

# *The Effects of New Hospital Facilities on Health Costs in Michigan*

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## *I. Executive Summary*

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**PURPOSE OF REPORT** Michigan policymakers have recently discussed the state’s Certificate of Need (CON) system for construction of new hospital facilities. One of the primary justifications for this state-level regulation is that hospitals are extremely expensive, long-lived institutions that have long-term effects on both quality and cost of health care in Michigan. While recent developments, such as the implementation of the Affordable Care Act (ACA) affect the entire health care sector, the debate over the use of a CON system to balance capacity and costs remains relevant.

The purpose of this report is to analyze the effects of the construction of new hospital facilities on health care costs, and the implied effect on employment, in the surrounding metro area.

**OVERVIEW OF APPROACH**

We examine this issue by modeling how the costs of hospital facilities are borne by patients, as well as by taxpayers and donors. In addition, we analyze how adding new capacity affects how patients and doctors move between different hospitals in a region, and can substitute one hospital for another. Finally, we confirm our analysis using evidence from two hospital additions in southeast Michigan in 2008 and 2009. We also analyze changes in market area demographics of existing hospitals in response to the addition of a hospital that had been proposed in Clarkston, Michigan.

**SUMMARY OF FINDINGS**

*1. Adding hospital capacity imposes costs that are borne by employers and individuals who pay for care.*

The costs of building a new hospital facility must be covered by a hospital’s revenues in order for the hospital to remain solvent. These costs are passed along to those who pay for care by through fees for health care services. These fees often take the form of higher premiums for health insurance that is provided by employers or in individual markets. The increased costs to employers are shared indirectly by workers as employers face pressure to lower wages or other compensation in response to higher insurance premiums. See “Costs of Adding Hospital Capacity” on page 7 for a more detailed discussion.

*2. Constructing hospital facilities that are not supported by new patient demand imposes additional costs on existing health care customers. Furthermore, employment gained from constructing and operating new hospital facilities, when such facilities represent unnecessary capacity in the region, is offset by reduced employment at existing hospitals and lost employment in other areas of the economy.*

The net effect of new hospital construction on costs depends crucially on whether the new hospital is needed (due to increased demand or the end of the useful life of existing facilities) or represents excess capacity. When new capacity is needed, the cost of constructing hospital facilities is paid for by the new patients, and the jobs associated with construction and maintenance of the facilities are not offset by higher costs elsewhere in the region's hospital sector.

However, new construction that creates excess capacity increases costs to existing hospitals, which are likely passed on to the existing patient base in the region. In addition, the jobs associated with the new facilities are offset by job losses elsewhere in the region's economy. Just as in any other industry, forcing customers to pay additional costs for something unneeded does not create jobs—it costs jobs. See “Needed vs. Unneeded New Capacity” on page 8 for further discussion on this issue.

*3. New provider capacity above what is required by increased patient volume may temporarily raise the cost of providing care as demand for skilled health care workers temporarily outstrips supply. This effect could raise costs for the region's healthcare sector as a whole during a period of adjustment.*

When unneeded new capacity is added to a region, the cost of employing skilled health care workers (technicians, nurses, and physicians) rises for two reasons. First, there can be a temporary spike in the number of workers needed as new facilities work to come online. During this period, existing providers have not yet seen the persistent change in patient volume that allows them to adjust their staffing levels. As a result, over a period of months there is a temporary shock in demand for skilled workers that can affect wages. Second, there is a rise in the premium providers must pay for the most skilled and experienced workers. As a result, competition for “in-demand” workers such as head nurses and department-leading physicians can increase the overall cost of staffing. See “Costs Follow Patients or Increase Costs For Employers and Workers” on page 9 for further discussion.

*4. The existing Certificate of Need system of regulating hospital capacity is intended to keep hospital capacity matched to the needs of a region's patient base.*

Under a state Certificate of Need (CON) program, specific health care service providers (hospitals, nursing homes, surgical centers) are required to gain prior state government approval before undertaking certain capital expenditures or purchasing certain expensive equipment. Generally, this regulatory purview pertains to investing in new technology, expanding existing facilities, and relocating operations.

The CON process requires health care service providers to demonstrate the need for such expenditures. The stated goal of these programs is to constrain excess capacity in the health care industry and guard against higher operating costs for those responsible for financing health services—employers, employees, insurance companies, and taxpayers.

Of course, no regulatory process of this type can perfectly match capacity to demand; even in the private sector, service providers cannot perfectly predict demand for their services. However, the CON process regulates a particularly expensive capacity, the costs of which are imposed partially on taxpayers.

Debate exists in multiple states over whether CON systems achieve their intended purpose. This study provides empirical evidence that can inform the policy debate, both in Michigan and in other states. See “Michigan’s Certificate of Need Program” on page 11 for further information regarding the CON program.

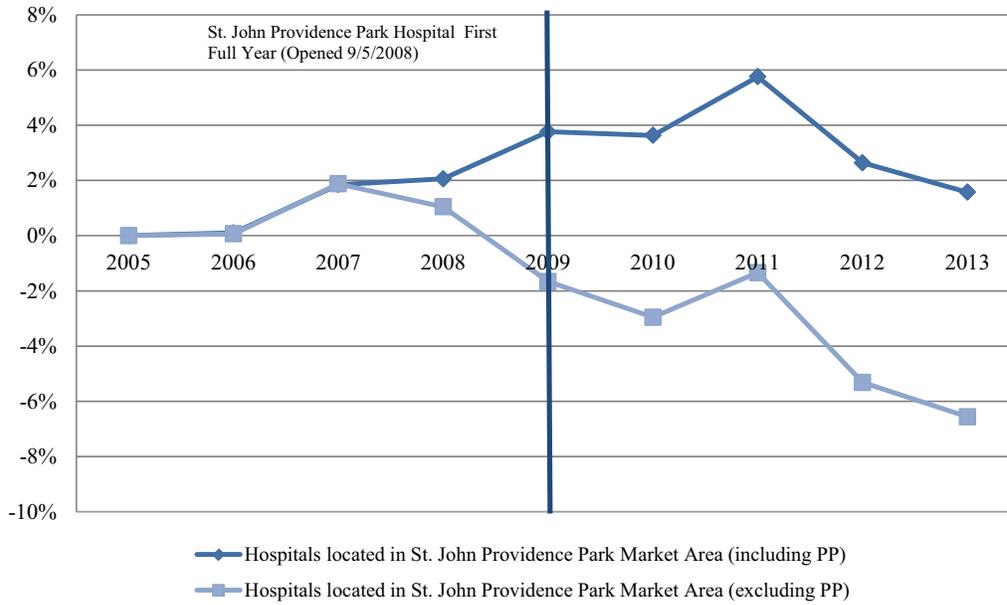
*5. Evidence from two hospital additions in southeast Michigan in 2008 and 2009 confirms that a significant share of patient demand is simply shifted from existing hospitals to newly constructed hospitals in the same region.*

In 2008 and 2009, two new hospitals opened in Oakland County, Michigan. The aggregate patient volume for existing hospitals within the market areas of these new facilities declined significantly after each respective facility opened, while the total patient volume (including the new facility) increased. We show the results of our analysis in Figure 1 and Figure 2 on page 4. This suggests that these two new hospitals attracted patients who would have otherwise visited a previously existing hospital. See “Effects on Patient Volume” on page 14 for further discussion on this analysis.

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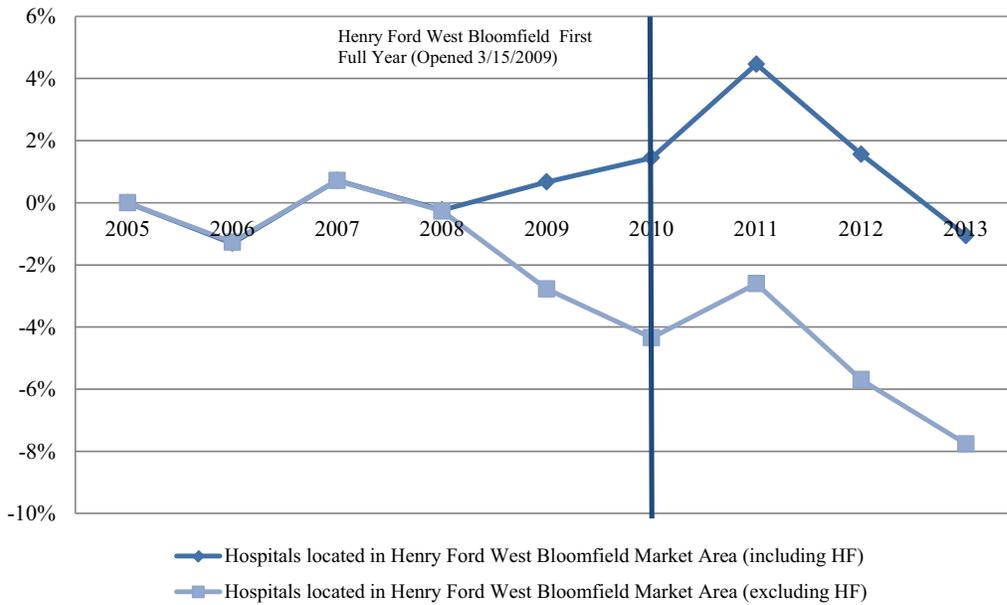
Executive Summary

**FIGURE 1. Cumulative Change in Patient Volume from 2005, St. John Providence Park Market Area**



Source: AEG analysis based on data sourced from the Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 2. Cumulative Change in Patient Volume from 2005, Henry Ford West Bloomfield Market Area**



Source: AEG analysis based on data sourced from the Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

6. A previously proposed McLaren facility in Clarkston, Michigan would have likely competed with some existing hospitals for patients using higher-paying private insurance.

New hospitals can affect not only the number of patients at existing hospitals, but also the composition of the patient base. In particular, new hospitals can change the mix of “payor types,” which refers to the source of payment for patients using the hospital. Patients paying with Medicare or Medicaid—rather than private insurance—generally pay lower prices for care.

McLaren Health Care Corporation previously proposed building a new hospital in Clarkston, Michigan. Our GIS-based analysis of the market area demographics for both the new hospital and eight nearby existing hospitals indicates that the proposed McLaren facility would have been located in an area that would attract patients likely to pay with private insurance. The results of our market area analysis are shown in Table 1 below. These results indicate that the proposed facility would have affected the Primary Service Area (PSA) of four out of the eight nearby hospitals.<sup>1</sup> Furthermore, the proposed facility would have affected the competing hospital PSAs such that it would have competed with some of these hospitals for privately-insured patients. See “Effects on Market Areas of Existing Hospitals” on page 16 for more information this analysis.

**TABLE 1. Competitor Hospital Primary Service Area Demographics With and Without the Previously Proposed McLaren Hospital**

|                                    | Population | Share of Population Age 65 Years & Over<br>(a) | Share of Households with Income < \$25,000<br>(a) | Likely to Have Increased Reliance on Public Insurance Payors |
|------------------------------------|------------|--|---|--|
| McLaren Oakland                    | ↓          | ↓  | ↑   |  |
| Doctors' Hospital of Michigan      | →          | →  | →   | x  |
| St. Joseph Mercy Oakland           | →          | →  | →   |  |
| Crittenton Hospital Medical Center | →          | →  | →   |  |
| Genesys Regional Medical Center    | ↓          | ↑  | ↑   | x  |
| Beaumont Hospital - Troy           | →          | →  | →   |  |
| Beaumont Hospital - Royal Oak      | →          | →  | →   |  |
| Huron Valley-Sinai Hospital        | ↓          | →  | →   |  |

**Legend**  
 ↓ Decreased with proposed McLaren facility in Clarkston  
 → Unchanged with proposed McLaren facility in Clarkston  
 ↑ Increased with proposed McLaren facility in Clarkston

Source: AEG analysis based on data sourced from the Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

(a) Demographic considered unchanged if within +/- 0.2 percentage points of value without McLaren facility in Clarkston.

1. The PSA is the area in which a hospital should be expected to have the greatest advantage relative to competitors offering the same products and services.

**ABOUT ANDERSON  
ECONOMIC GROUP**

Anderson Economic Group is a research and consulting firm specializing in economics, finance, business valuation, and industry analysis. The firm was founded in 1996, and has offices in East Lansing, Michigan and Chicago, Illinois.

Past Anderson Economic Group analyses include: assessments of employment in high-tech and life sciences industries, done for Automation Alley, Oakland County, and the University Research Corridor; assessments of the economic benefits of consolidating existing and building new facilities in Detroit, Lansing, and Grand Rapids, for Blue Cross Blue Shield of Michigan; numerous economic impact studies on events ranging from strikes, blackouts, and work stoppages to Super Bowls, major league baseball playoffs and Ryder Cup events; and examinations of the business and tax climate in the State commissioned by the Michigan House of Representatives, the Michigan Chamber of Commerce, Business Leaders for Michigan, the National Education Association, and the Michigan Education Association.

## *II. Effects of New Hospital Facilities*

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The construction of a new hospital that adds new capacity represents a major change in a region's health care market. Since hospitals are large, complex organizations, capacity is rarely added "gradually." When a new hospital opens the amount of available medical services in the area increase instantly. The geographic distribution of hospital services, such as inpatient capacity, is also significantly altered since some patients now have additional choices and access. This section qualitatively describes the effects of new hospital capacity being added to a region.

### **COSTS OF ADDING HOSPITAL CAPACITY**

Our model of hospital facility costs confirms a fundamental principle: employers and workers are the primary payors of costs in the health care system. If the cost of care rises, these costs are borne by employers directly, for self-insured businesses, or indirectly through higher premiums in the small group and individual markets. Increased costs to employers are shared to some extent by workers as employers face pressure to lower wages or other compensation to help pay for more costly health premiums.

Other institutions are involved in paying for health care facilities, but these institutions are also ultimately funded by health care customers. Federal and State governments (including the Medicaid and Medicare programs) receive taxes and make payments to cover a part of health care costs; insurers receive insurance premiums from individuals and employers, and reimburse providers, including hospitals.<sup>2</sup> The State of Michigan's Hospital Financing Authority assists organizations in borrowing to fund hospital construction, but the organizations are still responsible for the repayment of all the borrowed funds as well as the interest on the debt. The involvement of these institutions obscures who is responsible for which part of the costs and affects the incentives of the parties involved, but does not change the fundamental truth that customers pay for facilities.

In the case of hospital facilities, the costs of the facility (including financing costs) are ultimately part of the base of costs that must be covered by hospital's revenues in order for the hospital to remain solvent. Those costs are passed along to employers through fees for health care services, some of which are paid directly by the employer and some of which are indirectly paid for by employers, through their insurers.

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2. The taxes that fund Medicare and Medicaid likely pay very little of the extra costs imposed by adding new hospital capacity, as the reimbursement rates they pay to hospitals for patient care are fixed at amounts that are much lower than private reimbursement rates. See "Effects on Market Areas of Existing Hospitals" on page 16.

**EFFECTS ON  
EXISTING HOSPITAL  
EXPENDITURES AND  
COSTS**

The most important effects of new hospital capacity on existing hospitals comes through changes in the volume and composition of patients. Customers for many products and services have some ability to choose the most convenient provider, though physician referral networks can restrict the available options. It is well established that customers for such products as automobiles, household goods, groceries, food and drink at restaurants, and tickets to sporting events are more likely to purchase those services from facilities located closer to their place of residence or work. There is no reason to expect that health care customers behave any differently. Indeed, one justification for the construction of new facilities is to locate them closer to where people in a region live or work. However, evidence shows that constructing more hospital facilities closer to patients when those patients already have access is not economically beneficial.

When patient volume is shifted from existing to new hospital facilities, some of the costs associated with providing care follow the patient to the new facility, while others do not. As a result, the net effect of new hospitals on costs depends crucially on whether the new hospital is needed (due to increased demand or to existing facilities ending their useful life) or represents excess capacity.

*Needed vs. Unneeded New Capacity*

When new hospital capacity is needed (to provide increased access for an underserved patient base, or to replace existing facilities at the end of their useful life), the cost of constructing and maintaining the new facilities is spread over a larger patient base (in the case of new construction) or simply replaces the costs associated with the obsolete facility (in the case of replacement). The new capacity is paid for by the new patients, and the jobs associated with construction and maintenance of the facilities are not offset by higher costs elsewhere in the region's hospital sector.

If a new facility is added without an expansion of the existing patient base in a region, the result is over-capacity. The cost of constructing and maintaining the new facility is borne by increased costs to hospitals, much of which is likely passed on to the *existing* patient base in the region.

Overcapacity can impose costs by making current facilities operate at less-efficient levels. It can also cause existing facilities to be prematurely decommissioned. In cases where the financing and other contractual agreements require the hospital to continue to operate facilities that are no longer being utilized at an efficient level, the hospital may have few options other than to pass along higher costs to its patients, employees, or sponsoring organization.

In addition, employment gained from construction and operation of new hospitals that provide excess capacity substitutes activity in other areas of the economy. There are two primary sources for this offset economic activity. First, jobs at the new facilities can be offset by fewer jobs at existing hospitals. As patients

move from existing facilities to new facilities, much of the employment associated with providing their care shifts with them as all providers strive to adjust staffing to the level appropriate for patient volume.

Second, employment in the rest of the region's economy will fall as higher health premiums borne by employers and workers affect the labor market. In addition to the direct costs associated with constructing and financing the excess new facilities, there can be inefficiencies caused by excess capacity, including premature decommissioning costs at other hospitals. These extra costs are being spread over the same patients, and someone (typically employers and workers) has to pay them.

*Costs Follow Patients or Increase Costs For Employers and Workers*

When patient volume has shifted from an existing hospital to a new hospital, some of the existing hospital's operating costs can "follow the patient" as staffing levels change at both hospitals. For example, compensation for front-line medical workers such as technicians, nurses, and doctors composes a large fraction of the cost paid by employers and other payors. This portion of costs that simply substitutes employment at one hospital for another negates part of the new employment at the new hospital.

Other costs do not fall immediately when patient volume is shifted away from an existing facility. Some, such as debt service, facility maintenance, and other fixed costs associated with the hospital, have very little scope for adjustment, and must be spread over the newly-smaller patient volume. This is one way in which adding unneeded additional hospital capacity can increase overall health system costs in a region.

Some costs may persist for a period of time before an adjustment can be made. The labor market for skilled medical workers, such as technicians, nurses, and doctors, is one example where this might take place. There are at least two main reasons why an existing hospital may not be able to lower staffing costs directly in line with a drop in patient volume due to a new facility. First, the new hospital and existing hospitals may be competing for the more experienced, talented workers in the market as the new facility tries to establish a reputation for quality. This may affect the compensation levels for workers capable of filling leadership and supervisory positions for a period of time. Second, there may be a period of uncertainty during which it is not clear to existing hospitals how large and how persistent the change in patient volume really is. This may result in a period during which staffing for some types of care is maintained temporarily at a higher level than is warranted by the patient volume. The end result of this is more medical workers working in the region overall for a period of time.

**EFFECTS ON PAYOR  
TYPE**

In addition to patient volume, opening a new hospital facility may also affect the composition of the patient base at existing hospitals. Hospitals are typically set up to serve a mixture of “payor types.” This term refers to the source of payment for patients using the hospital. Many patients have privately purchased insurance, some are insured through their employer, some patients pay the full cost of their care out-of-pocket, and others have taxpayer-subsidized insurance through Medicare or Medicaid.

Public insurance typically pays providers a lower amount for care than private insurance. Traditionally, providers rely on a mix of payors with public and private insurance to cover both marginal and fixed costs of care. A change in the mixture of the type of insurance a hospital’s patient base use to pay for care will affect the hospital’s financial position. When a new facility opens, the types of patients that choose to attend the new hospital may not have the same payor mix as those that choose to stay at an existing hospital.

**EFFECTS ON  
HOSPITALIZATION  
RATES**

Another potential effect of new hospital facilities is a shift in rate of hospital utilization. Roemer’s Law, a well-known principle in health care policy, states that hospital beds that are built tend to be used. This is often interpreted to mean that the use of hospital services increases with an increase in the supply of hospital beds. The implication of this concept is that patients will be prescribed treatments and services that may not be completely necessary, if there is unneeded capacity of hospital beds. If this understanding of Roemer’s Law is true, then this will further increase health care costs.

While the validity of Roemer’s Law is not always accepted, a recent study analyzed hospital utilization in Michigan in 2010.<sup>3</sup> Results of the study indicate that there was a positive and statistically significant relationship between hospital bed availability and inpatient hospitalization rates, supporting the common interpretation of Roemer’s Law.

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3. Paul Delamater, Joseph Messina, Sue Grady, Vince WinklerPrins, and Ashton Shortridge, “Do More Hospital Beds Lead to Higher Hospitalization Rates? A Spatial Examination of Roemer’s Law,” PLOS ONE, February 2013.

### *III. Michigan's Certificate of Need Program*

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In this section, we describe the Certificate of Need (CON) program, which is designed to address some of the effects identified in the previous section. We outline economic arguments in support and in opposition to the program, describe the history of CONs, and describe the CON program in Michigan.

#### **WHAT IS A CERTIFICATE OF NEED?**

Under a state Certificate of Need program, specific health care service providers (hospitals, nursing homes, surgical centers) are required to gain prior state government approval before beginning capital expansions or improvements. Generally, expansions and improvements include adding beds, investing in new technology, expanding existing facilities, adding new procedures, and relocating operations. In general, the CON process requires health care service providers to demonstrate the need for each expansion. The stated goal of these programs is to constrain excess capacity in the health care industry and guard against higher operating costs for those responsible for financing health services - employers, insurance companies, and taxpayers.

The underlying economic assumption behind CON requirements is that the free market does not work properly when it comes to health care facility expansion decisions and that, in the absence of government regulation, an oversupply of these facilities will be provided by profit-seeking firms. The theory follows that firms would have to raise operating costs on existing facilities and services to cover the costs of under-utilized facilities. Arguments in support of CON programs claim that many health care services are not subject to the attributes found in a free market, such as choice (as services are often ordered by physician and patients are unable to “shop around”) and perfect information. In the absence of these “market forces”, prices will be higher. Governments’ (state and federal) justifications for regulating health care facility expansions (and guarding against higher operating costs) rest on the fact that a great deal of total health care expenditures are financed by the government (taxpayers). It is argued that these regulations protect the public from higher costs (taxes).

One of the key motivations for using a CON process is to ensure that decisions to invest in additional hospital capacity are not mainly driven by the desire to “select” more profitable customers using location or other features. The pressure to do so is increased by federal policy, which created a class of patients on whose behalf the government pays below-market rates for care through Medicare and Medicaid. The Affordable Care Act (ACA) extends federal intervention in the healthcare sector by expanding the number of Medicaid payors and creating a new class of patients with regulated private insurance sold through exchanges. These issues should affect how Michigan policymakers think about regulating health care capacity.

Opponents of CONs argue that these requirements create high barriers to entry that protect existing hospitals from competition and actually increase the costs of health care services.<sup>4</sup> This may be another important consideration in the context of the Affordable Care Act (ACA), which was intended to increase competition amongst insurers. By restricting supply, CONs possibly erode insurers' bargaining power with hospitals and other health care providers over rates.

## HISTORY OF CONS

In 1966, New York was the first state to pass CON legislation. Many states followed with the encouragement and threat of losing federal financial resources in the mid-1970s. Amendments to federal law in 1976 effectively mandated that states pass CON legislation or risk losing federal Medicaid (health care program for poor) and Medicare (health care program for elderly) funding for health facility construction expenses if the capital expenses were not approved by states or the federal government. The federal government feared that out-of-control health care inflation and the fiscal effects on these two federal health care programs. By the early 1980s, all states (except Louisiana) had passed CON legislation to ensure the continuous flow of federal health care funding. Changes in federal law in 1987 removed the threat to states of losing federal dollars and, as a result, a number of states abandoned their CON programs. As of December 2013, 36 states (including Michigan) had a CON program in operation.<sup>5</sup>

Michigan's CON program was initiated in 1973 under separate statute and later codified in the Public Health Code in 1978 (Part 222), where it remains today. The program is administered by the Department of Community Health under the auspices of the CON Commission. The Commission consists of 11 members, appointed by the governor, representing various interests (providers, insurers, labor, academic)

## MICHIGAN CON ACTIVITY

The CON process begins by filing a letter of intent with the Department of Community Health. The vast majority of the time, these letters are turned into formal applications. Applications are then reviewed by the Department. Final approval (for non-emergency applications) to proceed with a project is a two-step process. Following a detailed evaluation of the application, a proposed decision is recommended by Department staff. The second step involves a final

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4. See Jordan Bruneau, "The Great Healthcare CON," January 14, 2014, <[www.fee.org/the\\_freeman/detail/the-great-healthcare-con](http://www.fee.org/the_freeman/detail/the-great-healthcare-con)>.

John Locke Foundation, "Certified: The Need to Repeal CON," October 25, 2013, <[john-locke.org/acrobat/spotlights/Spotlight445CON.pdf](http://john-locke.org/acrobat/spotlights/Spotlight445CON.pdf)>.

5. National Conference of State Legislatures, Certificate of Need: State Health Laws and Programs, July 2014, <[www.ncsl.org](http://www.ncsl.org)>.

decision by the Director of the Department. The Director can approve, approve with condition(s), or disapprove an application.

In 2014, 256 final CON decisions were rendered on hospital construction matters (including expansions of existing facilities), compared to 283 and 309 in 2012 and 2013, respectively. The total project costs associated with the 2014 final decisions were \$1.1 billion. In 2012 and 2013, total project costs were \$1.2 billion and \$1.3 billion, respectively. Only a very small fraction (5 projects in 2014) of the final decisions were disapproved.<sup>6</sup>

Of the 2014 final decisions, 75 percent of those approved involved capital expenditures for clinical areas of facilities. This category includes projects to initiate, replace, or expand a covered clinical service. About 18 percent of approved projects involved bed capacity, including moving beds from one geographic area to another without a net change in the number of beds. And 18 percent of the approved projects related to the construction or replacement of a health facility, including the acquisition of an existing facility.

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6. Michigan Department of Community Health, Certificate of Need Program Annual Activity Report, 2014, <[www.michigan.gov/con](http://www.michigan.gov/con)>.

## *IV. Evidence of the Effects of New Hospital Facilities*

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In this next section, we examine evidence from existing hospitals' experience when two new hospitals opened in southeast Michigan in 2008 and 2009, particularly the change in patient volume at these hospitals. In addition, we analyze the effects that a previously proposed McLaren facility in Clarkston, Michigan would have on the market area demographics of nearby existing hospitals.

### **EFFECTS ON PATIENT VOLUME**

We first analyze whether new hospital capacity draws patients away from existing hospitals using the case of two new hospital facilities that were recently built in the same region in Michigan. St. John Providence Park in Novi opened in 2008 and Henry Ford West Bloomfield Hospital in West Bloomfield opened in 2009. Both of these hospitals are located in Oakland County, and they are located within 30 minutes of one another.<sup>7</sup>

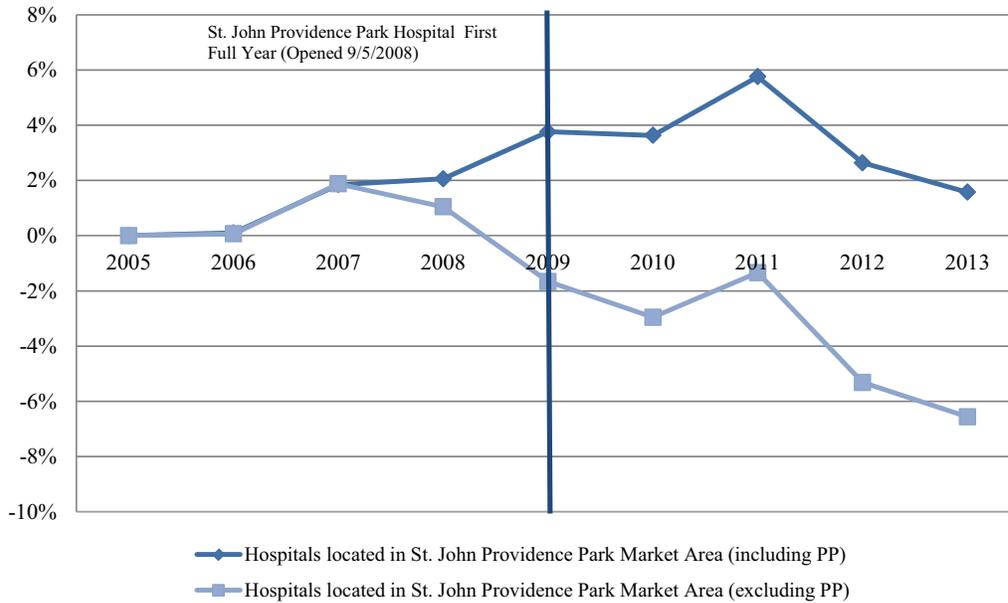
We used patient discharge data from the Michigan Department of Community Health (MDCH) Annual CON Survey. Such data should indicate whether new hospitals in a region with a slowly changing population base attract primarily new patients to a region, or attract patients away from existing hospitals in a region.

Figure 3 on page 15 shows an analysis of trends in the aggregate patient volume for hospitals within a 30-minute drive-time area around Providence Park. One trend includes the new facility, and the other excludes this facility. While the overall patient volume in the Providence Park market area increased during the first couple years of operations, there was a significant decline in the patient volume for the existing hospitals, collectively. Although we can not quantify the magnitude of patient substitution, this strongly suggests that the new hospital's patient base would have sought treatment at another existing hospital in the area if not for Providence Park.

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7. A 30-minute drive-time area is a commonly used indicator of market area in the hospital industry, though there are many examples of patients traveling further for care. CON frequently considers that residents living within a 30-minute drive-time area around a hospital would be considered the patient base for that hospital. When a new hospital wants to open the CON requires that no other hospital facilities be located in that area unless there are populations of particular need that are under-served.

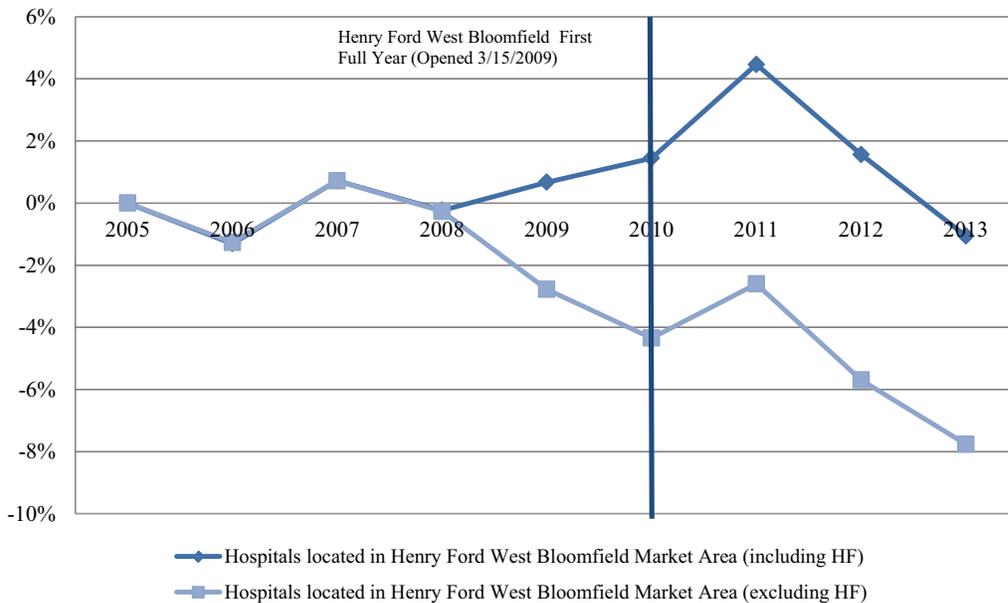
**FIGURE 3. Cumulative Change in Patient Volume from 2005, St. John Providence Park Market Area**



Source: AEG analysis based on data sourced from the Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

Similar to the figure above, Figure 4 on page 16 shows an analysis of the trends in the aggregate patient volume for hospitals within a 30-minute drive-time area of Henry Ford West Bloomfield Hospital. Again, one trend includes the new facility, and the other trend excludes it. In contrast to the patient volume analysis of the Providence Park market area, the overall Henry Ford West Bloomfield market area increased during the years following the facility’s opening. However, similar to the Providence Park analysis, the patient volume for the existing competing hospitals declined in aggregate when the new hospital opened.

**FIGURE 4. Cumulative Change in Patient Volume from 2005, Henry Ford West Bloomfield Market Area**



Source: AEG analysis based on data sourced from the Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

This analysis shows that the patient base supporting a new hospital can draw significantly from the patients who would otherwise have visited an existing hospital. Patients that would have attended already established area hospitals instead go to a new one. Of course, this may represent a real benefit to some patients, who may have preferred the new hospital for a variety of reasons, including convenience or quality of care. However, it also confirms that many customers are simply moving from one facility to another.

**EFFECTS ON MARKET AREAS OF EXISTING HOSPITALS**

We examine the demographics of the market areas of the previously proposed facility in Michigan and nearby existing hospitals in order to draw conclusions regarding the potential effects of a new hospital on payor types.

*Previously Proposed Hospital in Clarkston, Michigan*

McLaren Health Care Corporation is a health care organization based in Flint, Michigan. The McLaren system includes 12 hospitals, along with several clinics and various centers. Under its previously proposed plan, McLaren intended to transfer 200 beds from its McLaren Oakland Medical Center in Pontiac, Michigan in order to build a new facility in Clarkston, Michigan.

Hospitals operate with a sense of mission to provide quality health care, but also must base location decisions, in part, on economic logic to ensure viability. This

section shows that the proposed Clarkston location would have succeeded in being near an attractive patient base and that it would have competed with existing hospitals.

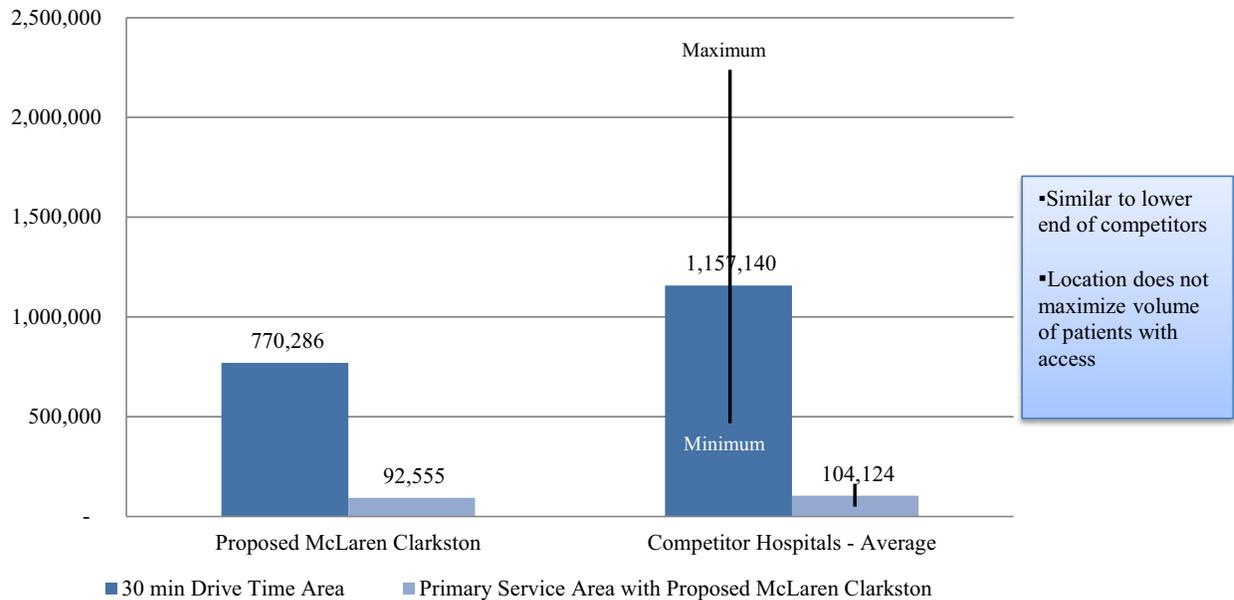
In order to examine the effect of a new hospital facility on payor types, we first identify age- and income-based demographics that are strongly related to the likelihood of using either Medicaid or Medicare to pay for care. We estimate these demographics based on two ways to measure hospital market areas:

- **Patients with access.** Similar to our analysis of the effects on patient volume, we measure the area within a 30 minute drive-time from a facility. This identifies a market area which includes patients that will consider a particular hospital among their choices for a provider.
- **Patients with easiest access.** We identify the Primary Service Area (PSA), which is the area in which a hospital should be expected to have the greatest advantage relative to competitors offering the same products and services. The PSA is based upon distance and road networks, and illustrates the geographic area that is the closest to any given hospital in terms of patient drive-times. We measure the PSAs of the competitor hospitals without the McLaren facility and with the McLaren facility.

For further information on our methodology and for specific estimates for the demographics for each hospital market area, see “Effects on Market Areas of Existing Hospitals” on page A-2.

We first compare the previously proposed McLaren facility in Clarkston with its competitors based on the population of its market areas, as shown in Figure 5 on page 18. In general, the market areas for the proposed McLaren facility in Clarkston would have had a smaller population than those of the facility’s potential competitors.

**FIGURE 5. Population of Market Areas for Previously Proposed McLaren Clarkston Hospital and its Competitors**

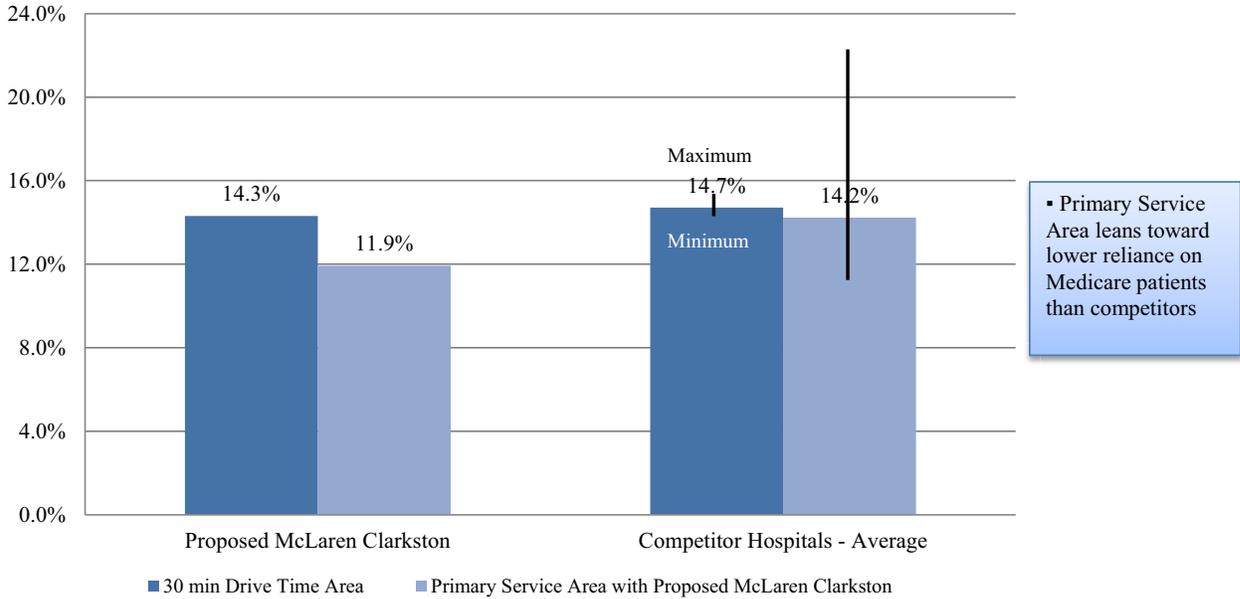


Source: AEG analysis based on data sourced from Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

We then compare the previously proposed McLaren facility in Clarkston with its competitors based on the share of the market area population that is age 65 years and over. We use this demographic as a proxy for an estimate of the population that is eligible for Medicare.<sup>8</sup> While the 30 minute drive-time areas are fairly similar, the PSA for the proposed McLaren hospital would have had a significantly lower share of a Medicare-eligible population than its competitors. See Figure 6 on page 19 for further details.

8. Generally, individuals are eligible for Medicare Part A (hospital insurance) if they are 65 years of age or older. Some individuals who are younger than 65 years old may be eligible if they meet certain disability criteria.

**FIGURE 6. Share of Population Age 65 Year and Over in Market Areas for Previously Proposed McLaren Clarkston Hospital and its Competitors**

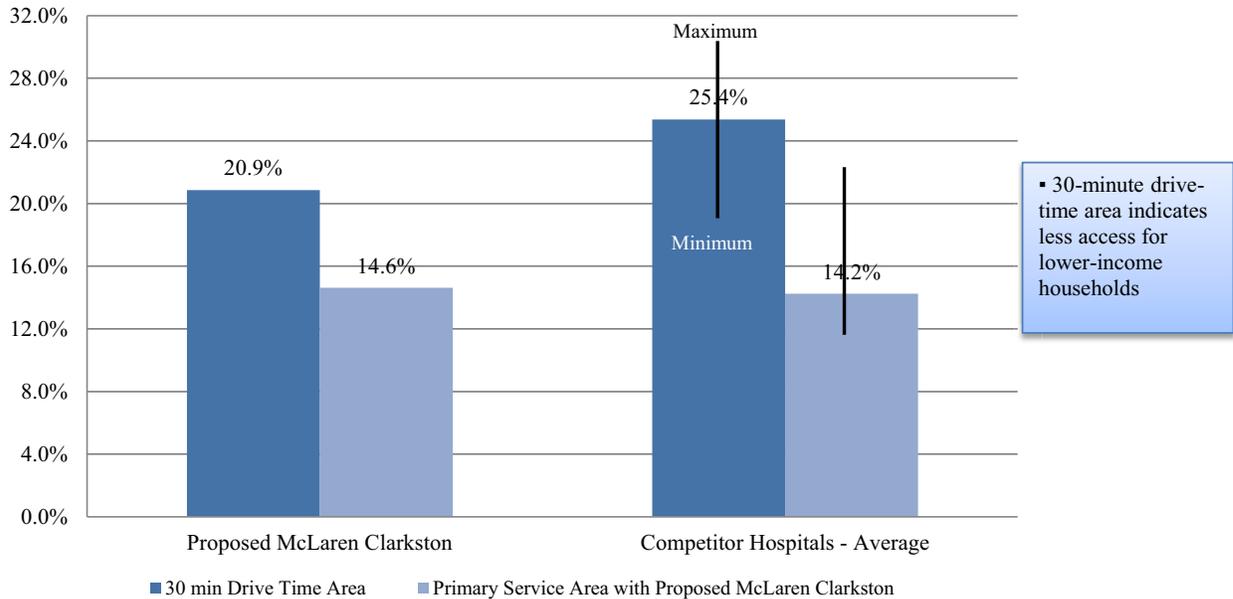


Source: AEG analysis based on data sourced from Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

We also compare the share of the market area households that have an income less than \$25,000. We consider this to be representative of the share of the market area population that may be eligible for Medicaid.<sup>9</sup> Figure 7 on page 20 shows that the 30 minute drive-time area for the previously proposed McLaren facility would have had a considerably lower share of potentially Medicaid-eligible patients. The PSA of the proposed McLaren facility is comparable to that of the competitor average. However, it is on the low end of the range of values.

9. Medicaid eligibility is based on a variety of factors and household income thresholds are dependent on household size. See

**FIGURE 7. Share of Households with Income <\$25,000 in Market Areas for Previously Proposed McLaren Clarkston Hospital and its Competitors**



Source: AEG analysis based on data sourced from Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

In addition to comparing the value of each demographic for each competing hospital PSA with the previously proposed McLaren Clarkston PSA, we also compare the PSAs of the competing hospitals with and without the proposed McLaren hospital. Table 2 on page 21 shows the results of the PSA analysis.

The PSAs of four competing hospitals remained unchanged with the previously proposed McLaren hospital in Clarkston. The population of the PSAs for all four remaining hospitals would have declined with the proposed facility. The share of households with income greater than \$25,000 would have increased in two out of the four remaining competing hospital PSAs—Doctors’ Hospital of Michigan and Genesys Regional Medical Center. This suggests that these hospitals may have a higher share of patients that are eligible for Medicaid. Finally, the share of population age 65 years and older would have remained unchanged for all competing hospitals, except for two: Genesys and McLaren Oakland. The results indicate that Genesys may have a higher share of patients that are eligible for Medicare, while McLaren Oakland may have lower share. Recall that McLaren Oakland was the hospital from which McLaren had proposed to transfer beds in order to build the proposed facility in Clarkston.

In general, the analyses of the market area demographics indicate that the previously proposed McLaren facility in Clarkston would have been well-positioned

to attract age and income groups that would be likely to pay with private insurance. In addition, the results shown in the scorecard table indicate that the proposed hospital would have competed with a couple of the nearby existing hospitals for these patients.

**TABLE 2. Competitor Hospital Primary Service Area Demographics With and Without the Previously Proposed McLaren Hospital**

|                                    | Population | Share of Population Age 65 Years & Over<br>(a) | Share of Households with Income < \$25,000<br>(a) | Likely to Have Increased Reliance on Public Insurance Payors |
|------------------------------------|------------|--|---|--|
| McLaren Oakland                    | ↓          | ↓  | ↑   |  |
| Doctors' Hospital of Michigan      | ↓          | →  | ↑   | x  |
| St. Joseph Mercy Oakland           | →          | →  | →   |  |
| Crittenton Hospital Medical Center | →          | →  | →   |  |
| Genesys Regional Medical Center    | ↓          | ↑  | ↑   | x  |
| Beaumont Hospital - Troy           | →          | →  | →   |  |
| Beaumont Hospital - Royal Oak      | →          | →  | →   |  |
| Huron Valley-Sinai Hospital        | ↓          | →  | →   |  |

**Legend**

- ↓ Decreased with proposed McLaren facility in Clarkston
- Unchanged with proposed McLaren facility in Clarkston
- ↑ Increased with proposed McLaren facility in Clarkston

Source: AEG analysis based on data sourced from the Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

(a) Demographic considered unchanged if within +/- 0.2 percentage points of value without McLaren facility in Clarkston.

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## *Appendix A. Methodology*

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In this appendix, we describe the data sources and methodology that we used to complete our analyses. We also provide detailed tables and figures to supplement the summary tables and figures in the body of the report.

### **DATA SOURCES**

We outline the main data sources that we used in this analysis below:

- Michigan Department of Community Health Annual Certificate of Need Survey for patient discharges and hospital locations; and
- Esri, Inc. for 2013 demographic data and for drive-time analyses.

### **EFFECTS ON PATIENT VOLUME**

In our analysis of changes in patient volume in response to the new Henry Ford West Bloomfield Hospital in 2008 and the St. John Providence Park Hospital in 2009, we used patient discharges for medical/surgical beds from the MDCH Annual CON survey from 2005 through 2013.<sup>10</sup> We used facility location data from the 2013 survey to identify comparable existing hospitals that were within a 30-minute drive-time of each new facility.<sup>11</sup>

Table A-1 on page A-2 provides a list of these hospitals, the market areas in which they belong, patient volume, and relative change in patient volume. These hospitals were included in the aggregate patient volume in the Figure 3 on page 15 and in Figure 4 on page 16 for their respective market areas. There were 10 previously existing hospitals included in the Henry Ford West Bloomfield market area and 9 previously existing hospitals included in the St. John Providence Park market area.

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10. “Discharges” refer to the number of patients who expire or are released from the hospital. “Medical/surgical” category includes intensive care, cardiac care, rehabilitation, acute substance abuse, and tuberculosis beds.

11. A 30-minute drive-time area is a commonly used indicator of market area in the hospital industry, though there are many examples of patients traveling further for care. CON frequently considers that residents living within a 30-minute drive-time area around a hospital would be considered the patient base for that hospital. When a new hospital wants to open the CON requires that no other hospital facilities be located in that area unless there are populations of particular need that are under-served.

**TABLE A-1. Hospitals Included in Patient Volume Analysis**

| <b>Hospital Facility</b>                   | <b>Market Area</b> | <b>2005</b>    | <b>2013</b>    | <b>2005-13% Change</b> |
|--|--------------------|----------------|----------------|------------------------|
| Beaumont Hospital - Royal Oak              | Both               | 46,645         | 46,553         | 0%                     |
| Botsford Hospital                          | Both               | 14,164         | 13,345         | -6%                    |
| Doctors' Hospital of Michigan              | HF                 | 5,600          | 1,154          | -79%                   |
| Huron Valley-Sinai Hospital                | Both               | 6,923          | 7,363          | 6%                     |
| McLaren - Oakland                          | HF                 | 5,505          | 4,743          | -14%                   |
| Oakwood Hospital - Wayne                   | PP                 | 9,442          | 7,061          | -25%                   |
| Sinai-Grace Hospital                       | Both               | 21,828         | 17,723         | -19%                   |
| St. John Macomb-Oakland Hospital (Oakland) | Both               | 6,865          | 6,005          | -13%                   |
| St. John Providence - Southfield           | Both               | 20,673         | 16,395         | -21%                   |
| St. Joseph Mercy - Livingston              | PP                 | 2,904          | 3,189          | 10%                    |
| St. Joseph Mercy - Oakland                 | HF                 | 14,663         | 15,028         | 2%                     |
| St. Mary Mercy - Livonia                   | Both               | 12,662         | 15,148         | 20%                    |
| St. John Providence Park - Novi            | PP                 | 132 *          | 11,693         | 8758%                  |
| Henry Ford - West Bloomfield               | HF                 | 150 *          | 10,572         | 6948%                  |
| <b>Total</b>                               |                    | <b>168,156</b> | <b>175,972</b> | <b>5%</b>              |

\* These hospitals were not officially open until 2008 and 2009 respectively. However, each hospital had several active beds where patients could stay no longer than 23 hours.

## **EFFECTS ON MARKET AREAS OF EXISTING HOSPITALS**

In our analysis of the effects of a previously proposed hospital in Clarkston on existing hospitals' market areas, we identified eight comparable hospitals that were within a 30-minute drive-time. We then determined the 30-minute drive-time area for each of these hospitals, which we consider to be the market area for patients that would consider the reference hospital among their choices of potential health care providers. We then estimated the Primary Service Area of these eight hospitals without the proposed McLaren facility and with the proposed McLaren facility.<sup>12</sup> Map 1 on page A-4 and Map 2 on page A-5 show the boundaries of these PSAs.

For each 30-minute drive-time area and PSA, we estimated three demographic variables: population, the share of population age 65 years and over, and the share of households with an annual income less than \$25,000. The population is indicative of the relative size of the patient base for each hospital. The share of population age 65 years and over is a proxy for the share of the patient base that

12. The PSA is the area in which a hospital should be expected to have the greatest advantage relative to competitors offering the same products and services. The PSA is based upon distance and road networks, and illustrates the geographic area that is the closest to any given hospital in terms of patient drive-times.

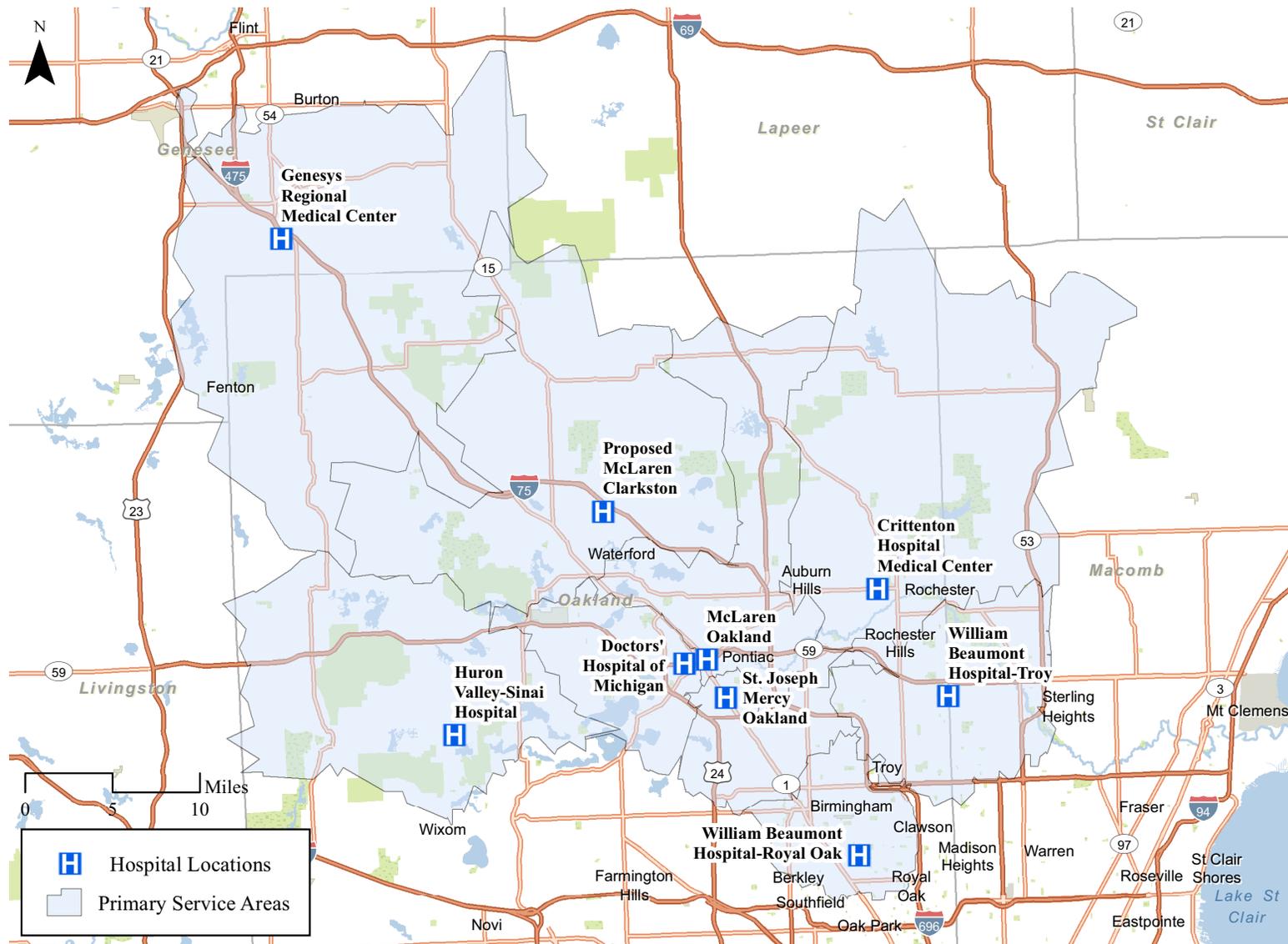
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is eligible for Medicare. In general, Medicare hospital coverage is limited to adults age 65 years and over unless they qualify under certain disability criteria.

The share of households with an income less than \$25,000 is an estimate for the share of the patient base that is eligible for Medicaid. While Medicaid eligibility is based on a variety of factors, we determined that this is a reasonable, conservative proxy given the constraints of the demographic income groups available from Esri, Inc. Because the State of Michigan expanded Medicaid coverage, the eligibility threshold for parents and other adults is 133% of the federal poverty level (FPL). The FPL is dependent on location and household size. The average household size of the market areas ranged between 2 and 3 people. Based on 2013 poverty guidelines, the Medicaid eligibility threshold for this population would range between approximately \$20,000, and \$25,000. Figure 8 on page A-6, Figure 9 on page A-6, Figure 10 on page A-7, Figure 11 on page A-7, Figure 12 on page A-8, and Figure 13 on page A-8 provide further detail regarding the market area demographics.

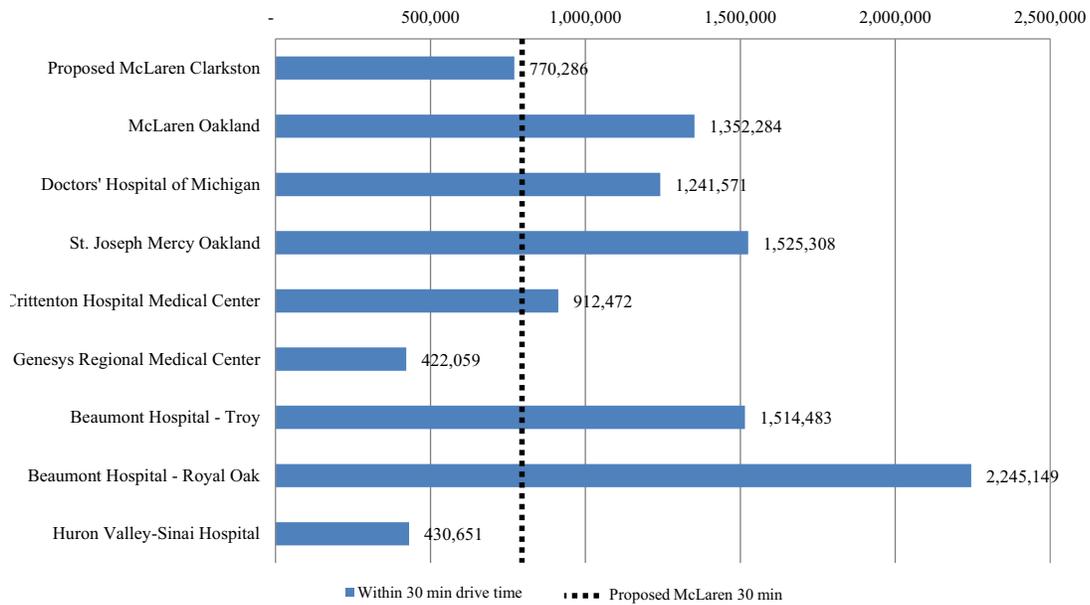


**MAP 2. Primary Service Area Boundaries With Previously Proposed Clarkston Hospital**



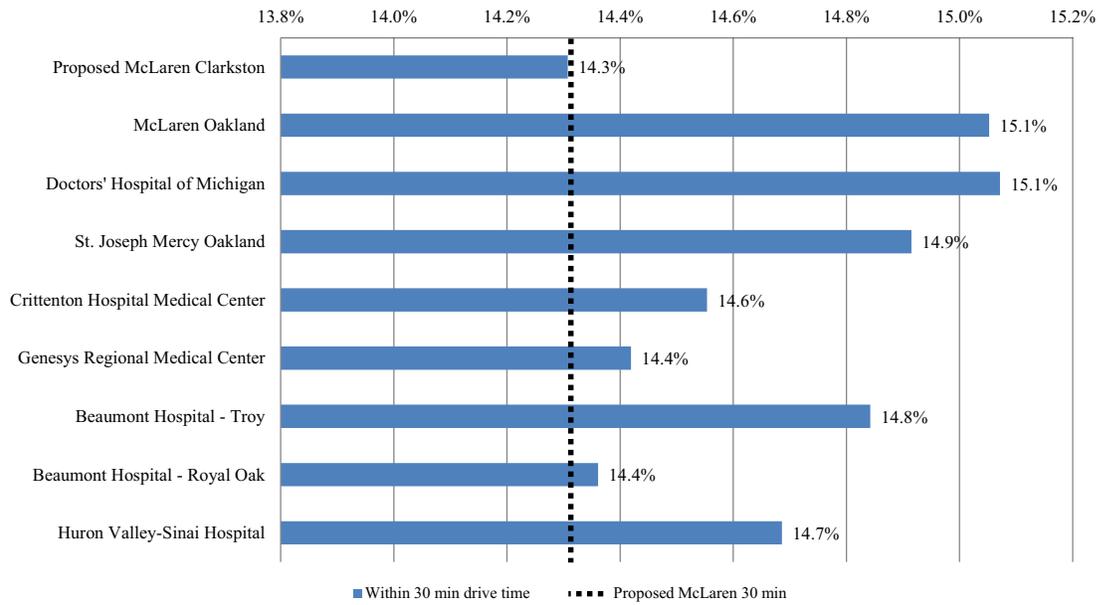
Source: AEG analysis of data sourced from Michigan Department of Community Health 2013 Certificate of Need Survey and Esri, Inc.

**FIGURE 8. 30-min Drive-Time Areas - Population**



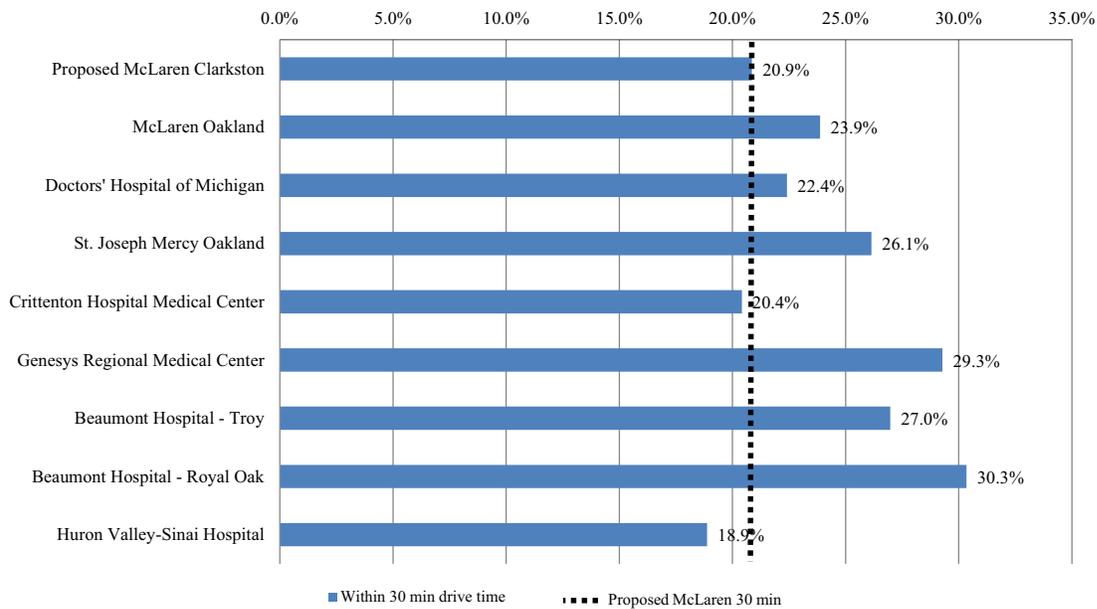
Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 9. 30-min Drive-Time Areas - Share of Population Age 65 Year and Over**



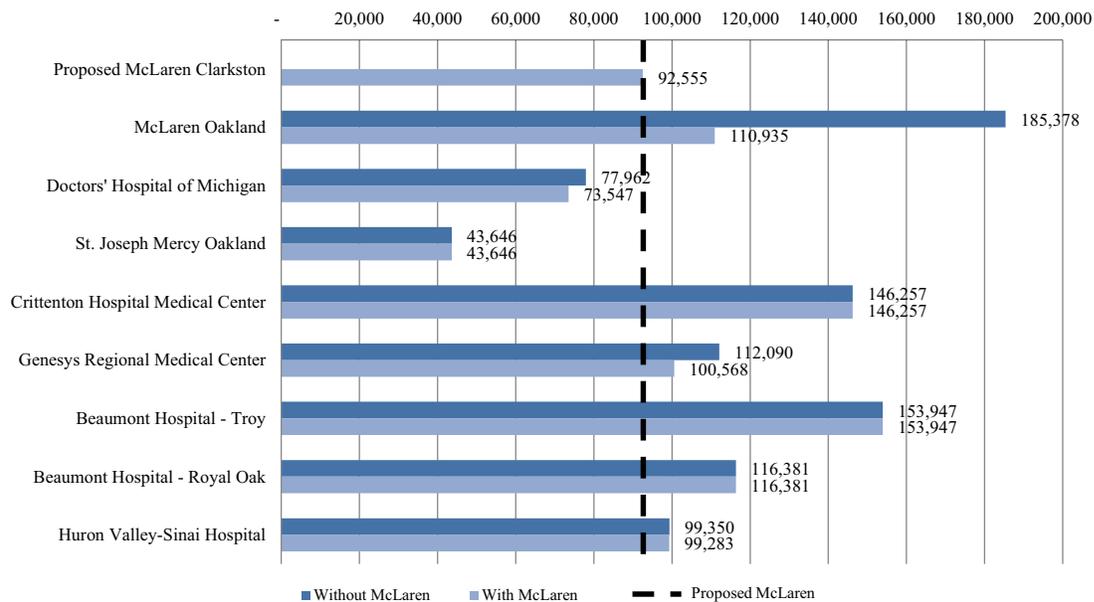
Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 10. 30-min Drive-Time Areas - Share of Households with Income <\$25,000**



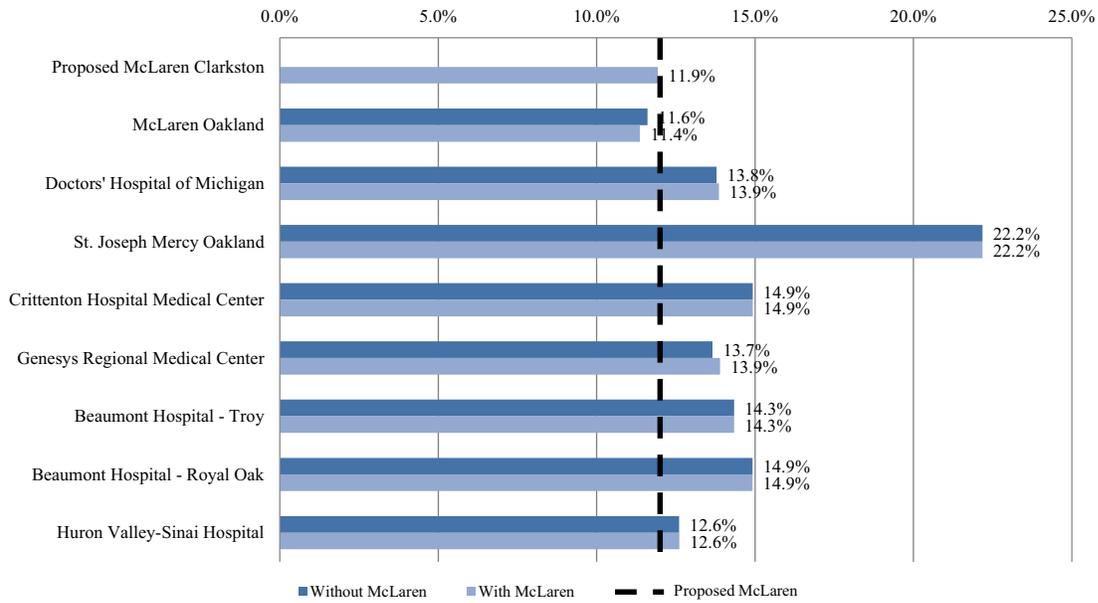
Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 11. Primary Service Areas - Population**



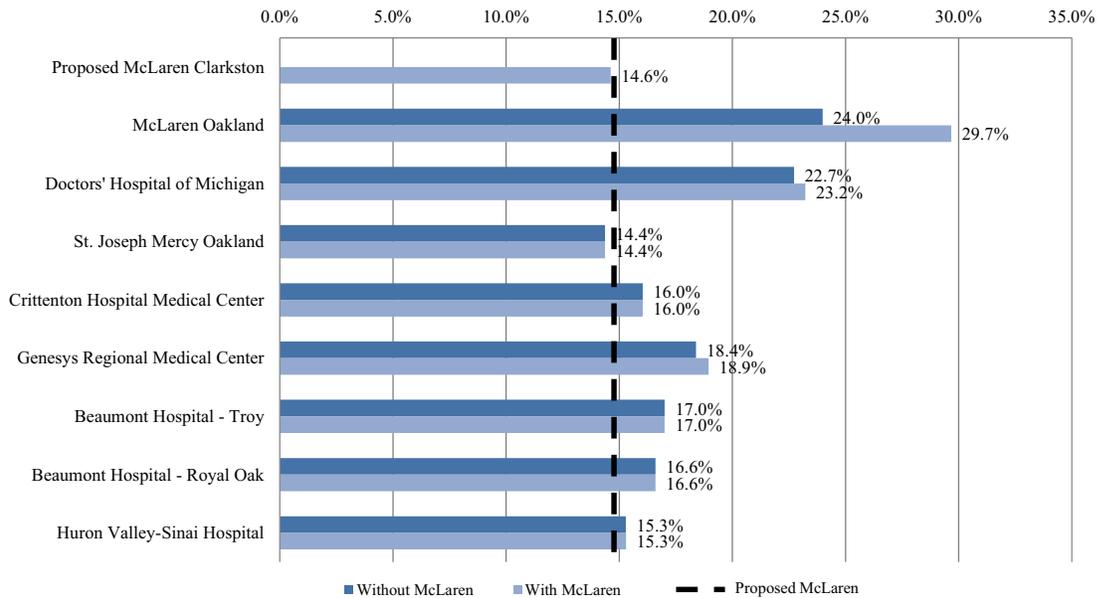
Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 12. Primary Service Areas - Share of Population Age 65 Year and Over**



Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

**FIGURE 13. 30-min Drive-Time Areas - Share of Households with Income <\$25,000**



Source: AEG analysis of data sourced from Michigan Department of Community Health Annual Certificate of Need Survey and Esri, Inc.

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## *Appendix B: About AEG*

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Anderson Economic Group, LLC was founded in 1996 and today has offices in East Lansing, Michigan and Chicago, Illinois. AEG is a research and consulting firm that specializes in economics, public policy, financial valuation, and market research. AEG's past clients include:

- *Governments* such as the states of Michigan, North Carolina, and Wisconsin; the cities of Detroit, Cincinnati, Norfolk, and Fort Wayne; counties such as Oakland County, Michigan, and Collier County, Florida; and authorities such as the Detroit-Wayne County Port Authority.
- *Corporations* such as GM, Ford, Delphi, Honda, Taubman Centers, The Detroit Lions, PG&E Generating; SBC, Gambrinus, Labatt USA, and InBev USA; Spartan Stores, Nestle, automobile dealers and dealership groups representing Toyota, Honda, Chrysler, Mercedes-Benz, and other brands.
- *Nonprofit organizations* such as Michigan State University, Wayne State University, University of Michigan, Van Andel Institute, the Michigan Manufacturers Association, United Ways of Michigan, Service Employees International Union, Automation Alley, the Michigan Chamber of Commerce, and Detroit Renaissance.

Please visit [www.AndersonEconomicGroup.com](http://www.AndersonEconomicGroup.com) for more information.

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Mr. Rosaen's recent work includes several economic and fiscal impact analyses, including of proposed real estate developments, power plants, and infrastructure projects; analysis of tax incentives; an analysis of the impact of federal tax incentives on the freight rail industry; and an analysis of the economic contribution that research universities make in the State of Michigan.

Mr. Rosaen holds a Masters in Public Policy from the Gerald R. Ford School of Public Policy at the University of Michigan. He also has a Masters of Science and a Bachelors of Science in mechanical engineering from the University of Michigan.

#### *Patrick L. Anderson*

Mr. Anderson founded Anderson Economic Group in 1996, and serves as a Principal and Chief Executive Officer in the company.

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Mr. Anderson has written over 100 published works, including the just-released *Economics of Business Valuation* from Stanford University Press. Three of his articles, “Pocketbook Issues and the Presidency,” “The Value of Private Businesses in the United States,” “Policy Uncertainty and Persistent Unemployment” have each been awarded for outstanding writing from the National Association of Business Economics. Mr. Anderson's views on the economy are often cited by national news media including *The Wall Street Journal*, *New York Times*, *National Public Radio*, and *Fox Business News*.

Mr. Anderson has taken a leading role in several major public policy initiatives in his home state. He was the author of the 1992 Term Limit Amendment to the Constitution of the State of Michigan, and also the author of the 2006 initiated law that repealed the state's 4-decade-old Single Business Tax. His firm's work resulted in a wage increase for Home Help workers in 2006, the creation of a Michigan EITC in 2008, and the repeal of the item pricing law in 2011. Before founding Anderson Economic Group, Mr. Anderson was the deputy budget director for the State of Michigan under Governor John Engler, and Chief of Staff for the Michigan Department of State.

Mr. Anderson is a graduate of the University of Michigan, where he earned a Master of Public Policy degree and a Bachelor of Arts degree in political science. He is a member of the National Association for Business Economics and the National Association of Forensic Economists. The Michigan Chamber of Commerce awarded Mr. Anderson its 2006 Leadership Michigan Distinguished Alumni award for his civic and professional accomplishments.

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