

# The Economic Impact of Nationwide Children's Hospital on the Columbus Region in 2006

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## Introduction

In addition to its contribution to the health and quality of life of children and families in the Columbus region and beyond, Nationwide Children's Hospital, Close to Home Centers and other remote facilities, and the Research Institute at Nationwide Children's Hospital have a substantial impact on the local economy. This report documents the magnitude of that impact based on operations in 2006. In that year, operation of the Hospital and Research Institute and facility construction increased regional output by more than \$866 million and sustained more than 16,500 direct and indirect jobs in the region. The spending of visitors of patients from outside the region created an additional \$28.7 million in impact and sustained an additional 470 regional jobs. The total impact of these factors amounted to a nearly \$900 million impact on the regional economy and 16,900 full-time equivalent direct and indirect jobs sustained.

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 in Central Ohio: Delaware, Fairfield, Franklin, Licking, Madison, Morrow, Pickaway, and Union.

The report begins by describing the meaning of economic impact, the approach used to measure impact, and details on the assessment of Nationwide Children's impact – both operations and facility construction. Next is considered the geographic reach of Nationwide Children's, which treats patients from throughout Ohio and beyond. The economic implications of this geographic reach – visitor spending impacts – are discussed next. Finally, a number of non-quantifiable impacts that Nationwide Children's provides to the regional economy are described.

## The Nature and Measurement of Economic Impact

The key focus of an economic impact assessment is the increase in **output** of the regional economy that results from the economic activity of a specific entity. Output is measured by the value of goods and services produced in a given area over a given period of time; this is often referred to as Gross Domestic Product (GDP). A second consideration is the jobs that are created or sustained as a result of the target entity's activities.

Nationwide Children's creates economic impact through its purchases of goods and services and its payment of wages and salaries to hospital and research employees that allow it to provide the healthcare and research services that are its mission. But these **direct** output and employment impacts are only part of the total impact. To the extent that these payments for purchases and wages and salaries are made to suppliers and employees within the MSA, the region's economic activity and output is increased further. The sales of local suppliers increase, increasing output, and their employment may increase as well. Employees of Nationwide Children's and its suppliers use the wages paid as a result of the increased output to make household purchases of all types. This creates further rounds of spending and output growth. It is important to emphasize that this additional spending would not have occurred had Nationwide Children's not made the original purchases. For this reason, these **indirect** impacts are as much a part of the economic impact of Nationwide Children's as are the direct impacts.

These indirect output and employment impacts 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), developed by 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 increase in purchases from other local firms by industry and the sales to other local firms by industry that result from a one dollar increase in the given industry's output. 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.

These impacts are specific both to a given industry and to a given region. The array of suppliers that benefit from an increase in demand for healthcare services is generally the same regardless of location. But if the structure of the Columbus MSA economy is such that Nationwide Children's is forced to make most of its purchases from vendors outside the region, then most of the impact will leak from the local economy. Conversely, a broad local economy with many local suppliers will keep more of the impact of the output increase circulating within the local economy, and the impact of an increase in activity at Nationwide Children's will be much greater. Thus, the values within the input-output table are unique to the Columbus MSA.

RIMS-II summarizes the information in the regional input-output table by calculating a set of unique impact factors for each of 490 detailed industries 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 output resulting from a one-dollar increase in output within a given industry. When this factor is multiplied by the increase in direct output, the result is the total regional increase in output; the indirect output impact is simply the difference between the total and direct impacts.

Other factors measure impacts on employment. One of these represents the total number of regional jobs sustained as a result of each \$1 million of output within the specific industry.<sup>1</sup> Again, the indirect employment impact is the difference between total employment and direct employment (i.e., that at Nationwide Children's).

Operationally, there are two different approaches that could be taken in assessing the output impact of Nationwide Children's. The first of these is to multiply the incremental net healthcare revenues by the output factor for hospitals, to multiply the local spending on construction by the factor for construction, to multiply research grants revenue by the factor for scientific research and development services, and finally to sum these three component impacts. It is important to note, though, that only dollars coming into the economy from outside the region have an impact. Local individuals paying Nationwide Children's for medical services are likely using dollars that they would otherwise have spent elsewhere in the local economy. Likewise, purely local grant-making organizations are providing Nationwide Children's with funds that they would otherwise have given to other local organizations. In both cases, the composition of regional output is changed, but not its total level.<sup>2</sup>

Unlike other types of local services, though, local residents' use of healthcare services does have an impact, though, because of the high percentage of medical expenses covered by public and private insurance. Because insurance payments come to Nationwide Children's from outside the region, they represent new flows of funds into the local economy and thus increase output.<sup>3</sup> Hospital revenues creating an impact are thus all total revenues from patients living outside the MSA plus the insured expenses of local patients.<sup>4</sup> Nationwide Children's indicates that only three percent of healthcare costs are paid by consumers,<sup>4</sup> so the overall direct impact from Nationwide Children's operations is only slightly less than total healthcare revenue.

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<sup>1</sup> 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 jobs in other industries. The model cannot determine whether the activity results in actual job creation or in existing employees increasing their output.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> Nationwide Children's website, "Fast Facts for the Year Ended 12/31/2006," <http://www.nationwidechildrens.org/gd/templates/pages/AboutUs/AboutUs.aspx?page=100>.

The second approach to measuring output involves doing directly what the above approach does indirectly: multiply each category of expenditures made to local suppliers by the output factor for the relevant supplier industry and multiply the wages paid to employees who live in the local area by the factor for households. The sum of these calculations is conceptually the same as the first approach, but this more detailed analysis has the major advantage of reflecting the character of Nationwide Children's operations specifically. The purchase patterns of a pediatric hospital may be somewhat different from those of a typical hospital, the inpatient versus outpatient mix may be different, and Nationwide Children's may have more of a preference for dealing with local suppliers than other hospital systems. Each of these would result in the direct estimation of impact using hospital revenues and the hospital factor to misstate the economic impact of Nationwide Children's. Fortunately, data provided by Nationwide Children's are sufficient to permit the use of the second – and more reliable – of these two approaches.

### The Impact of Nationwide Children's Hospital and Research Operations

Purchases of goods and services by Nationwide Children's totaled \$10.6 million in 2006, with 67 percent (\$7.1 million) of these purchases supplied by local vendors. Another \$566,000 was paid in property taxes to local governments. But by far the most important supplier of services to Nationwide Children's is its 10,960 employees. Payroll in 2006 totaled nearly \$252 million. As is true elsewhere, though, only payments to local suppliers (in this case, employees living within the Columbus MSA) have an impact; wages paid to non-residents represent leakages from the local economy.<sup>5</sup> Based on data provided by Nationwide Children's, 9,842 employees live within the Columbus MSA and earn \$239.7 million. Federal and state taxes leave the local economy, though, so tax withholdings are deducted from this total. While local income taxes stay within the region, these represent payments to government rather than households, so these taxes – two percent of the wages of both local and non-local employees – are multiplied by the factor for government enterprises.<sup>6</sup> It is assumed that no monetary employee benefits are provided by local suppliers.

Nationwide Children's also provides a significant amount of charity care to indigent patients; this also contributes to regional output and sustains jobs at the hospital and elsewhere. The value of this charity care in 2006 was \$11.5 million.

One final modification needs to be made to the local supplier purchases. Goods (as opposed to services) are valued in GDP at their producer price rather than their retail price, so the direct output impact is somewhat less than \$7.1 million. Tables are available from the Bureau of Economic Analysis that allow one to calculate the necessary adjustment factors.

Table 1 summarizes the direct and indirect economic impacts of the operations of Nationwide Children's Hospital and Research Institute.

**Table 1: Economic Impact of 2006 Operations: Nationwide Children's Hospital and Research Institute**

	Output (\$000)			Employment*		
	Direct	Indirect	Total	Direct	Indirect	Total
Purchases and operations	\$ 399,368	\$ 345,170	\$ 744,538	7,272	7,940	15,212
Local taxes	5,604	5,980	11,584	0	84	84
Charity care	11,462	14,977	26,439	141	148	290
<b>Total</b>	<b>\$ 416,434</b>	<b>\$ 366,128</b>	<b>\$ 782,562</b>	<b>7,413</b>	<b>8,172</b>	<b>15,585</b>

\*Employment is measured on a full-time equivalent basis.  
Components may not exactly add to totals because of rounding.

<sup>5</sup> This is not entirely true: non-residents' wages have local impacts if these employees go out for lunch to local restaurants or make purchases from local grocery stores, gas stations, or other retailers on their way home.

<sup>6</sup> Under Ohio law, employees are taxed where they work, not where they live.

## Economic Impact of Facility Construction

Nationwide Children's spent more than \$56.6 million on construction in 2006. This creates regional economic impacts separate from those calculated above. In order to estimate these impacts, the amount spent on land (\$10.6 million) is deducted from the total, and the remaining expenditures are allocated among architectural services; building construction; and furniture, fixtures and equipment. Architectural and construction services are supplied locally, as is an assumed 25 percent of furniture, fixtures and equipment. (The latter expenditures are restated to producer values.) The resulting local expenditures are multiplied by the relevant RIMS-II factors. The resulting output and employment impacts are summarized in Table 2.

**Table 2: Economic Impact of 2006 Facility Construction**

	Output (\$000)			Employment*		
	Direct	Indirect	Total	Direct	Indirect	Total
Architectural services	\$ 4,603	\$ 5,182	\$ 9,785	50	55	105
Construction	29,918	38,519	68,436	288	363	651
Furniture/fixtures/equipment	2,273	2,970	5,242	28	29	57
<b>Total</b>	<b>\$ 36,793</b>	<b>\$ 46,671</b>	<b>\$ 83,463</b>	<b>366</b>	<b>448</b>	<b>814</b>

\*Employment is measured on a full-time equivalent basis.  
Components may not exactly add to totals because of rounding.

There is an important difference between the operating impacts estimated above and these construction impacts. Although both are based on 2006 information, the operating impacts reflect an ongoing activity, so it is reasonable to expect that these impacts will be stable and increasing over time. Because construction expenditures fluctuate to a much greater extent than operating expenditures, so do the associated impacts.

Nationwide Children's unveiled a master plan for its campus in 2005, with a revised, expanded version of that plan announced in November 2007. The construction plan, slated to be implemented between 2008 and 2012 and currently valued at more than \$800 million, will expand the existing two million square feet of treatment and research space in the main campus by one-third. Expanded treatment facilities will be designed to accommodate the one million patients expected to visit Nationwide Children's by 2012. A new hospital building will shift the main entrance to Nationwide Children's on Parsons Avenue to take advantage of the Ohio Department of Transportation's plans to establish Parsons as the major eastern downtown access point of Interstate 70/71.

Using the above approach and assumptions allows one to estimate a rough economic impact of this plan. The master plan's impact on the Columbus MSA economy could be in the neighborhood of \$1.36 billion (in 2007 dollars) over the next four years. More than 13,000 direct and indirect jobs could be sustained during the course of the construction. (The actual level will fluctuate with the nature and pace of construction.) More detailed information would permit a more refined estimate of the impact. This brief exercise is intended merely to give some idea of the magnitude of the economic benefit of the master plan on the region's economy.

## Geographic Reach of Nationwide Children's Hospital

Nationwide Children's attracts patients from beyond Franklin County and the Columbus MSA, thereby improving the health and well-being of children throughout the state and beyond. 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 living 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.<sup>7</sup> Here too, out-of-state and foreign patients comprise a distinct segment.

Table 3 shows the inpatient, outpatient, and total patient distribution under the first of these two classification schemes. Children living outside the eight-county Columbus MSA comprise 29.2 percent of inpatients, 16.4 percent of outpatients, and 17.2 percent of all patients.

**Table 3: Segment Mix by Distance from Nationwide Children's**

Segment	Inpatients		Outpatients		Total patients	
	Number	% of total	Number	% of total	Number	% of total
Franklin County	8,007	54.0%	150,306	68.5%	158,313	67.6%
Other MSA	2,496	16.8%	33,296	15.2%	35,792	15.3%
Non-MSA, w/in 75 miles	2,708	18.2%	27,153	12.4%	29,861	12.7%
Ohio, outside 75 miles	1,098	7.4%	5,482	2.5%	6,580	2.8%
Total Ohio	14,309	96.4%	216,237	98.5%	230,546	98.4%
Outside Ohio	530	3.6%	3,267	1.5%	3,797	1.6%
<b>Total</b>	<b>14,839</b>	<b>100.0%</b>	<b>219,504</b>	<b>100.0%</b>	<b>234,343</b>	<b>100.0%</b>

Table 4 segments this same patient base by region of Ohio. (The Central Ohio region, as defined in the study referenced above, is larger than the Columbus MSA, including 15 counties.) Outside the Central region, the largest number of patients come from Southeastern Ohio. Although this area has the smallest population of the six regions (685,000 in 2006) it lacks the population density that would support medical centers of the breadth and quality of those found in the state's major metropolitan areas. West Central Ohio is the second largest outpatient segment. This is due to the Nationwide Children's Close to Home Center in Springfield; Clark and Champaign Counties account for more than 10,300 of the region's 11,000 total.

**Table 4: Segment Mix by Region of Ohio**

Segment	Inpatients		Outpatients		Total patients	
	Number	% of total	Number	% of total	Number	% of total
Central Ohio	11,786	79.4%	192,461	87.7%	204,247	87.2%
Northeast Ohio	335	2.3%	2,395	1.1%	2,730	1.2%
Northwest Ohio	354	2.4%	1,531	0.7%	1,885	0.8%
Southeast Ohio	1,524	10.3%	8,271	3.8%	9,795	4.2%
Southwest Ohio	81	0.5%	570	0.3%	651	0.3%
West Central Ohio	229	1.5%	11,009	5.0%	11,238	4.8%
Outside Ohio	530	3.6%	3,267	1.5%	3,797	1.6%
<b>Total</b>	<b>14,839</b>	<b>100.0%</b>	<b>219,504</b>	<b>100.0%</b>	<b>234,343</b>	<b>100.0%</b>

### Visitor Impacts on the Regional Economy

An often-overlooked economic impact of a major medical center such as Nationwide Children's is the incidental spending of those coming from outside the area to visit patients and to obtain outpatient services. 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 2006.

There is no direct information on the amount of visitor spending by friends and family of Nationwide Children's 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

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

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 area hotels with pretax rates less than \$80.00 per night. It is assumed that two visitors share a room.

The number of patient days is given by county, which when multiplied in turn by the number of visitors per patient, gives the number of visitor days. 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. Nationwide Children's indicates that out-of-town patients have on average 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 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.

Families of outpatients living outside the region also generate economic impacts, although in this case the patient him/herself also can be expected to generate spending. It is assumed that all outpatients come into the area briefly and return home, so their expenditure patterns are the same as those of visitors of inpatients living within 75 miles. Because the Springfield Close to Home Center attracts patients whose incidental spending never enters the Columbus MSA economy, outpatients living in Champaign, Clark, Greene, and Montgomery Counties are not included in the impact estimation.

Table 5 summarizes the results of the calculations outlined above. The spending of friends and family visiting Nationwide Children's patients adds \$28.7 million per year to the gross domestic product of the Columbus MSA economy through direct and indirect impacts and sustains 470 jobs.<sup>8</sup> These estimates must be regarded as provisional and illustrative rather than definitive, however, because of the lack of direct information on the spending behavior of these individuals. It is also important to note that these estimates omit spending impacts of visiting researchers, which could likewise be substantial. In any case, it is safe to say that the economic impacts of visitor spending are material and deserving of further study.

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<sup>8</sup> Estimated spending of visitors and outpatients is not the direct impact of \$12.6 million, but rather \$13.3 million. As noted earlier in the discussion, purchases of goods (as opposed to services) are valued in the output calculation at their producer price.

**Table 5: Economic Impacts of Visiting Friends and Family and Outpatients**

	Output (thousands)			Employment*		
	Direct	Indirect	Total	Direct	Indirect	Total
Restaurants	\$ 4,235	\$ 5,624	\$ 9,859	123	50	173
Retail	3,461	3,994	7,455	58	38	96
Transportation	3,857	5,384	9,240	125	49	175
Recreation	366	413	779	7	4	11
Lodging	519	514	1,033	8	5	13
Taxes	226	241	466	1	2	3
<b>Total</b>	<b>\$ 12,615</b>	<b>\$ 16,117</b>	<b>\$ 28,732</b>	<b>323</b>	<b>147</b>	<b>470</b>

\*Employment is measured on a full-time equivalent basis.

Components may not exactly add to totals because of rounding.

### Total Quantifiable Economic Impact of Nationwide Children's Hospital on the Columbus MSA in 2006

The information in Table 1, Table 2, and Table 5 can be combined to give a total impact of Nationwide Children's in 2006. This total includes operations of the Hospital, Close to Home Centers, and Research Institute; facility construction; and spending of visitors and outpatients. As shown in Table 6, this impact amounts to nearly \$900 million in the \$82 billion Columbus MSA economy. Nearly 17,000 of the region's 940,000 jobs are sustained by activity of and arising from Nationwide Children's.

**Table 6: Summary 2006 Economic Impacts**

	Output (\$000)			Employment*		
	Direct	Indirect	Total	Direct	Indirect	Total
Operations	\$416,434	\$366,128	\$782,562	7,413	8,172	15,585
Construction	36,793	46,671	83,463	366	448	814
Visitors	12,615	16,117	28,732	323	147	470
<b>Total</b>	<b>\$465,842</b>	<b>\$428,916</b>	<b>\$894,757</b>	<b>8,102</b>	<b>8,767</b>	<b>16,870</b>

\*Employment is measured on a full-time equivalent basis.

Components may not exactly add to totals because of rounding.

### Non-quantifiable Impacts on the Columbus MSA

Not all impacts of a business on its region can be reduced to dollars and cents. This is particularly true of an entity like Nationwide Children's, which has a substantial impact on the health, well-being, and quality of life of residents of the Columbus MSA. One highly visible example is community outreach and education. Nationwide Children's also provides outreach through health information on its website and through "Pediatric Health Source" television reports. Nearly 16,800 individuals took advantage of the community education programs offered by Nationwide Children's during 2006 – thereby obtaining information that will improve their health and decrease the incidence of illness. This not only improves the quality of life for children and their families, it also reduces school absenteeism – thereby improving the quality of education these children receive – and absenteeism from work on the part of parents and guardians – thereby improving regional productivity.

Another aspect of education is that provided to medical students and professionals. A total of 4,547 medical and nursing students were enrolled in clinical training in 2006. Although none of these individuals can be considered visitors<sup>9</sup>, the existence of this program has significant implications for the region's workforce development. Working in the field as a student – regardless of the industry – opens access to the professional community and its employment opportunities. Students enjoying this access are more likely to stay to take local jobs and develop their career in the region. Student internships are

<sup>9</sup> Nationwide Children's estimates that approximately 25 percent of these students have their original residence outside the MSA.

such a powerful retention tool for the local workforce that this is a major feature of the Columbus Chamber's Attract and Retain Talent Initiative.

The continuing education of health professionals is also important. In 2006, Nationwide Children's hosted five national conferences, and provided continuing education to 24,113 medical professionals. More than half of these were physicians. The knowledge gained in these programs improves the quality of care offered to patients both in the Columbus MSA and beyond. (There are quantifiable visitor impacts that arise from those professionals coming in from outside the region similar to those for patient families discussed above, but the available data are not sufficient to estimate these impacts.)

The economic impacts of research at Nationwide Children's were included above in the operating impacts. But in addition to these output and employment impacts are the value of clinical trials to those who participate in them. In 2006, Nationwide Children's was an active participant in more than 500 clinical trials. These trials allow children fighting illness access to the latest discoveries in pediatric medicine, thus broadening the treatment options that are open to them.

Finally, the presence in Columbus of the nation's fifth largest children's hospital enhances the ability of local economic development professionals to attract jobs and investment to the Columbus region. The quality of healthcare available within a region is almost always a major consideration for companies seeking to expand or relocate their operations. The high quality and relatively low cost of healthcare in Columbus – including that offered by Nationwide Children's – is a major selling point. While there is no way of knowing whether healthcare was a deciding factor for the corporate site location decisions that were made in our region's favor, it is one more factor that positions the Columbus region well with respect to our competition.