

Impact of OSU Medical Center's Growth on the Columbus Region

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Introduction

The Ohio State University Medical Center (OSUMC), including OSU Health System, the College of Medicine, and research facilities, have experienced substantial growth in employment and reach over the past seven years. This study places that growth in context and explores its impact on the region and state. This is not a full economic impact study; it does not measure the impact of all OSUMC's operations. Rather, it documents the growth of employment and research awards over the past six years and assesses the impact of that growth on the regional economy and on the state as a whole.

The region considered in this report is Columbus Metropolitan Statistical Area (MSA). The MSA, defined by the federal government on the basis of worker commuting flows, includes eight counties: Delaware, Fairfield, Franklin, Licking, Madison, Morrow, Pickaway, and Union.

The report begins by documenting employment and patient revenue growth since 2000, compares employment growth with that of other major employers in the region, and assesses the total impact of the growth on the regional economy. Next is considered the impact of the growing number of patients, including the economic impact of revenue growth, the impact on areas outside Columbus of the growing market penetration, and the impact of visiting friends and family members. Finally, the impact of OSUMC's growing research awards on the local economy is addressed.

Key findings of this analysis are as follows:

- OSUMC would rank as the fifth-largest employer in the Columbus MSA if it were a stand-alone business. The 3,700 new jobs added to the organization between March 2001 and March 2007 represents the largest growth over this period by any employer in the region. An additional 4,400 jobs are sustained elsewhere in the MSA economy as a result of this growth.
- The total impact of the OSU Health System on the Columbus MSA economy could be in the \$1.4 billion range, while the impact of research activity could be around \$400 million.
- Growth in patient counts and market penetration over the past six years has been particularly strong in MSA counties other than Franklin, and in areas outside of – but relatively close to – the Columbus MSA. Regionally, OSU Health System's strongest market outside the MSA is Southeastern Ohio.
- Spending by visitors of OSU Health System patients provide a material impact to the regional economy. Rough estimates suggest that total impacts on regional output are in excess of \$50 million annually, while this spending sustains more than 800 direct and indirect local jobs.

Employment Level and Growth

As shown in Table 1 on the next page, OSUMC would rank as the fifth-largest employer in the Columbus MSA if it were a stand-alone business. It is the largest of the four hospital systems in terms of employment. It also represents by far the largest concentration of OSU employment, with nearly a third more employees than all other areas of the University combined.

Table 1: OSUMC Employment Compared to That of Other Major Columbus MSA Employers

Rank	Organization	Employment*
1	State of Ohio	26,613
2	JP Morgan Chase & Co.	14,276
3	U.S. Government	12,900
4	Nationwide	11,834
5	OSU Medical Center	11,350
6	OhioHealth	9,413
7	OSU Non-Medical	8,569
8	City of Columbus	8,106
9	Columbus Public Schools	7,432
10	Limited Brands	7,200
11	Honda of America Manufacturing	6,900
12	Wal-Mart Stores	6,449
13	Franklin County	6,164
14	Mount Carmel Health	4,660
15	American Electric Power	4,128
16	Huntington Bancshares	4,000
17	Kroger Co.	3,626
18	Children's Hospital, Inc.	3,307
19	AT&T Ohio	3,000
20	Battelle	2,478

* OSUMC employment is as of March 31, 2007; other totals are as of late 2006

Source: OSUMC, *Business First of Columbus*, December 8, 2006.

OSUMC has experienced substantial employment growth over the past six years. In fact, analysis of the employment changes among the largest regional employers in Table 1 suggests that no other company or organization in the Columbus MSA has increased employment by a greater amount.¹ This is shown in Table 2 on the next page, which lists 2000-2006 employment changes for the 20 largest employers in the MSA. Appendix 1 shows these organizations' employment change over this period on a year-by-year basis.

This employment growth is also significant in the context of the region. According to employment totals from the U.S. Bureau of Labor Statistics, the net change in Columbus MSA employment between March 2001 and March 2007 was 7,500. Thus, OSUMC was likely responsible for approximately half of net regional employment growth over this period.²

¹ Because the smallest of these employers (Battelle) has fewer total employees than OSUMC growth, this statement is false only if *Business First* omitted a major employer with larger growth.

² The statistics used to make this comparison (the Current Employment Statistics series) count both full-time and part-time jobs, while the OSUMC statistics are on a full-time equivalent basis. Consequently, if the mix of full-time and part-time employment shifted to a different extent at OSUMC than in the regional economy as a whole, the proportion of net regional job growth supplied by OSUMC would be either higher or lower than one-half.

Table 2: Six-Year Change in Employment for OSUMC and Other Major Columbus MSA Employers

Rank	Organization	Employment change*
1	OSU Medical Center	3,742
2	Wal-Mart Stores	2,499
3	JP Morgan Chase & Co.**	2,404
4	OhioHealth	2,162
5	Children's Hospital Inc.	1,268
6	Nationwide	887
7	American Electric Power	778
8	Battelle	580
9	Huntington Bancshares	451
10	Mount Carmel Health	423
11	Honda of America Manufacturing	400
12	Franklin County	88
13	Limited Brands***	0
14	AT&T Ohio	(100)
15	City of Columbus	(262)
16	The State of Ohio	(997)
17	Columbus Public Schools	(1,389)
18	U.S. Government	(1,500)
19	Kroger Co.	(1,682)
20	OSU Non-Medical	(1,912)

* OSUMC change from March 31, 2001 to March 31, 2007; other employers' changes from late 2000 to late 2006.

** JP Morgan Chase employment in 2006 compared to sum of Bank One and Chase Home Finance employment in 2000.

*** Limited Brands has reported a constant 7,200 employees since at least 1999. While this unchanging employment total is highly unlikely, the actual change in employment is unknown.

Source: OSUMC, *Business First of Columbus*, December 8, 2000 and December 8, 2006.

Another important impact of this job growth is its ability to sustain and create employment elsewhere in the local economy. The growth in OSUMC activity that has led to the increase in employment – and also certainly has increased expenditures within the MSA – increases the sales and output of OSUMC suppliers. This increased activity supports new hiring within supplier firms. Further, as the new employees of OSUMC and its suppliers spend their wages on household purchases throughout the local economy, they create additional impacts on output and employment. Because these secondary (indirect) impacts would not have occurred had the increases in hiring and expenditures by OSUMC not occurred, the indirect impacts are as much an economic benefit of the growth of OSUMC in the region as is the original 3,700 increase in employment.

This indirect employment impact can be estimated by applying an economic impact model to the direct employment increase. Several generally-accepted models are available for this purpose; this analysis uses the Regional Input-Output Modeling System (RIMS-II) of the United States Bureau of Economic Analysis. As is the case for the other impact models, RIMS-II is based on a framework called an input-output table. For a given industry in a given geographical area, the input-output table shows the dollar value of the purchases from other local firms by industry and the sales to other local firms by industry. Thus, the input-output table can be used to derive the impact on other local firms of an increase in production within a specific industry.

This impact is specific both to a given industry and to a given region. If the structure of a local economy is such that most goods and services used by a given industry in its production have to be purchased

outside the region, then most of the industry's spending will leak from the local economy and the impact of an increase in production will be less than if there are many local suppliers.

RIMS-II uses the regional input-output table to calculate a set of unique factors for each industry within the Columbus MSA. Because of their origin in the input-output table, the factors implicitly reflect the structure of the local economy and the presence or absence of local suppliers. One of these factors represents the total increase in regional employment resulting from an increase in employment within a given industry. When this factor is multiplied by the increase in direct jobs, the result is the total regional increase in employment; the indirect impact is the difference between the total and direct impacts.

Of the 3,742 net new full-time equivalent jobs, 2,727 were created in the OSU Health System and the remaining 1,015 were created in the OSU College of Medicine. Consequently, there are actually two relevant industries: hospitals and scientific research and development services³. Multiplying each of these increases in employment by the relevant multiplier and summing the results gives a total employment impact of 8,142. Thus, 4,400 jobs elsewhere in the economy are sustained by the new OSUMC positions.⁴

Impacts on Regional Output

In addition to the employment impacts discussed above, the growth of OSUMC has also brought dollars into the regional economy through the attraction of research awards and patients from outside the MSA. This increases regional output and per-capita income. Output is measured by Gross Domestic Product (GDP), the value of all goods and services produced within the economy during a specific time period. As the above discussion implies, there are both direct and indirect impacts on output as additional waves of spending occur among suppliers and employees. The indirect and total impacts can be estimated through other factors in the RIMS-II model. Generally, only those dollars coming into the region from outside have an impact. Local individuals paying OSUMC for medical services are likely using dollars that they would otherwise have allocated elsewhere in the local economy. Thus, the composition of output is changed, but not its total level.⁵

This is much less true for hospitals than for other types of local services, though, because of the high percentage of medical expenses covered by public and private insurance. Because insurance payments come to OSUMC from outside the region, they represent new flows of funds into the local economy and thus increase output.⁶ Hospital revenues creating an impact are thus all those from patients living outside the MSA plus the insured expenses of local patients. Each \$100 increase in demand for hospital services creates a total increase of \$238.02 in GDP, according to RIMS-II. Fiscal year 2006 net revenues from patients living outside the MSA totaled more than \$319 million, while net revenues from local patients were \$373 million. If 70 percent of local expenditures were insured, the total direct and indirect impact of the OSU Health System on regional GDP was more than \$1.4 billion.

The impact of research funding is more straightforward to measure because all of these dollars represent new impacts on the regional economy. According to the RIMS-II model, each \$100 in research

³ Because the primary activity of the School of Medicine positions is research, their impact on the local economy is likely to be closer to that of scientific research laboratories than to colleges, universities, and junior colleges, which have their own set of impact factors.

⁴ Referring to the indirect jobs as "sustained" rather than "created" is a subtle, but important, distinction. The implication of the economic impact calculation is that the activity exists to support 4,400 jobs in other industries. The model cannot determine whether the activity results in actual job creation or in existing employees increasing their output.

⁵ This is not entirely true: changing the composition of direct output changes the level of indirect impacts, making total regional economic activity somewhat higher or lower than it would otherwise have been. This effect is usually ignored in impact studies, however.

⁶ This is true even if the payments are made by a locally-based insurer such as Nationwide. Because most of the funds used to pay those claims come from insured parties outside the MSA, they can be treated as dollars newly released into the local economy.

expenditures creates a total impact of \$222.05. Fiscal year 2006 research awards totaled \$184.4 million, up from only \$80.6 million in 2000. The total regional output impact of research in fiscal 2006 was thus \$409.5 million.

Patient Growth and Geographic Reach of the OSU Medical Center

The OSU Medical Center has witnessed strong growth over the past several years, with total admissions increasing from 45,796 in fiscal 2003 to 54,314 in fiscal 2006 – an 18.6 percent increase. In fiscal 2003, 31.9 percent of patients lived outside the eight-county MSA; three years later, this had increased to 33.4 percent.

These patients can be segmented by geography in two ways: by distance from Columbus and by region of the state. Under the first scheme, submarkets include Franklin County residents, those of MSA counties other than Franklin, those outside the MSA but within 75 miles, those outside 75 miles but within Ohio, and residents of other states and foreign countries. The second scheme divides the 88 counties of Ohio into six regions as defined in a recent study of Ohio's regional economies.⁷ Here too, out-of-state and foreign patients comprise a distinct segment.

Table 3 summarizes inpatient mix and segment growth under the first of these schemes. Market penetration (as measured by the number of admissions relative to area population) increased across the board, with the strongest increase in penetration and patient growth in the MSA counties outside Franklin and the counties outside of, but relatively close to, the MSA.

Table 3: Segment Mix and Inpatient Growth by Distance from OSUMC

Segment	Fiscal year 2003			Fiscal year 2006			Growth, 2003-06
	Number	% of tot.	Admits per 1,000 pop.	Number	% of tot.	Admits per 1,000 pop.	
Franklin	25,457	55.6%	23.46	28,371	52.2%	25.89	11.4%
Other MSA	5,483	12.0%	9.32	7,020	12.9%	11.14	28.0%
Non-MSA, w/in 75 mi.	9,249	20.2%	4.14	11,470	21.1%	5.09	24.0%
Ohio, outside 75 mi.	4,255	9.3%	0.56	5,095	9.4%	0.68	19.7%
Total Ohio	44,444	97.0%	3.89	51,956	95.7%	4.53	16.9%
Outside Ohio	945	2.1%	n/a	1,154	2.1%	n/a	22.1%
Unidentified	407	0.9%	n/a	1,204	2.2%	n/a	195.8%
Total	45,796	100.0%	n/a	54,314	100.0%	n/a	18.6%

Table 4 shows the results of segmenting the market by region of Ohio. Once again, penetration has increased in each of these areas. Outside the 15-county Central region, the strongest penetration is in the Southeast. This is not surprising given the lack of population density that would support medical centers of the breadth and quality of those found in the state's major metropolitan areas. The West Central region (anchored by Dayton) is a distant third in terms of penetration. The lowest penetration is in the Northeast and Southwest regions: the excellent hospitals in Cleveland and Cincinnati are strong competitors of the OSU Health System.

⁷ Deloitte Consulting and Cleveland State University, *Industry-Based Competitive Strategies for Ohio: Managing Three Portfolios*, Ohio Department of Development, May 2005.

Table 4: Segment Mix and Inpatient Growth by Region of Ohio

Segment	Fiscal year 2003			Fiscal year 2006			Growth, 2003-06
	Number	% of tot.	Admits per 1,000 pop.	Number	% of tot.	Admits per 1,000 pop.	
Central Ohio	34,877	76.2%	17.36	40,031	73.7%	19.39	14.8%
Northeast Ohio	1,587	3.5%	0.34	2,213	4.1%	0.48	39.4%
Northwest Ohio	1,243	2.7%	0.96	1,636	3.0%	1.27	31.6%
Southeast Ohio	4,572	10.0%	6.65	5,429	10.0%	7.92	18.7%
Southwest Ohio	484	1.1%	0.28	673	1.2%	0.39	39.0%
West Central Ohio	1,681	3.7%	1.49	1,974	3.6%	1.76	17.4%
Total Ohio	44,444	97.0%	3.89	51,956	95.7%	4.53	16.9%
Outside Ohio	945	2.1%	n/a	1,154	2.1%	n/a	22.1%
Unidentified	407	0.9%	n/a	1,204	2.2%	n/a	195.8%
Total	45,796	100.0%	n/a	54,314	100.0%	n/a	18.6%

Visitor Impacts on the Regional Economy

An often-overlooked economic impact of a major medical center such as OSU Health System is the incidental spending of those coming from outside the area to visit patients. These impacts can be substantial. Visitors may purchase restaurant meals, gifts for the hospitalized individual, other goods and services for themselves, and overnight lodging. All of these purchases create impacts on regional output and employment. To illustrate the magnitude of these impacts, they are estimated for fiscal 2006.

There is no direct information on the amount of visitor spending by friends and family of OSU Health System patients, but 2003 survey data from Experience Columbus provide the amount and breakdown of spending of the typical visitor to Columbus. Average daily expenditures per person are given for food and restaurants, retail, auto and other transportation expenditures, recreation, and lodging. These averages must be inflated to current-dollar amounts and taxes must be extracted. This is because payments to government have a different impact from payments to restaurants, retailers, or gas stations.

There are two problems with using the Experience Columbus data. The first is that these data do not specifically address the behavior of hospital visitors, so assumptions and adjustments need to be made where appropriate. The second is that the data do not differentiate between overnight and day-trip visitors. As a result, the reported average daily spending for lodging – which is positive for overnight visitors and zero for those making day trips – is a weighted average of these two groups' spending that does not reflect the actual spending of either group. Thus, the daily expenditure for lodging is the average of the daily room rates of hotels in northern Franklin County with pretax rates less than \$80.00 per night. It is assumed that two visitors share a room.

The average stay of patients in each hospital is given by OSUMC. This is multiplied by the number of patients in each region to obtain the number of patient days, which when multiplied in turn by the number of visitors per patient gives the number of visitor days.⁸ It is assumed that visitors are from the same location as the patient: local patients have no out-of-town visitors and out-of-town patients have no local visitors. Based on information from another health system, each patient is assumed to have 2.5 visitors.

As is the case for patient expenditures for medical services, visitors living within the MSA are spending dollars that they would likely have spent within the region in any case. Thus, the expenditures of these local visitors provide no incremental economic impact. Somewhat arbitrarily, it is assumed that all visitors living within 75 miles of Columbus come in for a relatively short visit and return home. The restaurant and retail spending of these visitors is thus half the daily average. Auto expenses are the full daily average, but recreational and lodging expenditures are zero. Visitors of patients living more than 75 miles from

⁸ This may understate the stay of patients who live far outside Columbus, and hence the impact of the friends and family. These patients are likely to have more serious ailments than local patients, and remain in the hospital longer than average.

Columbus, but within Ohio, spend the full daily average for all expenditure categories except lodging; it is assumed that only half stay overnight. All those living outside Ohio stay overnight.

Table 5 summarizes the results of the calculations outlined above. The spending of friends and family visiting patients of the OSU Health System adds \$52.7 million per year to the gross domestic product of the Columbus MSA economy and sustains 815 jobs.⁹ These estimates must be regarded as provisional and illustrative rather than definitive, however, because of the lack of direct information on the behavior spending of these individuals. But it is safe to say that the economic impacts of visitor spending are material and deserving of further study.

Table 5: Economic Impacts of Friends and Family Visiting Patients of the OSU Health System

	Output (thousands)			Employment		
	Direct	Indirect	Total	Direct	Indirect	Total
Restaurants	\$ 8,803	\$ 5,956	\$ 24,760	299	94	393
Retail	7,194	8,596	15,790	113	81	194
Transportation	2,600	3,293	5,893	111	30	142
Recreation	1,085	1,276	2,361	27	12	39
Lodging	2,250	2,228	4,478	42	21	63
Taxes	638	681	1,319	3	6	10
Total	\$ 21,598	\$ 31,059	\$ 52,656	580	235	815

⁹ The estimated retail spending of visitors is not the direct impact of \$22.570 million, but rather \$24.482 million. Purchases of goods (as opposed to services) are valued in the output calculation at their producer price.

Appendix 1
OSU Medical Center Employment and Growth, 2000-2006, in the Context of the Columbus Region's Largest Employers

	2000	2001	2002	2003	2004	2005	2006	1999-2006
	Rank/Emp.	Rank/Emp./Chng.	Rank/Emp./Chng.	Rank/Emp./Chng.	Rank/Emp./Chng.	Rank/Emp./Chng.	Rank/Emp./Chng.	Change
The State of Ohio	1 27,610	1 26,985 (625)	1 27,707 722	1 25,787 (1,920)	1 26,037 250	1 30,009 3,972	1 26,613 (3,396)	(997)
JP Morgan Chase & Co.*	3 11,872	3 11,551 (321)	3 11,448 (103)	4 11,734 286	3 12,130 396	2 13,707 1,577	2 14,276 569	2,404
U.S. Government	2 14,400	2 14,000 (400)	2 13,900 (100)	2 13,500 (400)	2 13,200 (300)	3 12,900 (300)	3 12,900 0	(1,500)
Nationwide	4 10,947	4 11,262 315	4 10,444 (818)	5 10,815 371	4 11,293 478	4 11,002 (291)	4 11,834 832	887
OSU Medical Center	8 7,608	9 7,914 306	8 8,331 417	6 8,922 591	5 10,096 1,174	5 10,892 796	5 11,350 457	3,742
OhioHealth	9 7,251	7 8,464 1,213	9 8,158 (306)	8 8,304 146	6 8,398 94	6 9,083 685	6 9,413 330	2,162
OSU Non-Medical	5 10,481	5 9,275 (1,206)	7 8,738 (537)	7 8,439 (299)	9 7,265 (1,174)	9 7,871 606	7 8,569 699	(1,912)
City of Columbus	7 8,368	8 8,039 (329)	5 8,805 766	9 8,067 (738)	8 7,919 (148)	8 7,890 (29)	8 8,106 216	(262)
Columbus City Schools	6 8,821	6 8,724 (97)	6 8,784 60	3 12,092 3,308	7 8,024 (4,068)	7 7,905 (119)	9 7,432 (473)	(1,389)
Limited Brands	10 7,200	10 7,200 0	10 7,200 0	10 7,200 0	10 7,200 0	10 7,200 0	10 7,200 0	0
Honda of America Mfg.	11 6,500	11 6,500 0	12 6,550 50	12 6,600 50	11 6,350 (250)	14 4,829 (1,521)	11 6,900 2,071	400
Wal-Mart Stores	15 3,950	17 3,150 (800)	17 3,400 250	15 4,444 1,044	13 6,100 1,656	11 5,842 (258)	12 6,449 607	2,499
Franklin County	12 6,076	12 6,000 (76)	11 6,830 830	11 7,161 331	12 6,218 (943)	13 5,069 (1,149)	13 6,164 1,095	88
Mount Carmel Health	14 4,237	14 4,529 292	14 4,877 348	13 4,983 106	14 5,558 575	12 5,605 47	14 4,660 (945)	423
American Electric Power	17 3,350	15 3,961 611	15 3,794 (167)	16 3,795 1	16 3,900 105	15 3,879 (21)	15 4,128 249	778
Huntington Bancshares	16 3,549	16 3,557 8	16 3,478 (79)	17 3,521 43	17 3,500 (21)	17 3,400 (100)	16 4,000 600	451
Kroger Co.	13 5,308	13 4,942 (366)	13 5,952 1,010	14 4,632 (1,320)	15 4,502 (130)	16 3,587 (915)	17 3,626 39	(1,682)

*Bank One plus Chase Home Finance prior to 2004.

OSUMC employment as of March 31 of the following year; other totals as of late in the specified year.

Source: Calculated from "Greater Columbus Largest Employers," Business First of Columbus, various issues, 1999-2006, and OSU Medical Center data.