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Manufacturing Brief: Trends in Manufacturing Industries in Northeast Ohio

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Manufacturing BRIEF

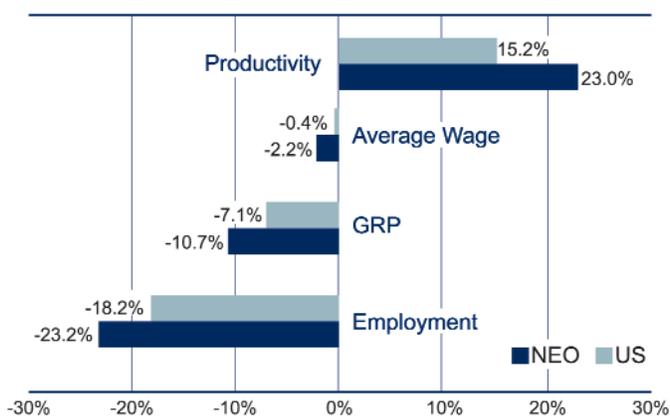


Trends in manufacturing industries in Northeast Ohio

Consistent with national trends, manufacturing employment, gross regional product, and average wages declined in Northeast Ohio between 2000 and 2005.

Total manufacturing employment, gross regional product, and average wages declined in Northeast Ohio (NEO) between 2000 and 2005, which is consistent with national trends. However, **Figure 1** shows that the rates of decline in NEO were higher than those across the U.S. In contrast, productivity—measured as gross regional product per employee—increased substantially in both NEO and the U.S., after adjusting for inflation. Moreover, the rate of increase in productivity in NEO was much larger than in the U.S. (23% in NEO versus 15.2% nationally). Thus, the regional manufacturing sector is losing jobs and output but is significantly more productive. These aggregate trends mask the diverse performance of individual manufacturing industries. The remainder of this brief will highlight NEO's leading industries measured by size, growth, export potential, and performance relative to the same industries nationally.

**Figure 1: Manufacturing Trends in NEO and the U.S., 2000-2005
Employment, GRP, Average Wage, and Productivity**



Source: Quarterly Census of Employment and Wages (ES202) and Moody's Economy.com

Eighty-four manufacturing industries are analyzed using the North American Industry Classification System (NAICS) at the four-digit level. The largest six industries employ between 10,000 and 22,600 people, accounting for almost 32 percent of all manufacturing employment. Another 13 industries employ between 5,000 and 10,000 people, accounting for an additional 33 percent. Thus, the largest 19 industries account for almost two thirds (64.4%) of manufacturing sector employment. The largest industry in 2005 was Motor Vehicles, which employed approximately 22,600 employees. **Table 1** shows that, of the 19 largest industries, only one gained employment in NEO between 2000 and 2005—Household and Institutional Furniture and Kitchen Cabinet Manufacturing increased employment by 18 percent, adding more than 900 jobs. All 19 industries experienced job losses nationally. In four of the industries with job losses in both NEO and the U.S., the rate of decline was smaller in NEO. These industries include: Other Fabricated Metal Products; Coating, Engraving and Heat Treating; Other Miscellaneous Manufacturing, and Medical Equipment and Supplies.

Productivity increased in NEO at a much higher rate than in the U.S.

This brief is the second in our new series of publications on trends in manufacturing industries in Northeast Ohio (NEO). NEO is defined as a 15-county area that includes four metropolitan areas—Cleveland, Akron, Canton, and Youngstown—and four rural counties (Ashland, Ashtabula, Columbiana, and Wayne). The objective of this series is to provide a quick, current, and informative report on the status of the region's manufacturing sector. The first manufacturing brief, released in May 2006, described trends in employment, wages, and gross regional product (GRP) for major manufacturing industries. This brief focuses on detailed manufacturing industries, highlighting leading industries between 2000 and 2005. The third manufacturing brief will focus on the performance of sub-regions within Northeast Ohio.

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It is produced by the Center for Economic Development at Cleveland State University's Maxine Goodman Levin College of Urban Affairs. To contact the Center for Economic Development call (216) 687-6947.

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Five NEO manufacturing industries produced more than one billion dollars each; combined they accounted for 28% of the region's manufacturing GRP in 2005.

NEO is also home to many small and mid-sized manufacturing industries; 38 industries employed between 1,000 and 5,000 each, accounting for one-third of all manufacturing jobs, and 27 industries employ fewer than 1,000 employees, accounting for only three percent of manufacturing jobs. Almost all of these industries lost employment. Exceptions are Pharmaceutical and Medicine Manufacturing, a mid-size industry that added more than 400 jobs in NEO, and four small industries that, combined, added about 350 jobs.

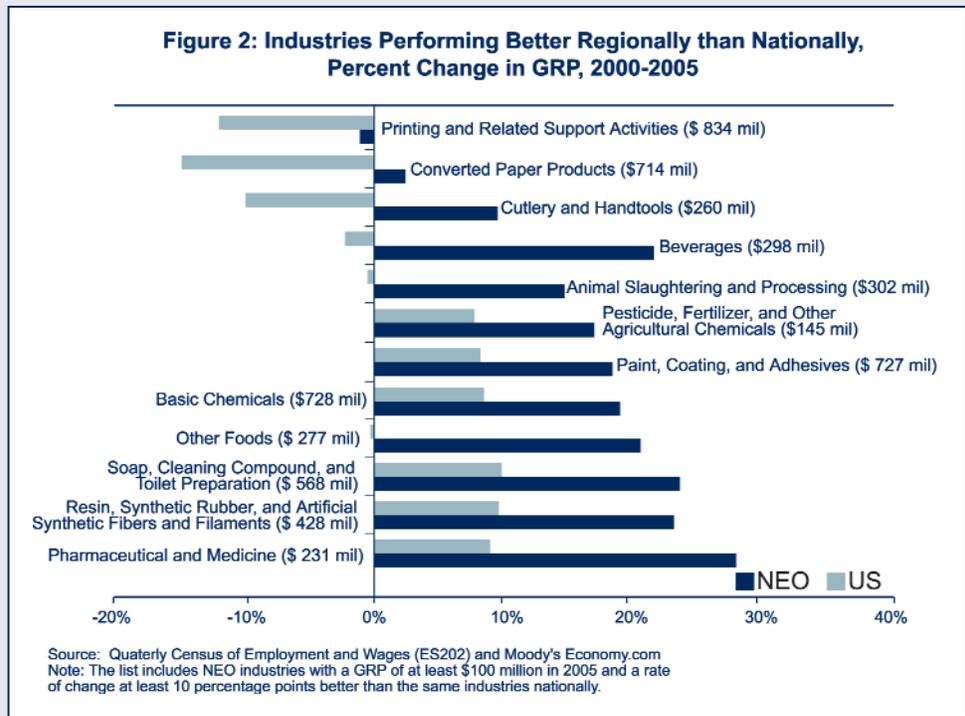
Gross regional product (GRP), or output, measures the value added by each economic entity. Total GRP for NEO's manufacturing sector amounted to \$31 billion in 2005. Analyzing GRP by detailed industry shows that five industries produced more than one billion dollars each in 2005 (see Table 1, which presents employment and GRP for the largest 19 manufacturing industries). Motor Vehicle Parts was the largest producer with \$3.4 billion followed by Plastics Products, which produced \$1.6 billion. Other Fabricated Metals, Machine Shops, and Motor Vehicles each produced between \$1.2 and \$1.4 billion. These five industries accounted for 28 percent of all manufacturing GRP. Analyzing the 19 industries reveals that two NEO industries increased their GRP, while GRP declined in the same industries nationally. Plastics Products experienced an increase in GRP in NEO (6.3%), while it declined slightly in the U.S. (-0.4%), and Converted Paper Products gained 2.6 percent, while its GRP declined significantly in the U.S. (-16.2%). The opposite trends occurred in six other industries, where GRP declined in NEO while it increased nationally. The largest among these industries is Foundries, where GRP in NEO declined by 27 percent to less than \$800 million, while increasing by 7.8 percent in the U.S. Eleven industries experienced GRP losses in both NEO and the U.S.: in six industries NEO's rate of decline was slower than the U.S. and in the remaining five industries, NEO declined at a faster rate.

Table 1: NEO's Largest Manufacturing Industries, 2000-2005

INDUSTRY	NEO		U.S.	NEO		U.S.
	Employment, 2005	Percent Change, 2000-2005		GRP, 2005 (Millions\$)	Percent Change, 2000-2005	
Motor Vehicle Parts	22,644	-24.3%	-18.2%	3,368	-12.7%	-7.4%
Plastics Products	19,757	-17.6%	-15.4%	1,607	6.3%	-0.4%
Other Fabricated Metal Products	14,716	-16.7%	-17.8%	1,414	-9.3%	-10.2%
Machine Shops; Turned Products; and Screws, Nuts, and Bolts	14,274	-16.1%	-7.0%	1,239	-17.3%	-11.0%
Metalworking Machinery	11,204	-27.4%	-27.6%	863	-10.9%	-13.7%
Printing and Related Support Activities	10,300	-22.6%	-20.4%	834	-1.0%	-13.0%
Other General Purpose Machinery	9,915	-25.5%	-23.0%	821	-14.9%	-13.9%
Motor Vehicles	9,075	-31.1%	-13.7%	1,178	-19.8%	-6.8%
Foundries	8,652	-32.8%	-24.0%	796	-27.3%	7.8%
Converted Paper Products	8,509	-17.4%	-17.4%	714	2.6%	-16.2%
Rubber Products	8,395	-24.0%	-21.3%	694	-26.4%	0.4%
Forging and Stamping	8,051	-21.0%	-19.4%	566	-10.8%	-11.1%
Coating, Engraving, Heat Treating, and Allied Activities	6,983	-12.8%	-17.4%	598	-6.3%	-10.9%
Other Miscellaneous Manufacturing	6,644	-15.5%	-19.5%	544	-6.1%	14.1%
Architectural and Structural Metals	6,597	-20.3%	-12.8%	585	-16.5%	-11.5%
Nonferrous Metal (except Aluminum) Production and Processing	6,332	-30.0%	-26.1%	624	-25.4%	8.1%
Iron and Steel Mills and Ferroalloys	6,136	-54.6%	-30.2%	699	-35.7%	10.8%
Household and Institutional Furniture and Kitchen Cabinets	6,041	18.1%	-14.6%	266	-3.4%	-11.8%
Medical Equipment and Supplies	5,458	-1.1%	-3.4%	393	-0.1%	15.0%
Total	294,325	-23.2%	-18.2%	30,917	-10.7%	-7.1%

Source: Quarterly Census of Employment and Wages (ES202) and Moody's Economy.com

Figure 2 highlights 12 large and mid-size manufacturing industries that performed better in NEO than across the U.S. in terms of rate of change in GRP. These industries had a GRP of at least \$100 million in 2005, and their rate of change in NEO was at least 10 percentage points better than that of the U.S. As a group, they accounted for 18 percent of NEO's manufacturing GRP. Moreover, these industries not only performed better than the same industries nationally, but, with one exception, their GRP increased between 2000 and 2005. GRP grew faster in NEO than in the U.S. in the following six industries: Pharmaceutical and Medicine; Resins, Synthetic, and Artificial Synthetic Fibers; Soap, Cleaning, and Toilet Preparation; Basic Chemicals; Paint, Coating, and Adhesive; and Pesticide, Fertilizer, and Other Agricultural Chemicals. Four of the 12 better-performing NEO industries were large, ranking between 7th and 12th in GRP. Most of the industries that performed better in NEO in comparison to the U.S. are mid-size industries.



Consistent with other regions, the average wage in NEO's manufacturing sector (\$48,600 in 2005) is higher than the overall average wage (\$36,900). Five NEO manufacturing industries paid more than \$70,000 in 2005. The highest-paying industries include Motor Vehicles (\$92,800) with more than 9,000 employees, Manufacturing and Reproducing Magnetic and Optical Media (\$92,300) with fewer than 200 employees, Basic Chemicals (\$85,000) with close to 4,000 employees, Iron and Steel Mills (\$77,400) with more than 6,000 employees, and Nonferrous Metals (\$71,000) with 6,300 employees.

GRP increased in 11 NEO industries between 2000 and 2005 and the rates of increase were greater than the national rates.

Table 2: Employment by Average Wage, 2005

Average Wage	Employment	% of Mfg. Employment	Cummulative %
> 70,000	25,630	8.7%	8.7%
60,000 - 69,999	43,655	14.8%	23.5%
50,000 - 59,999	51,156	17.4%	40.9%
40,000 - 49,999	55,821	19.0%	59.9%
30,000 - 39,999	108,418	36.8%	96.7%
< 30,000	9,646	3.3%	100.0%
Total	294,325	100.0%	

Source: Quarterly Census of Employment and Wages (ES202)

The industries with average wages higher than \$70,000 employed approximately 25,600 people, accounting for 8.7 percent of manufacturing jobs (Table 2). An additional 43,700 employees (15% of manufacturing workers) earn average wages between \$60,000 and \$69,999, and 51,200 employees earn average wages between \$50,000 and \$59,999. The table shows that 60 percent of all manufacturing workers earn at least \$40,000, which is higher than the average wage in the NEO economy as a whole. Twelve industries pay less than \$30,000, but they account for only 3.3 percent of all of manufacturing employment (9,600 jobs).

Location quotients (LQs) are used to measure the degree to which an industry is concentrated or specialized in a region relative to the nation, suggesting import and export potential. LQ is calculated as the ratio of the industry employment share in NEO to the industry employment share in the U.S. An export industry is one in which the industry not only meets the local demand for its products, but also produces enough to sell outside of the region. An import industry is one in which local production levels are insufficient to meet local demand. A location quotient of 1.0 indicates that the economy is self-sufficient. A location quotient greater than 1.25 identifies an export industry, and a location quotient of less than 0.75 indicates an import industry.

Of the 84 manufacturing industries, NEO had 35 industries with LQs larger than 1.25 in 2005. Moreover, six industries are highly specialized in NEO: the Nonferrous Metals industry tops the list with an LQ of 6.2, followed by Forging and Stamping (LQ=5.2); Paint, Coating, and Adhesive Manufacturing (LQ=5.2); and Steel Product Manufacturing (LQ=5.1). An additional 16 industries have LQs between two and four. It is interesting to note that seven of the 35 industries with high LQs are also characterized by the U.S. Bureau of Labor Statistics as high-tech industries.

Manufacturing BRIEF

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Thirty-five manufacturing industries export their products outside NEO; seven are high-tech industries.

In order to identify leading regional manufacturing industries, all 84 manufacturing industries were ranked according to seven criteria: total employment, rate of change in terms of both employment and GRP, performance relative to the same industry nationally in terms of employment and productivity, average wage, and regional specialization (LQ). **Table 3** identifies nine industries that rank among the top 30 industries in at least four criteria and have an average wage higher than the regional average wage of \$36,900. Two of the nine industries are among the 10 largest employers, including Other Fabricated Metal Products with more than 14,700 employees and Converted Paper Products with over 8,500 employees. Four of the selected industries are among the top paying industries with average annual wages between \$60,000 and \$85,000. Seven are part of a larger group of industries that comprise NEO's competitive Chemical and Metalworking clusters.

Table 3: Leading NEO Manufacturing Industries, 2000-2005

INDUSTRY	Employment, 2005	% Employment Change, 2000-2005	Difference in Rate of Employment Change, NEO vs. U.S.	Average Wage, 2005	%GRP Change, 2000-2005	Difference in Rate of Productivity Change, NEO vs. U.S.	Location Quotient, 2005
Fruit and Vegetable Preserving and Specialty Foods	3,497	-15.4%	-2.4%	\$47,521	3.8%	24.2%	1.5
Converted Paper Products	8,509	-17.3%	0.1%	\$50,804	2.6%	14.8%	1.7
Basic Chemicals	3,917	-15.0%	4.9%	\$84,999	20.7%	4.4%	1.8
Pharmaceutical and Medicine	1,292	47.1%	41.1%	\$69,892	30.5%	2.7%	0.3
Paint, Coating, and Adhesives	4,923	-10.4%	3.1%	\$60,259	20.1%	4.5%	5.2
Soap, Cleaning Compound, and Toilet Preparations	3,463	-5.2%	9.0%	\$48,236	25.7%	18.2%	2.1
Cutlery and Handtools	2,495	-15.8%	13.2%	\$38,768	10.4%	36.3%	3.1
Boiler, Tank, and Shipping Containers	3,336	-1.5%	13.8%	\$64,966	-6.9%	27.4%	2.6
Other Fabricated Metal Products	14,716	-16.7%	1.1%	\$61,573	-9.3%	12.0%	3.7

Note: Industries listed are those that rank among the top 30 industries in at least four of seven criteria.
Source: Quarterly Census of Employment and Wages (ES202) and Moody's Economy.com

This brief highlights the large variety of manufacturing industries in Northeast Ohio and their varied performance. Although many of the industries share common challenges and opportunities, the richness of the manufacturing sector suggests that we cannot reach conclusions or suggest policy changes for the sector as a whole but should tailor recommendations to groups of industries based on their attributes, economic performance, and clustering. Although many industries had declining employment and output over the past five years, some small and mid-size industries experienced gains, and some industries performed better than the same industries nationally. Many of the industries pay high average wages relative to other sectors of the economy, and many contribute to NEO's economic base by exporting their products to other regions and countries. Perhaps the most critical indicator is that manufacturing productivity not only increased in NEO over the studied period, but that it grew at a higher rate than nationally.