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Northeast Ohio Manufacturing Brief

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Manufacturing BRIEF



Trends in manufacturing industries in Northeast Ohio

The Manufacturing Sector is Leaner, More Productive, and Critically Important to the Northeast Ohio Economy

The manufacturing sector remains a vital component of the Northeast Ohio economy, despite declines in manufacturing employment and output over the last few decades. In addition to being a major exporting sector and a source of inflow of dollars into the region, manufacturing consistently represents the largest sector of the regional economy in terms of gross regional product. The sector contributed \$29.4 billion to the Northeast Ohio economy in 2010, accounting for 17.2% of gross regional product. Manufacturing was also responsible for approximately 227,000 jobs and 13.3% of total employment in Northeast Ohio in 2010. Moreover, the average wage of manufacturing workers in Northeast Ohio remained 43.6% higher than the average wage for all non-manufacturing industries combined and the productivity of regional manufacturing firms increased 8.3% from 2008 to 2010.

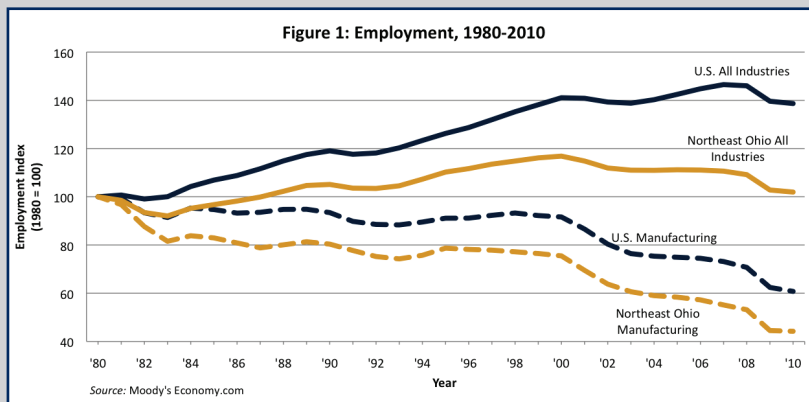
Recent statistical and anecdotal evidence shows that demand for manufacturing has grown in Northeast Ohio. Preliminary data from both the U.S. Bureau of Labor Statistics and the Ohio Department of Jobs and Family Services suggest that a 2.6% increase in manufacturing employment occurred for the metropolitan areas included in this brief between the first quarter of 2010 and the first quarter of 2011. This indicates that manufacturers have begun hiring again.

Maintaining these recent positive trends requires continued attention to ensuring that federal, state, and local policies in the areas of regulation, trade, and taxation are conducive to manufacturing success. Likewise, a range of efforts are needed to help companies survive and thrive into the future. These include actions to help companies adopt production efficiencies, increase innovation, develop new products, increase exports, find qualified workers, and secure access to capital.

Employment

The focus of this brief is the manufacturing industry. However, it is important to first analyze total employment in Northeast Ohio

and the United States as a means to understand the context within which manufacturing employment trends have transpired. Total employment in both Northeast Ohio and the United States has generally followed an upward trend since 1980. The United States' job growth rate, however, consistently grew faster than Northeast Ohio's job growth rate between 1980 and 2010 (Figure 1). Despite an initial decrease in employment beginning in 1980, employment grew steadily for both Northeast Ohio and the United States every year between 1983 and 1990.



About this Brief

This brief continues a series of publications that provide an overview of the trends in employment, gross regional product, and average wages for major manufacturing industries in Northeast Ohio. It offers a long-term analysis (1980 to 2010) of employment and gross regional product for the manufacturing sector as a whole, and a short-term analysis (2008 to 2010) of the specific industries that constitute the sector. Trends in Northeast Ohio are compared to trends in the United States and the state of Ohio.

Northeast Ohio is defined as the 16-county region 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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A second, small decline in employment took place from 1990 to 1992, followed by another period of sustained employment growth lasting until 2000. The beginning of the new millennium was met with a short-term recession in 2001 that resulted in a decline in employment through 2003 for both Northeast Ohio and the United States.

Starting in 2003, the general trends of Northeast Ohio and the United States began to diverge. While the United States regained and grew beyond the employment lost between 2000 and 2003, Northeast Ohio exhibited zero growth between 2003 and 2007. A second, larger recession began in December 2007 and employment in Northeast Ohio and the United States has declined consistently every year since. Over the entire 30-year period from 1980 to 2010, total employment in Northeast Ohio grew by only 1.9% compared to a 38.7% increase in the United States.

Northeast Ohio and United States manufacturing employment exhibited far different trends than total employment. Manufacturing employment in both the region and nation has steadily declined since 1980; in fact, neither Northeast Ohio nor the United States has regained their 1980 level of employment and probably never will due to increased productivity and the outsourcing of manufacturing jobs. Between 1980 and 2010, Northeast Ohio consistently lost manufacturing jobs at a faster rate than the nation. Northeast Ohio manufacturing employment declined 55.8% from 1980 to 2010 while national manufacturing employment fell by 39.2%.

Short-term trends show a continual decline in manufacturing employment in both Northeast Ohio and the United States from 2008 to 2010. As is consistent with the long-term trends, Northeast Ohio lost a higher percentage of manufacturing employment than the United States (-19.8% and -16.4%, respectively) (Table 1). However, manufacturing remains a critical component of the Northeast Ohio economy as it accounts for more than 227,000 jobs and 13.3% of total employment in the region. By comparison, 9.1% of workers in the United States are employed in the manufacturing sector.

Table 1: Employment Change by Manufacturing Industry, 2008:Q1 to 2010:Q1

Industry	Northeast Ohio		Ohio	U.S.
	Manufacturing Employment, 2010	Difference (2008-2010)	Percent Change (2008-2010)	
Fabricated Metal Product Manufacturing	48,029	-11,811	-19.7%	-19.4%
Machinery Manufacturing	25,016	-6,584	-20.8%	-18.1%
Transportation Equipment Manufacturing	23,173	-9,506	-29.1%	-20.6%
Plastics and Rubber Products Manufacturing	19,066	-4,961	-20.6%	-17.9%
Primary Metal Manufacturing	18,244	-7,752	-29.8%	-21.9%
Chemical Manufacturing	17,490	-1,795	-9.3%	-7.6%
Food Manufacturing	15,569	46	0.3%	-3.0%
Miscellaneous Manufacturing	9,799	-1,384	-12.4%	-11.2%
Electrical Equipment, Appliance, and Components	9,045	-2,006	-18.2%	-17.1%
Computer and Electronic Product Manufacturing	8,442	-1,535	-15.4%	-12.8%
Printing and Related Support Activities	8,391	-2,179	-20.6%	-19.4%
Paper Manufacturing	6,812	-1,142	-14.4%	-12.2%
Nonmetallic Mineral Product Manufacturing	5,595	-1,781	-24.1%	-24.0%
Furniture and Related Product Manufacturing	5,359	-2,344	-30.4%	-29.3%
Wood Product Manufacturing	2,850	-919	-24.4%	-30.3%
Textile Product Mills	1,467	-147	-9.1%	-22.6%
Beverage and Tobacco Product Manufacturing	975	-207	-17.5%	-7.3%
Petroleum and Coal Products Manufacturing	865	-84	-8.9%	-3.2%
Apparel Manufacturing	705	-132	-15.8%	-22.5%
Textile Mills	408	-73	-15.1%	-25.6%
Leather and Allied Product Manufacturing	58	-6	-8.9%	-17.2%
Total Manufacturing	227,359	-56,302	-19.8%	-16.4%
Total All Industries	1,704,663	-157,003	-8.4%	-6.4%

Source: Quarterly Census of Employment and Wages (QCEW)

Fabricated Metal Products was the largest manufacturing industry in Northeast Ohio in 2010. This industry employed just over 48,000 workers and accounted for approximately one-fifth (21.1%) of all manufacturing employment in Northeast Ohio. Two industries (*Machinery* and *Transportation Equipment*) each employed over 20,000 workers while three more industries (*Plastics and Rubber Products*; *Primary Metals*; and *Chemicals*) each employed just under 20,000 workers. Together, these six industries accounted for two-thirds, or 66.4%, of total manufacturing employment in Northeast Ohio.

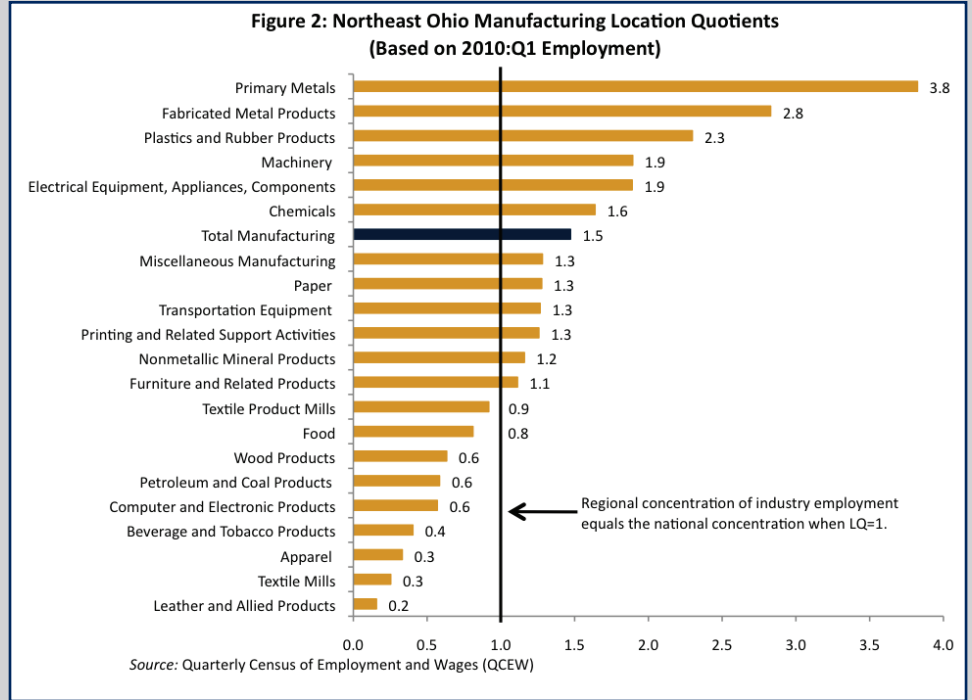
Manufacturing remains a critical component of the Northeast Ohio economy as it accounts for more than 227,000 jobs and 13.3% of total employment in the region.

Only one manufacturing industry in Northeast Ohio, *Food*, had a net increase in jobs between 2008 and 2010. This industry added 46 jobs, an increase that was substantially offset by the net loss of 56,348 jobs in the other 20 manufacturing industries. In addition, five industries in Northeast Ohio performed better than the United States by declining at a rate smaller than the national rate of employment loss. These five small industries were *Wood Product Manufacturing*; *Textile Product Manufacturing*; *Apparel Manufacturing*; *Textile Mills*; and *Leather and Allied Product Manufacturing*. For the remaining 15 manufacturing industries, the percentage losses in employment experienced by each industry were larger in Northeast Ohio than at the national level.

Some of the decline in manufacturing employment resulted from structural changes in the economy that reflect a continued loss of manufacturing establishments. Overall, from 2000 to 2010, Northeast Ohio manufacturing establishments decreased 20.6%; United States manufacturing establishments decreased by only 15.4% over the same time period.

Location quotients for Northeast Ohio’s manufacturing industries are depicted in Figure 2. Location quotients (LQs) measure the concentration of a particular 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 than the national 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.

The manufacturing sector as a whole had an LQ of 1.5 in 2010, providing further evidence that manufacturing continues to play an important role in the Northeast Ohio economy as an exporting sector despite its employment losses. Twelve of the 21 manufacturing industries had a location quotient greater than 1.0 in 2010, and several had LQs greater than the entire manufacturing sector. These industries included: *Primary Metals* (LQ=3.8); *Fabricated Metal Products* (LQ=2.8); *Plastics and Rubber Products* (LQ=2.3); *Machinery* (LQ=1.9); *Electrical Equipment, Appliances, Components* (LQ=1.9); and *Chemicals* (LQ=1.6).

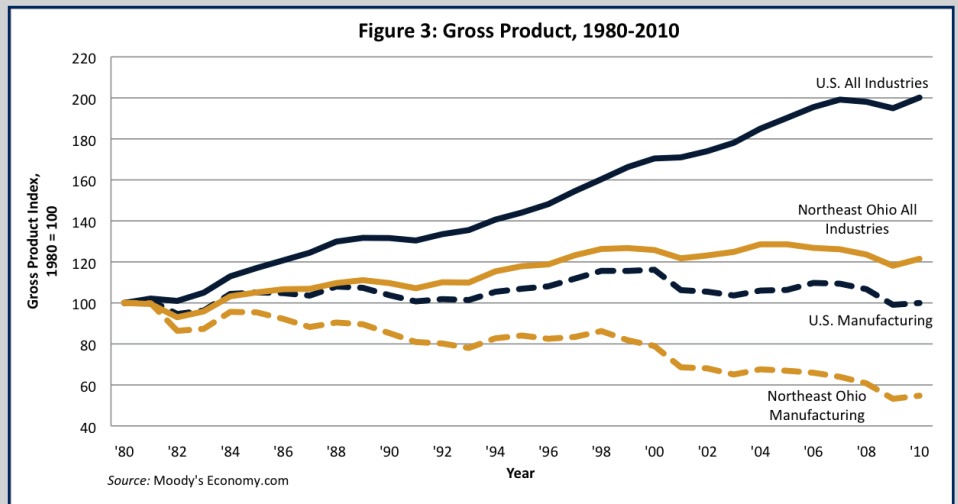


For the most part, manufacturing sector LQs have remained fairly consistent since 2008. The LQs of three industries (*Primary Metals*, *Transportation Equipment*, and *Beverage and Tobacco Products*), however, decreased from 2008 to 2010. This decrease can be attributed to Northeast Ohio manufacturing employment declining by a higher percentage than United States manufacturing employment in each of these three industries between 2008 and 2010.

The manufacturing sector represented the largest sector in the Northeast Ohio economy in 2010 in terms of gross product.

Gross Regional Product

The U.S. economy doubled its gross domestic product (value added output) from 1980 to 2010 while the gross regional product of the Northeast Ohio economy increased by 21.5%. During the same period of time, the gross regional product of Northeast Ohio’s manufacturing sector declined along with its employment, although at a slower rate (Figure 3). After adjusting for inflation, Northeast Ohio manufacturing output fell 45.2% between 1980 and 2010 while manufacturing employment decreased 55.8% over the same time period. The fact that the Northeast Ohio economy grew from 1980 to 2010 despite the decline in manufacturing output means that other, non-manufacturing sectors performed well and helped compensate for the loss of manufacturing output.



The output of the Northeast Ohio manufacturing sector has yet to rebound to its 1980 level of output. At the same time, the output of the U.S. manufacturing sector in 2010, despite its ebbs and flows between 1980 and 2010, broke nearly even with the sector’s level of output in 1980. This yielded a flat net growth in national manufacturing output over the 30-year time period.

Analyzing the data of the past three years, 2008 to 2010, shows that, although both Northeast Ohio and the United States sustained losses in manufacturing output, Northeast Ohio's manufacturing output (-9.9%) decreased at a greater rate than both the state of Ohio (-8.1%) and the United States (-6.3%) (Table 2). Other sectors in the economy grew at much higher rates. As a result, total output in Northeast Ohio and the state of Ohio decreased only 1.7% and 0.7%, respectively, between 2008 and 2010 while total output in the United States actually grew 1%.

Gross regional product per employee serves as a proxy for productivity. Manufacturing productivity increased between 2008 and 2010, resulting in a leaner sector because the rate of decline of Northeast Ohio's manufacturing output (-9.9%) was smaller than the decline in manufacturing employment (-19.8%).

In the case of Northeast Ohio's manufacturing sector, productivity increased 8.3% between 2008 and 2010, which was slightly lower than the productivity increase (9.0%) experienced by the national manufacturing sector.

Northeast Ohio had a \$170 billion economy in 2010, 17.2% (\$29.4 billion) of which resulted from manufacturing. This means that manufacturing remains a major contributor to Northeast Ohio's gross regional product, despite a greater loss in output relative to the state of Ohio and the United States. In fact, the manufacturing sector represented the largest sector in the Northeast Ohio economy in 2010 in terms of gross product.

Eight industries individually generated more than \$1 billion in output in Northeast Ohio in 2010. One of the eight industries (*Food*) increased output at a faster rate than the United States. Another industry (*Transportation Equipment*) increased output as well, but at a slower rate than the United States. Two of the eight industries (*Chemicals* and *Electrical Equipment, Appliances, Components*) had losses in output, but at a slower rate than the United States. The final four industries (*Fabricated Metal Products*; *Primary Metals*; *Machinery*; and *Plastics and Rubber Products*) sustained losses in output at a faster rate than the United States. These latter four industries combined accounted for 76.1% of the total loss in regional output between 2008 and 2010.

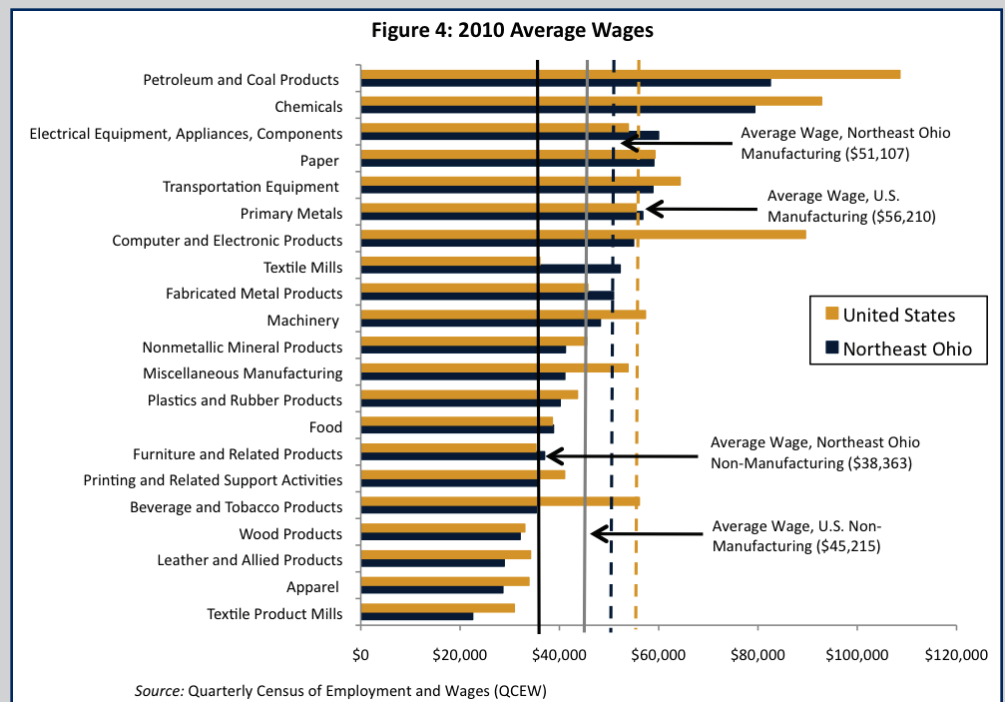
Average Wages

On average, the manufacturing sector pays higher wages than other sectors of the economy. In 2010, the average wage of Northeast Ohio's manufacturing sector was \$51,107, which was 43.6% higher than the average wage for all the non-manufacturing industries combined (\$38,363). This trend was consistent with the national industrial sectors as well; the average wage for U.S. manufacturing was \$56,210, which greatly exceeded the average wage for all non-manufacturing industries (\$45,215).

The average manufacturing wage in Northeast Ohio declined 2.8% between 2008 and 2010, which

Industry	Northeast Ohio		Ohio	U.S.	
	2010 Gross Product (in thousands \$)	Difference (2008-2010) (in thousands \$)	Percent Change (2008-2010)		
Fabricated Metal Products	5,739,501	-911,276	-13.7%	-11.1%	-9.3%
Transportation Equipment	4,534,273	29,100	0.6%	2.9%	5.9%
Chemicals	3,613,288	-135,886	-3.6%	-6.6%	-6.8%
Primary Metals	2,790,425	-848,929	-23.3%	-21.8%	-9.8%
Machinery	2,406,359	-262,664	-9.8%	-10.5%	-4.5%
Electrical Equipment, Appliances, Components	2,274,836	-202,066	-8.2%	-8.1%	-8.6%
Food	1,845,285	44,606	2.5%	3.8%	1.2%
Plastics and Rubber Products	1,342,364	-427,649	-24.2%	-24.4%	-19.3%
Miscellaneous Manufacturing	920,777	-60,917	-6.2%	-3.9%	-2.2%
Computer and Electronic Products	835,295	-5,827	-0.7%	-1.6%	-6.8%
Paper	671,767	-76,287	-10.2%	-11.0%	-12.5%
Nonmetallic Mineral Products	592,931	-9,297	-1.5%	-9.1%	-10.7%
Printing and Related Support Activities	539,676	-247,906	-31.5%	-31.4%	-20.7%
Petroleum and Coal Products	520,526	102,400	24.5%	4.7%	-1.4%
Furniture and Related Products	299,953	-133,869	-30.9%	-31.5%	-22.2%
Beverage and Tobacco Products	180,307	29,648	19.7%	12.5%	3.6%
Wood Products	169,005	-70,632	-29.5%	-25.0%	-32.3%
Textile Product Mills	43,912	-15,176	-25.7%	-15.6%	-13.2%
Apparel	27,533	-3,682	-11.8%	-10.5%	-21.2%
Textile Mills	25,210	-11,853	-32.0%	-22.6%	-22.4%
Leather and Allied Products	4,848	-1,839	-27.5%	-15.7%	26.3%
Total Manufacturing	29,378,072	-3,219,999	-9.9%	-8.1%	-6.3%
Total All Industries	170,370,389	-2,923,196	-1.7%	-0.7%	1.0%

Notes: 2008 values adjusted to 2010 dollars for inflation.
Source: Moody's Economy.com



represents a faster rate of decline than the average wage of the U.S. manufacturing sector (-0.9%) over the same time period. In addition, Northeast Ohio's manufacturing average wage declined at a rate nearly identical to the average wage of its non-manufacturing industries (-2.7%).

The highest paying manufacturing industry in Northeast Ohio in 2010 was *Petroleum and Coal Products* (\$82,487), followed by *Chemicals* (\$79,347); *Electrical Equipment, Appliances, Components* (\$59,964); and *Paper* (\$59,010) (Figure 4). *Petroleum and Coal Products*; *Chemicals*; and *Paper* were also three of the top four highest paying industries nationally.

Sub-Regional Manufacturing Employment

In the state of Ohio, 12.7% of total employment is manufacturing-based. The share of manufacturing employment to total employment in 13 of the 16 Northeast Ohio counties is larger than Ohio's share, which provides evidence that Northeast Ohio is more dependent than the state of Ohio on the manufacturing sector for employment. The share of manufacturing employment to total employment varies widely by county; manufacturing represents less than one-tenth of employment in Mahoning County (8.5%) and Cuyahoga County (9.9%), but nearly one quarter of total employment in Geauga County (23.0%) and Wayne County (25.2%).

All Northeast Ohio metro areas and counties experienced a decline in manufacturing employment between 2008 and 2010 (Table 3). The Northeast Ohio region as a whole lost 19.8%, or nearly one-fifth of its manufacturing jobs, between 2008 and 2010. The greatest rates of loss were sustained by Richland County, which lost 29.6% of its manufacturing employment, and Trumbull County, which lost 29.5% of its manufacturing jobs. As a result, the Mansfield and Youngstown-Warren-Boardman MSAs were the two metropolitan regions with the largest rates of manufacturing employment loss (29.6% and 26.5%, respectively). In terms of number of manufacturing jobs lost, the counties that lost the most jobs were Cuyahoga (-14,332 jobs), Summit (-6,865 jobs), and Stark (-6,173 jobs); these counties house three of the four core cities of Northeast Ohio: Cleveland, Akron, and Canton.

In 2010, the Cleveland-Elyria-Mentor MSA captured just over half (50.5%) of the total manufacturing employment in Northeast Ohio. The Akron MSA accounted for 16.2% of the total manufacturing employment; the Canton-Massillon MSA, 10.5%; the Youngstown-Warren-Boardman MSA, 8.3%; the Mansfield MSA, 3.7%; and the non-metro counties combined accounted for the remaining 10.8%.

Table 3: Manufacturing Employment by County, 2008:Q1 to 2010:Q1

	Manufacturing Employment			
	2010	Difference (2008-2010)	Percent Change (2008-2010)	2010 Share of Total Employment
Ohio	607,645	-144,189	-19.2%	12.7%
Northeast Ohio	227,359	-56,302	-19.8%	13.3%
Akron MSA	36,910	-8,926	-19.5%	12.5%
Portage	9,194	-2,061	-18.3%	19.2%
Summit	27,717	-6,865	-19.9%	11.2%
Canton-Massillon MSA	23,754	-6,496	-21.5%	15.8%
Carroll	1,164	-323	-21.7%	22.2%
Stark	22,590	-6,173	-21.5%	15.6%
Cleveland-Elyria-Mentor MSA	114,845	-25,222	-18.0%	12.3%
Cuyahoga	66,353	-14,332	-17.8%	9.9%
Geauga	6,939	-2,365	-25.4%	23.0%
Lake	18,196	-3,428	-15.9%	20.3%
Lorain	15,362	-3,349	-17.9%	17.2%
Medina	7,995	-1,749	-17.9%	14.8%
Mansfield MSA	8,487	-3,568	-29.6%	17.3%
Richland	8,487	-3,568	-29.6%	17.3%
Youngstown-Warren-Boardman MSA	18,837	-6,807	-26.5%	11.7%
Mahoning	7,886	-2,217	-21.9%	8.5%
Trumbull	10,952	-4,590	-29.5%	16.3%
Non-Metro Counties	24,525	-5,283	-17.7%	21.6%
Ashland	2,968	-635	-17.6%	17.9%
Ashtabula	6,073	-1,703	-21.9%	21.5%
Columbiana	5,176	-1,432	-21.7%	18.6%
Wayne	10,308	-1,513	-12.8%	25.2%

Source: Quarterly Census of Employment and Wages (QCEW)

Within Northeast Ohio, the share of manufacturing employment to total employment varies widely by county; manufacturing represents less than one-tenth of employment in Mahoning County and Cuyahoga County, but nearly one quarter of total employment in Geauga County and Wayne County.



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This brief is sponsored by the Manufacturing Advocacy and Growth Network (MAGNET) with additional financial support from the U.S. Economic Development Administration. MAGNET supports and champions manufacturing in northern Ohio and is a voice for the region’s manufacturers. Since its creation in 1984, MAGNET has assisted thousands of manufacturers through its business consulting, product development, and business incubation programs. Over the past five years, MAGNET has generated over \$892 million in economic impact for the region through increased sales, enhanced productivity, and investment in plants and equipment, resulting in the creation or retention of 6,038 jobs.

This brief 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) 687-3984.

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