

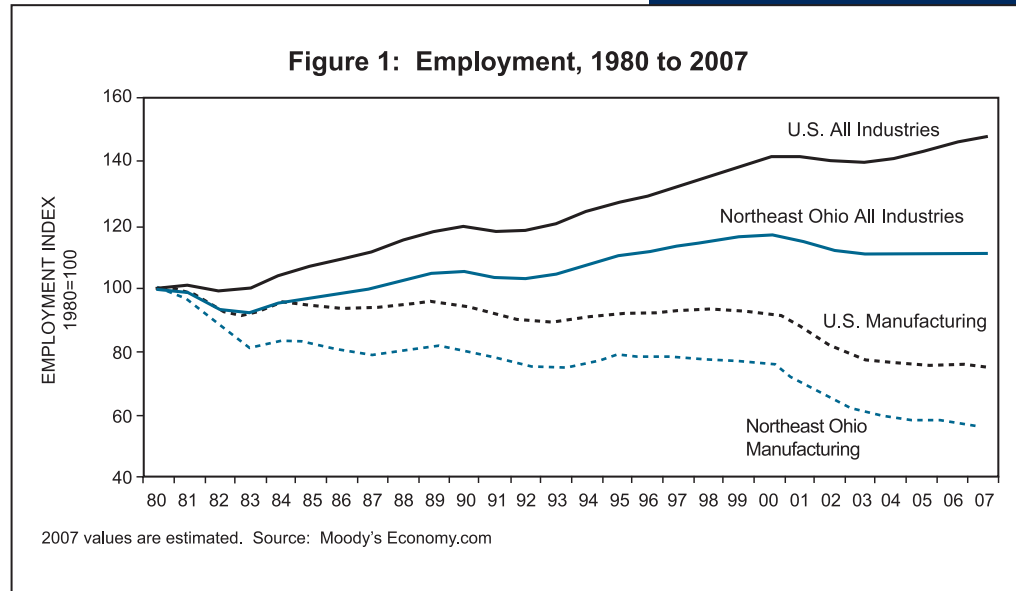
Manufacturing BRIEF



Trends in manufacturing industries in Northeast Ohio

Employment Trends

Since 1980, total employment in both Northeast Ohio and the U.S. has generally followed an upward trend; however, job growth in Northeast Ohio lagged national job growth throughout the time period from 1980 to 2007 (Figure 1). During the 1980s, the U.S. added jobs at a much faster pace; during the 1990s, the difference in the rate of growth lessened but was still substantial. In the early 2000s, the U.S. experienced a small decline in employment but recovered by 2004. In contrast, Northeast Ohio experienced a deeper decline in the early 2000s and never fully recovered. Between 1980 and 2007, Northeast Ohio employment increased 11.0 percent compared to 47.8 percent nationally.



Trends in manufacturing employment are considerably different. Both the U.S. and Northeast Ohio have experienced a steady decline in manufacturing jobs since 1980, with the steepest losses in the early 1980s and early 2000s. Over the longer time period (1980 to 2007) and the shorter periods of sharp decline, Northeast Ohio lost manufacturing jobs at a faster rate than the nation. Between 1980 and 2007, Northeast Ohio manufacturing employment declined 43.9 percent while U.S. manufacturing employment fell 25.1 percent.

Short-term trends (2005 to 2007) show a continued decline in manufacturing in both Northeast Ohio and the U.S., with the region still experiencing deeper losses (-4.5% versus -1.9%). However, manufacturing remains a critical component of the Northeast Ohio economy, providing nearly 300,000 jobs and capturing 15.6 percent of total employment. By comparison, 10.4 percent of U.S. workers are employed in the manufacturing sector.

This brief continues a series of publications that provide a concise overview of trends in employment, output, and wages for major manufacturing industries in Northeast Ohio. It offers a long-term analysis (1980 to 2007) of employment and output for the manufacturing sector as a whole, and provides a short-term analysis (2005 to 2007) of the specific industries that constitute the sector. Trends in Northeast Ohio are compared to trends in Ohio and the U.S.

Northeast Ohio is defined as a 16-county area that includes the Akron MSA (Portage and Summit counties), Canton-Massillon MSA (Carroll and Stark counties), Cleveland-Elyria-Mentor MSA (Cuyahoga, Geauga, Lake, Lorain, and Medina counties), Mansfield MSA (Richland County), Youngstown-Warren MSA (Mahoning and Trumbull counties), and four non-metropolitan counties (Ashland, Ashtabula, Columbiana, and Wayne).

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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.

MAGNET supports and champions manufacturing in the northern half of Ohio and is the voice for the region's manufacturers. Since 1984, MAGNET has assisted over 2,000 manufacturers through its business consulting, product development, and business incubation programs. MAGNET initiatives have generated over \$2 billion in economic impact for the region through increased sales, enhanced productivity, and jobs created or retained.

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With more than 61,000 jobs in 2007, *Fabricated Metal Products* is by far the largest manufacturing industry in Northeast Ohio, accounting for more than 20 percent of all manufacturing employment in the region. *Transportation Equipment* and *Machinery* each employ more than 30,000 workers and *Primary Metals* and *Plastics and Rubber Products* each employ more than 20,000. Employment in two of the five largest industries (*Fabricated Metal Products* and *Machinery*) grew slightly between 2005 and 2007, although they did not keep pace with job growth at the national level. In total, only five industries added jobs in Northeast Ohio during this time period. The others (*Food*, *Wood Products*, and *Textile Product Mills*) grew despite national declines. Across the Northeast Ohio manufacturing sector as a whole, 14,802 jobs were lost in 16 industries and 1,031 jobs were gained in five industries, resulting in a net loss of 13,771 manufacturing jobs.

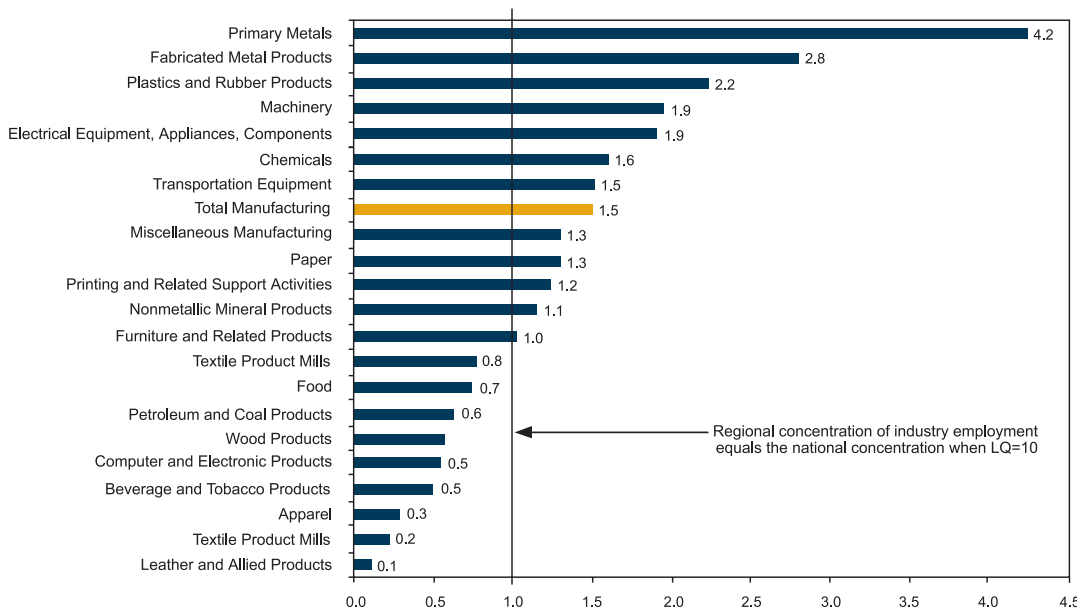
Location quotients for Northeast Ohio's manufacturing industries are depicted in **Figure 2**. Location quotients (LQs) measure the concentration of an industry in a region relative to the concentration of the same industry within the national economy. If an industry has a higher concentration in the regional economy ($LQ > 1$), it indicates that the industry is part of the regional economic base, producing some goods for export outside the region, thereby generating wealth for the region.

Table 1: Employment Change by Manufacturing Industry, 2005:Q1 to 2007:Q1

Industry	Northeast Ohio		Ohio	U.S.
	Manufacturing Employment 2007	Change 2005-2007	Percent Change 2005-2007	
Fabricated Metal Products	61,033	295	0.5%	3.2%
Transportation Equipment	37,326	-5,455	-12.8%	-2.4%
Machinery	32,296	177	0.6%	2.6%
Primary Metals	27,352	-1,479	-5.1%	-1.6%
Plastics and Rubber Products	23,661	-2,920	-11.0%	-5.5%
Chemicals	19,315	-320	-1.6%	-1.8%
Food	15,020	196	1.3%	-0.4%
Miscellaneous Manufacturing	11,684	-641	-5.2%	-1.1%
Electrical Equipment, Appliances, Components	11,527	-972	-7.8%	-2.0%
Printing and Related Support Activities	10,890	-259	-2.3%	-3.2%
Computer and Electronic Products	9,834	-196	-2.0%	-1.4%
Paper	8,247	-1,098	-11.8%	-5.5%
Nonmetallic Mineral Products	7,882	-709	-8.2%	1.3%
Furniture and Related Products	7,672	-534	-6.5%	-4.8%
Wood Products	4,059	216	5.6%	-5.3%
Textile Product Mills	1,709	147	9.4%	-6.6%
Beverage and Tobacco Products	1,309	-32	-2.4%	1.6%
Petroleum and Coal Products	971	-11	-1.1%	2.4%
Apparel	846	-29	-3.3%	-16.9%
Textile Mills	518	-139	-21.2%	-21.0%
Leather and Allied Products	47	-6	-10.8%	-13.6%
Total Manufacturing	293,197	-13,771	-4.5%	-1.9%
Total All Industries	1,875,375	-10,536	-0.6%	3.5%

The manufacturing total does not equal the summation of individual industries. Data for some industries have been suppressed to maintain confidentiality. Source: Quarterly Census of Employment and Wages (ES202)

Figure 2. Northeast Ohio Manufacturing Location Quotients (Based on 2007:Q1 Employment)



Source: Quarterly Census of Employment and Wages

Northeast Ohio has high employment concentration in *Primary Metals, Fabricated Metal Products, Plastics and Rubber Products, Machinery, Electrical Equipment, Chemicals, and Transportation Equipment.*

Northeast Ohio has high employment concentration in several industries, including *Primary Metals* (LQ=4.2), *Fabricated Metal Products* (LQ=2.8), *Plastics and Rubber Products* (LQ=2.2), *Machinery* (LQ=1.9), *Electrical Equipment* (LQ=1.9), *Chemicals* (LQ=1.6), and *Transportation Equipment* (LQ=1.5). Twelve of the 21 manufacturing industries have an LQ greater than 1.0. The manufacturing sector as a whole has an LQ of 1.5.

The *Primary Metals* industry includes iron and steel mills, aluminum production facilities and similar operations. The *Fabricated Metals* industry includes machine shops that perform functions such as forging, stamping, and metal plating. *Plastics and Rubber Products* is one of the largest industries in Ohio and produces a wide array of products ranging from tires and tubing to floor tiles and plastic bags. The *Machinery* industry manufactures lawn equipment, engines, compressors, and small office equipment, among other products. The *Electrical Equipment, Appliances, and Components* industry manufactures lighting, household appliances, and other electronic controls. The *Chemicals* industry includes companies that make paints, dyes, pesticides, and pharmaceuticals. The *Transportation Equipment* industry primarily includes auto parts manufacturers.

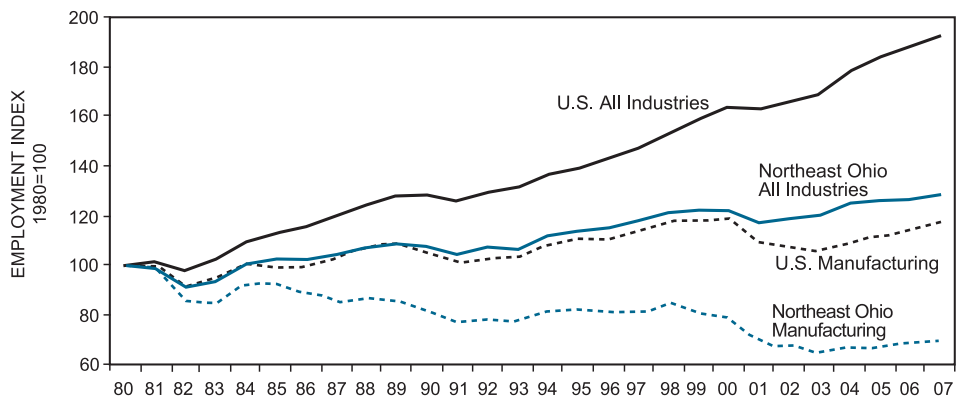
Gross Regional Product

Over the long-term, the gross regional product (value added output) of Northeast Ohio's manufacturing sector declined along with employment, although at a lower rate (**Figure 3**). Between 1980 and 2007, output fell 31.2 percent (after adjusting for inflation) in light of a 43.9 percent decline in employment. During the same time period, U.S. manufacturing output increased 16.9 percent despite a 25.1 percent job loss.

Other sectors of the Northeast Ohio economy helped compensate for the loss in manufacturing output. Total output increased 28.1 percent between 1980 and 2007. At the national level, output nearly doubled during this period, increasing 92.2 percent.

Manufacturing remains a critical component of the Northeast Ohio economy, providing nearly 300,000 jobs and \$36 billion in output in 2007.

Figure 3: Gross Product, 1980 to 2007



2007 values are estimated. Source: Moody's Economy.com

Northeast Ohio's growth in manufacturing output also lagged the U.S. over the short-term (2005 to 2007). Regional manufacturing output increased 1.6 percent versus 4.6 percent nationally (**Table 2**). Other sectors of the economy grew at similar rates (total output grew 1.8% in Northeast Ohio and 4.7% in the U.S.).

Northeast Ohio is a \$175 billion economy. Despite slower growth in output relative to the U.S., the manufacturing sector is a major contributor to Northeast Ohio's gross regional product. In 2007, manufacturing industries provided nearly \$36 billion in output, which accounted for 20.4 percent of the gross regional product, higher than its share of employment (15.6%). Nine industries generated more than \$1 billion in output in Northeast Ohio. Three of the nine industries (*Chemicals*, *Food*, and *Miscellaneous Manufacturing*) increased output at a faster rate than the same industry nationally. Three increased output but at a slower rate than the nation (*Fabricated Metal Products*, *Transportation Equipment*, and *Machinery*). Three of the nine (*Primary Metals*, *Electrical Equipment*, and *Plastics and Rubber Products*) had declining output despite an increase in output at the national level. All three of the large industries with declining output suffered job losses during this period.

Table 2. Change in Gross Regional Product by Manufacturing Industry, 2005:Q1 to 2007:Q1

Industry	Northeast Ohio		Ohio	U.S.
	2007 Gross Product (in millions \$)	Change 2005-2007* (in millions \$)	Percent Change 2005-2007*	
Fabricated Metal Products	6,309.5	252.5	4.2%	8.9%
Transportation Equipment	5,617.8	95.7	1.7%	3.1%
Primary Metals	4,724.7	-262.3	-5.3%	1.6%
Chemicals	3,998.7	213.1	5.6%	4.0%
Machinery	2,848.4	147.2	5.4%	9.8%
Electrical Equipment, Appliances, Components	2,421.6	-12.9	-0.5%	6.5%
Plastics and Rubber Products	2,056.7	-139.7	-6.4%	2.9%
Food	1,871.9	135.5	7.8%	4.5%
Miscellaneous Manufacturing	1,168.6	74.2	6.8%	6.6%
Paper	893.3	-14.3	-1.6%	1.2%
Printing and Related Support Activities	832.1	11.8	1.4%	2.0%
Nonmetallic Mineral Products	806.7	29.4	3.8%	5.1%
Computer and Electronic Products	695.6	-0.8	-0.1%	4.8%
Furniture and Related Products	537.3	24.5	4.8%	-1.5%
Petroleum and Coal Products	355.7	-31.7	-8.2%	11.4%
Wood Products	300.8	12.7	4.4%	1.0%
Beverage and Tobacco Products	223.1	24.2	12.2%	7.4%
Textile Product Mills	82.5	3.9	5.0%	-1.4%
Textile Mills	58.3	-5.0	-8.0%	-13.4%
Apparel	40.1	-3.1	-7.2%	-6.8%
Leather and Allied Products	12.0	1.0	9.0%	-7.9%
Total Manufacturing	35,855.1	555.8	1.6%	4.6%
Total All Industries	175,378.5	3,100.7	1.8%	4.7%

* 2005 values adjusted for inflation (2007\$). The manufacturing total does not equal the summation of individual industries. 2007 values are estimated. Source: Moody's Economy.com

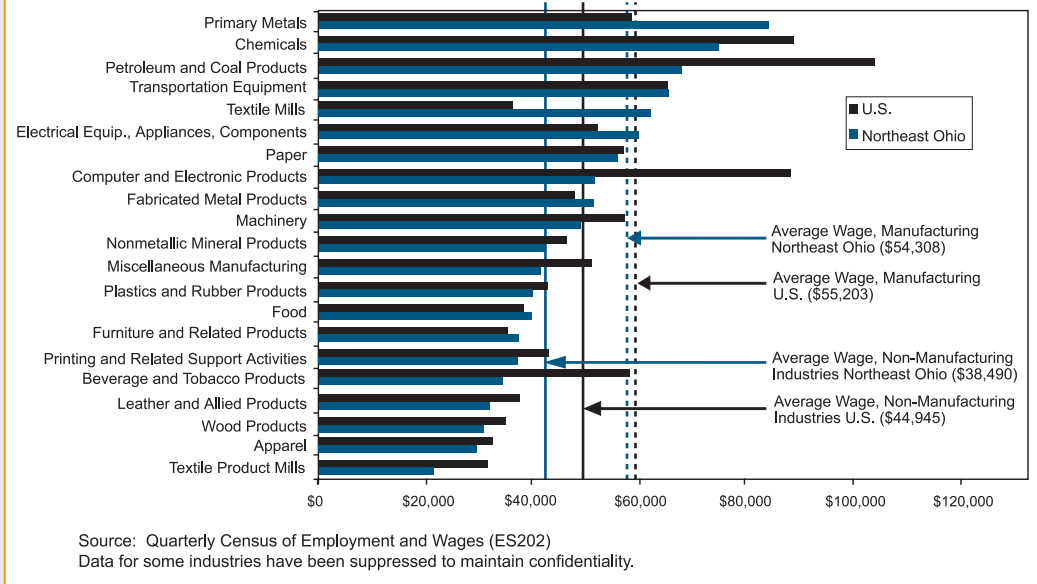
Four industries generated well over half (57.6%) of the manufacturing output in Northeast Ohio in 2007. *Fabricated Metal Products* was responsible for 17.6 percent, *Transportation Equipment*, 15.7 percent, *Primary Metals*, 13.2 percent, and *Chemicals*, 11.2 percent. The nine industries with more than \$1 billion in output account for 86.5 percent of total manufacturing output.

Average Wages

On average, the manufacturing sector pays much higher wages than other sectors of the economy (Figure 4). In 2007, the average wage of Northeast Ohio's manufacturing sector was \$54,308, which is more than 40 percent higher than the average wage for all other industries (\$38,490). Across the U.S., manufacturing wages are also considerably higher but the differential is not as great (\$55,203 in manufacturing versus \$44,954 in all other industries).

In the manufacturing sector, the U.S. average wage is only slightly higher than the Northeast Ohio average wage, however, the gap is larger for all other industries. The lower cost of living in Northeast Ohio may partially explain the differences in pay but the wage gap has increased in recent years. The average manufacturing wage in Northeast Ohio increased 5.8 percent between 2005 and 2007 versus 6.2 percent nationally. Likewise, the average wage for all other industries increased 5.1 percent in Northeast Ohio versus 7.9 percent nationally (after adjusting for inflation).

Figure 4. 2007 Average Wage



The highest paying manufacturing industry in Northeast Ohio is *Primary Metals* (\$83,823), followed by *Chemicals* (\$74,611), *Petroleum and Coal Products* (\$67,743), and *Transportation Equipment* (\$65,372). *Petroleum, Chemicals, and Transportation Equipment* are also among the highest paying industries nationally.

The largest pay gap is in *Computer and Electronic Products* where the U.S. average wage is significantly higher. This is a mid-sized industry in Northeast Ohio. The U.S. wage is also much higher than the Northeast Ohio average wage in *Petroleum and Coal Products* and *Chemicals*, despite the fact that these industries are among the highest paying in the region. The Northeast Ohio average wage is much higher than the U.S. average in *Primary Metals* and *Textile Mills*. *Primary Metals* is one of Northeast Ohio's largest industries but *Textile Mills* is very small.

Sub-Regional Manufacturing Employment

In 2007, the Cleveland-Elyria-Mentor MSA captured approximately half (49.3%) of total manufacturing employment in the larger Northeast Ohio region. The Akron MSA accounted for 16 percent; the Canton-Massillon MSA, 10.5 percent; the Youngstown-Warren MSA, 9.3 percent; the Mansfield MSA, 4.4 percent, and the non-metro counties combined accounted for the remaining 10.6 percent.

All metro areas and the non-metro counties in Northeast Ohio experienced a decline in manufacturing employment between 2005 and 2007 (**Table 3**). The Youngstown MSA, specifically Trumbull County, suffered the greatest loss, with more than 4,300 manufacturing jobs disappearing in the two-year period. Many of these job losses were due to cutbacks in two industries — *Primary Metals* and *Transportation Equipment*. News reports have documented large layoffs by General Motors and Delphi; both have plants in Trumbull County.

Only three counties in the 16-county Northeast Ohio region gained manufacturing jobs during this time. Two of these counties (Lake and Medina) reported very minimal gains. Carroll County experienced a high rate of growth in manufacturing employment, but it is by far the smallest county in the region. (However, it is also among the counties most dependent on the manufacturing sector.)

Most Northeast Ohio counties are heavily dependent on manufacturing employment. Ten percent of U.S. workers are employed in the manufacturing sector; only Cuyahoga, Mahoning, and Summit Counties have less than 15 percent of their workforce in manufacturing. These are the central counties of the larger metro areas and have more diversified economies.

All metro areas and the non-metro counties in Northeast Ohio experienced a decline in manufacturing employment between 2005 and 2007.

Table 3. Manufacturing Employment by County, 2005:Q1 to 2007:Q1

	Manufacturing Employment			
	2007	Change 2005-2007	% Change 2005-2007	2007 Share of Total Employment
Ohio	776,407	-33,454	-4.1%	14.9%
Northeast Ohio	293,197	-13,771	-4.5%	15.6%
Akron MSA	46,943	-1,564	-3.2%	14.7%
Portage	11,846	-257	-2.1%	22.8%
Summit	35,097	-1,307	-3.6%	13.1%
Canton-Massillon MSA	30,674	-600	-1.9%	18.5%
Carroll	1,504	333	28.5%	25.0%
Stark	29,170	-934	-3.1%	18.3%
Cleveland-Elyria-Mentor MSA	144,544	-4,233	-2.8%	14.1%
Cuyahoga	83,516	-2,837	-3.3%	11.3%
Geauga	9,206	-476	-4.9%	27.7%
Lake	21,692	24	0.1%	22.1%
Lorain	20,208	-1,023	-4.8%	20.5%
Medina	9,922	79	0.8%	16.8%
Mansfield MSA	12,760	-674	-5.0%	22.8%
Richland	12,760	-674	-5.0%	22.8%
Youngstown-Warren MSA	27,284	-4,361	-13.8%	15.1%
Mahoning	10,182	-155	-1.5%	10.1%
Trumbull	17,102	-4,206	-19.7%	21.5%
Non-Metro Counties	30,991	-2,338	-7.0%	24.5%
Ashland	3,783	-264	-6.5%	20.9%
Ashtabula	7,853	-822	-9.5%	24.9%
Columbiana	6,398	-208	-3.1%	20.5%
Wayne	12,956	-1,044	-7.5%	28.4%

Source: Quarterly Census of Employment and Wages (ES202)

Trends in manufacturing industries in Northeast Ohio

Manufacturing BRIEF



Manufacturing Sector is Leaner but Still Important to Northeast Ohio Economy

The Manufacturing sector has endured a long period of employment decline, both locally and nationally. Northeast Ohio has experienced deeper declines and continues to struggle; both employment and output have continued to fall in recent years. However, the sector still provides nearly 300,000 jobs (15% of the total workforce) and \$36 billion in gross regional product (20% of the total). Moreover, the average manufacturing wage remains relatively high.

Manufacturing companies are still responding to a long period of economic restructuring. They have often been forced to become more efficient by employing new technologies, reducing their workforce, and requiring new skills from the workers that are retained. Despite the challenges it has faced, the sector remains a critical component of the regional economy. It is part of the high-tech economy and plays an important role in transforming Northeast Ohio to a more innovative and productive region. ■

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