commonly used as an indicator of the economic health of a state or nation.

RDPI is an estimate of the total after-tax income received by any person residing in a specific county or state, deflated by the Personal Consumption Expenditure-Price Index, but available for spending or saving.

State revenue is an estimate of general sales tax, selective sales tax, license taxes, individual and corporate income taxes, other taxes, miscellaneous general revenue, utility revenue, liquor store revenue, insurance trust revenue, intergovernmental revenue and current charges.

Two distinct series of economic impact estimates are provided. The first series only takes into account the positive impacts associated with MIHS' employment and supplier purchases in CY2013, and is therefore a Partial Gross

---

available, Seidman currently uses the REMI model for all projects commissioned by the Arizona Commerce Authority. Seidman is also the only organization currently offering this form of modeling in the state.

<sup>2</sup> GSP excludes the value of intermediate goods and services purchased as inputs to final production. It can also be defined as the sum of employee compensation (wages, salaries and benefits, including employer contributions to health insurance and retirement pensions), proprietor income, property income, and indirect business taxes.

study. The second series additionally takes into account the trade-offs in the economy which result from financing MIHS in CY2013, such as the state tax and consumer spending implications, and is therefore a Partial Net study.

### THE PARTIAL GROSS ECONOMIC IMPACTS OF MIHS, CY2013

Table 1 summarizes the employment and supplier inputs provided by MIHS for the 2013 calendar year (CY2013) used in the Partial Gross REMI analysis.<sup>3 4</sup>

**Table 1: MIHS 2013 Direct Employment and Expenditure Profile**

EMPLOYMENT	Salaries & Wages (2013 \$)	Benefits (2013 \$)	Total Compensation <sup>5</sup> (2013 \$)	Number of Staff (FTE)
Ambulatory Staff	36,080,835	10,896,919	46,977,754	919.65
Hospital Staff	194,608,848	57,018,518	251,627,365	2,986.23

NON-LABOR EXPENDITURE (2013 \$)			
Professional and Technical Services	24,692,707	Repairs and Maintenance	11,627,299
Supplies	64,021,095	Utilities	6,257,950
Medical Service Fees	68,250,432	Other Expenses	7,121,494
Rent	4,580,388	Depreciation	20,698,608

Source: MIHS

Table 2 estimates the direct, indirect and induced total employment and total private non-farm employment impacts effects for the State of Arizona.

**Table 2: Statewide Employment Impact of MIHS, CY2013**

	Direct Impacts	Indirect/Induced Impacts	Total Impacts
Total Employment <sup>6</sup> (Job Years) <sup>7</sup>	3,906	8,427	12,333
Total Private Non-Farm Employment <sup>8</sup> (Job Years) <sup>9</sup>	3,906	7,599	11,505

Source: Authors' Calculations

The table estimates that MIHS is responsible for 12,333 direct, indirect and induced jobs in CY2013 across all sectors, including government and farm workers in the State of Arizona. If government and farm workers are excluded from this total figure, MIHS is responsible for 11,505 direct, indirect and induced jobs private non-farm

<sup>3</sup> The data supplied by the management team is for March 1, 2013 to February 28, 2014, and has been used by the research team as a proxy for the 2013 calendar year (CY2013). As a result, all expressed impacts are only for one full calendar year.

<sup>4</sup> The employment data supplied by MIHS does not include their health plan for Medicaid patients, which is outsourced to a separate entity, or a similar arrangement with District Medical Group. However, MIHS' \$4 million payment to District Medical Group is included in the vendor purchasing data. MIHS also operates a joint venture with Mercy Maricopa, which has not been included in this analysis.

<sup>5</sup> Numbers may not tally exactly due to rounding-up.

<sup>6</sup> This is a count of full- and part-time jobs in all sectors, including Government and agriculture. It includes both wage and salary workers, and the self-employed.

<sup>7</sup> A job year is equivalent to one person having a full-time job for exactly one year. This means, for example, that one person working at MIHS in 2012 and 2013 would account for 2 job years, but only represent 1 job.

<sup>8</sup> This is a count of full- and part-time jobs in all sectors, excluding Government and agriculture. It includes both wage and salary workers, and the self-employed.

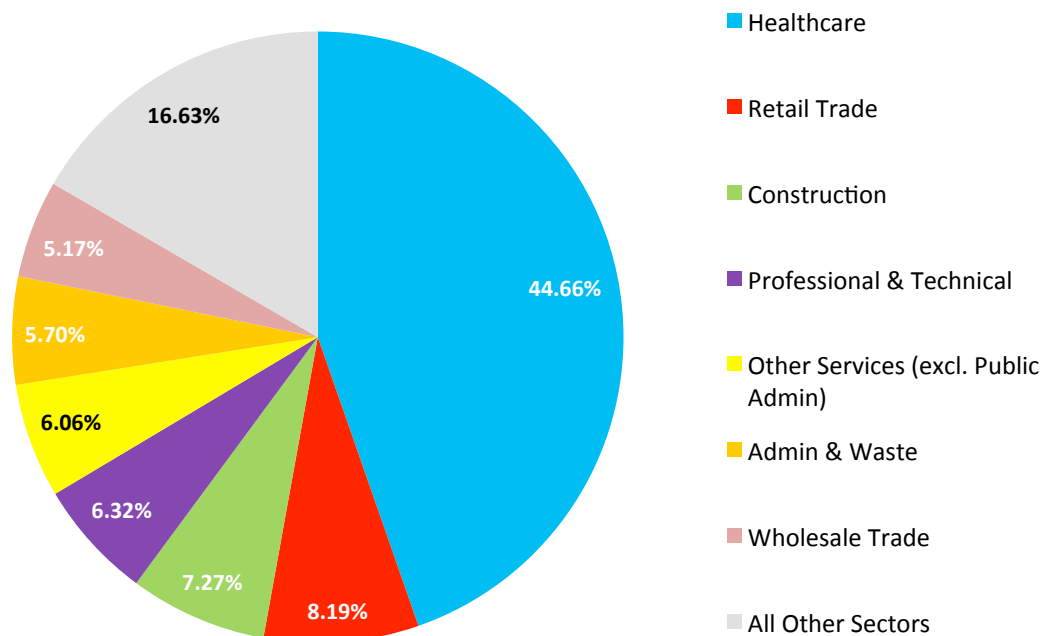
<sup>9</sup> A job year is equivalent to one person having a full-time job for exactly one year. This means, for example, that one person working at MIHS in 2012 and 2013 would account for 2 job years, but only represent 1 job.

jobs in the State of Arizona in CY2013. Table 2 therefore suggests that MIHS generates approximately 2.16 indirect and induced jobs (all sectors) or 1.95 indirect and induced jobs (private non-farm employment) statewide in CY2013 for every full-time or equivalent direct employee.

Maricopa County, as the host county, is the primary beneficiary of either employment measure, accounting for over 98% of the direct, indirect and induced jobs created in CY2013.

Figure 2 illustrates the sectors benefitting the most from MIHS’ job creation in the State of Arizona. The top five sectors estimated to benefit the most from MIHS’ operations in CY2013 are: Healthcare and Social Assistance (5,138 jobs), Retail Trade (943 jobs), Construction (836 jobs), Professional and Technical Services (727 jobs), and Other Services excluding Public Administration (697 jobs).

**Figure 2: Statewide Job Impacts, CY2013**



Source: Authors’ Calculations

Table 3 estimates the gross state product (GSP) and real disposable personal income (RDPI) impacts of MIHS’ operations in CY2013 in the State of Arizona and Maricopa County.

**Table 3: GSP and RDPI Impacts of MIHS, CY2013**

	Maricopa County Impact	State of Arizona Impact
Gross State Product (Millions 2013\$)	\$1,128	\$1,143
Real Disposable Personal Income (Millions 2013\$)	\$569	\$592

Source: Authors’ Calculations

Table 3 estimates that MIHS contributes over \$1.1 billion GSP (2013 \$) to the State of Arizona economy in CY2013, 98.4% of which is generated in Maricopa County.

Table 3 also estimates that MIHS contributes \$592 million RDPI in the State of Arizona in CY2013, 96.1% of which is generated in Maricopa County.

Table 4 estimates the state revenue implications of MIHS' operations for CY2013.

**Table 4: Summary of CY2013 State Revenues<sup>10</sup>**

	Maricopa County (Millions 2013 \$)	Other AZ (Millions 2013 \$)	State of Arizona (Millions 2013 \$)
Income Tax	11.00	0.49	11.49
General Sales Tax	17.74	0.44	18.18
Selective Sales Tax	5.02	0.13	5.15
Corporate Income Tax	2.09	0.04	2.13
Rest <sup>11</sup>	18.93	0.83	19.76
<b>Total</b>	<b>54.78</b>	<b>1.92</b>	<b>56.70</b>

Source: Authors' Calculations

Table 4 estimates that MIHS' operations in CY2013 generated approximately \$56.7 million in gross revenues in the State of Arizona, including almost \$54.8 million in Maricopa County (both 2013 \$).

#### THE PARTIAL NET ECONOMIC IMPACTS OF MIHS, CY2013

The previous series of economic impact estimates only take into account the positive impacts associated with MIHS' employment and supplier purchases in CY2013. However, financial data supplied by MIHS suggests that only 45% of MIHS' CY2013 operations is currently funded by federal sources. Approximately 30.3% is financed by the State of Arizona via taxation, with the balance met by patients. A second Partial Net analysis is therefore additionally implemented to take into account the negative economic implications associated with the direct operation of MIHS. This second analysis uses the same employment and expenditure inputs listed in Table 1 in conjunction with the negative impacts of state taxation and patient financing.<sup>12</sup>

Table 5 estimates the direct, indirect and induced total employment and total private non-farm employment impacts effects for the State of Arizona in CY2013, taking into account the positive and negative implications of operating MIHS.

The table estimates that MIHS is responsible for 8,930 direct, indirect and induced jobs in CY2013 across all sectors, including government and farm workers in the State of Arizona. If government and farm workers are excluded from this total, MIHS is responsible for 8,327 direct, indirect and induced jobs private non-farm jobs in the State of Arizona in CY2013. Table 5 therefore suggests that MIHS generates approximately 1.29 indirect and induced jobs (all sectors) or 1.13 indirect and induced jobs (private non-farm employment) statewide in CY2013 for every full-time or equivalent direct employee.

<sup>10</sup> Numbers may not tally exactly due to rounding-up.

<sup>11</sup> Rest includes intergovernmental revenue, charges, insurance trust revenue and other miscellaneous revenue.

<sup>12</sup> The state taxation and patient financing required by MIHS are negative impacts as they represent a loss to household disposable income.

Maricopa County, as the host county, is the primary beneficiary for either employment measure, accounting for at least 98.6% of the direct, indirect and induced jobs created in CY2013.

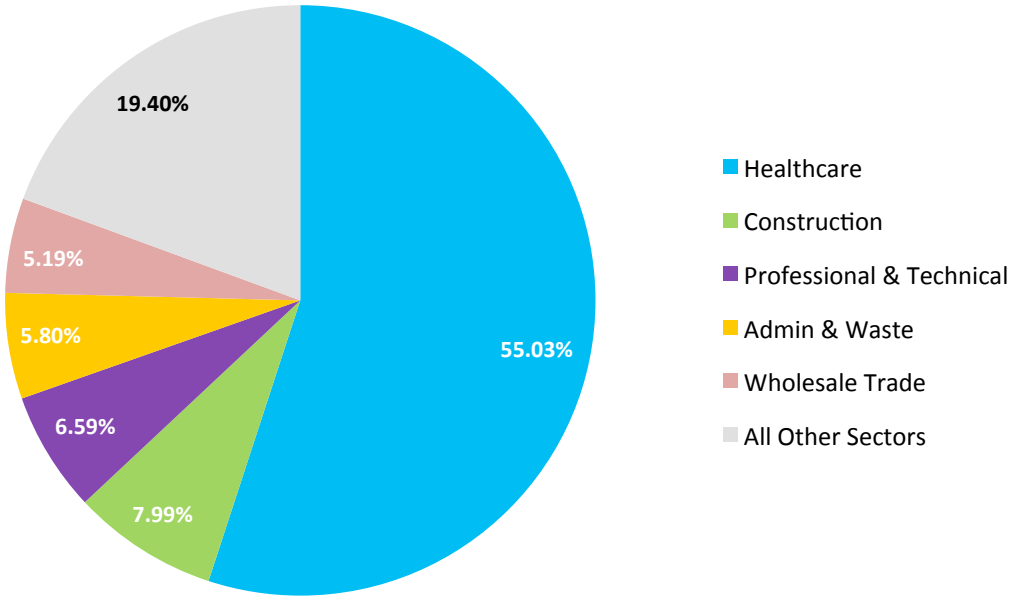
**Table 5: Statewide Employment Impact of MIHS, CY2013**

	Direct Impacts	Indirect/Induced Impacts	Total Impacts
Total Employment <sup>13</sup> (Job Years) <sup>14</sup>	3,906	5,024	8,930
Total Private Non-Farm Employment <sup>15</sup> (Job Years) <sup>16</sup>	3,906	4,421	8,327

Source: Authors' Calculations

Figure 3 illustrates the sectors benefitting the most from MIHS' job creation in the State of Arizona. The top five sectors estimated to benefit the most from MIHS' operations in CY2013 are: Healthcare and Social Assistance (4,582 jobs), Construction (665 jobs), Professional and Technical Services (549 jobs), Administrative and Waste Services (483 jobs), and Wholesale Trade (432 jobs).

**Figure 3: Statewide Job Impacts, CY2013**



Source: Authors' Calculations

<sup>13</sup> This is a count of full- and part-time jobs in all sectors, including Government and agriculture. It includes both wage and salary workers, and the self-employed.

<sup>14</sup> A job year is equivalent to one person having a full-time job for exactly one year. This means, for example, that one person working at MIHS in 2012 and 2013 would account for 2 job years, but only represent 1 job.

<sup>15</sup> This is a count of full- and part-time jobs in all sectors, excluding Government and agriculture. It includes both wage and salary workers, and the self-employed.

<sup>16</sup> A job year is equivalent to one person having a full-time job for exactly one year. This means, for example, that one person working at MIHS in 2012 and 2013 would account for 2 job years, but only represent 1 job.



Table 6 estimates the gross state product (GSP) and real disposable personal income (RDPI) impacts of MIHS' operations in CY2013 for the State of Arizona and Maricopa County.

**Table 6: GSP and RDPI Impacts of MIHS, CY2013**

	Maricopa County Impact	State of Arizona Impact
Gross State Product (Millions 2013\$)	\$824	\$834
Real Disposable Personal Income (Millions 2013\$)	\$439	\$456

Source: Authors' Calculations

Table 6 estimates that MIHS contributes \$834 million GSP (2013 \$) to the State of Arizona economy in CY2013, 98.8% of which is generated in Maricopa County.

Table 6 also estimates that MIHS contributes \$456 million RDPI in the State of Arizona in CY2013, 96.3% of which is generated in Maricopa County.

Table 7 estimates the state revenue implications of MIHS' operations for CY2013.

**Table 7: Summary of CY2013 State Revenues**

	Maricopa County (Millions 2013 \$)	Other AZ (Millions 2013 \$)	State of Arizona (Millions 2013 \$)
Income Tax	8.45	0.36	8.81
General Sales Tax	9.23	0.31	9.54
Selective Sales Tax	2.61	0.09	2.70
Corporate Income Tax	1.33	0.02	1.35
Rest <sup>17</sup>	14.16	0.61	14.77
<b>Total</b>	<b>35.78</b>	<b>1.39</b>	<b>37.17</b>

Source: Authors' Calculations

Table 7 estimates that MIHS' operations in CY2013 generated approximately \$37.2 million in net revenues in the State of Arizona, including almost \$35.8 million in Maricopa County (both 2013 \$).

**CONCLUSION**

MIHS exerts a significant impact on the State of Arizona and the Maricopa County economies in CY2013. In short, a Partial Net analysis suggests that MIHS in CY2013 is responsible for the statewide generation of:

- 8,327 private non-farm employment;
- Over \$834 million GSP (2013 \$);
- \$456 million real disposable personal income (2013 \$); and
- Almost \$37.2 million (2013 \$) in state net revenues.

<sup>17</sup> Rest includes intergovernmental revenue, charges, insurance trust revenue and other miscellaneous revenue.

The Partial Net estimates are lower than a Partial Gross study, but represent a more realistic assessment, as they additionally take into account the financial contributions of the state and patients for the annual operation of MIHS.



**L. WILLIAM SEIDMAN RESEARCH INSTITUTE  
660 S MILL AVENUE, SUITE 300  
TEMPE  
AZ 85281**

**Tel: (480) 965 5362**

**Fax: (480) 965 5458**

**[www.seidmaninstitute.com](http://www.seidmaninstitute.com)**