U.S. Metro Economies

Including Metro 2020 Forecast of Energy Intensive Manufacturing
March 2014

Impact of the Manufacturing Renaissance from Energy Intensive Sectors

Prepared for:

The United States Conference of Mayors and the Council on Metro Economies and the New American City

Prepared by:

IHS GLOBAL INSIGHT

THE UNITED STATES CONFERENCE OF MAYORS

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METROPOLITAN ECONOMIES AND ENERGY INTENSIVE MANUFACTURING

Since the end of the recession, the nation's manufacturing sector has been a keystone of economic growth, especially in our metropolitan areas. Over the last three years, metro area manufacturing employment has expanded by an average annual rate of 1.7%. Energy intensive industry, in particular, has been a key component in manufacturing's expansion. Recently tapped unconventional shale plays (large subterranean oil and natural gas formations, often stretching across several states), with their accessible and relatively inexpensive oil and natural gas, have boosted growth in both the manufacturing sector and the national economy. The Bakken Play in North Dakota and the Marcellus Play in Pennsylvania are the two largest and most notable of these shale formations. In this report we will examine our intensive industries and their impact on the metropolitan areas of the United States.

In 2011 and 2012, demand from the burgeoning shale plays for new pipelines and mining equipment ignited the nation's steel, iron, fabricated metals, and machinery manufacturing industries. In US metro areas, these sectors saw real sales and employment jump by 17% and 9.7%, respectively, during those years. The profusion of available natural gas and oil resulted in a surge in plastic, rubber, resin and chemical manufacturing thanks to lower costs and increased refining volume; as a result these industries saw a combined employment increase of 2.6% across all metropolitan areas. From 2010 to 2012, energy intensive manufacturing sectors added over 196,000 jobs and increased real sales by $124 billion in the nation's metro areas. In 2012, metropolitan areas accounted for greater than 78% of the total employment and 82% of the real sales in energy intensive manufacturing industries. (See Figure 1 for a review of individual industries across all metros.)

FIGURE 1: 2012 ENERGY INTENSIVE MANUFACTURING INDUSTRIES
ALL METROS

Industry	Employment	Percent change 2010-2012	Real Sales (2010$, millions)	Percent change 2010-2012
Fabricated metals	1,140,601	9.8	283,193	16.2
Machinery	848,695	9.5	276,660	19.4
Plastics and rubber	491,345	2.8	158,617	10.0
Nonmetallic minerals	273,825	(1.9)	70,768	1.9
Basic organic chemicals	110,029	(0.4)	183,649	(5.3)
Petroleum & coal	98,531	0.1	577,198	5.5
Iron and steel mills	89,305	10.7	69,219	11.3
Resin and synthetics	75,272	5.2	79,335	(1.7)
Agricultural chemicals	25,300	5.3	20,457	(7.1)

These energy intensive sectors will continue to boost the US economy for years to come as exploration and extraction fuel the iron, steel, machinery and fabricated metals industries, and cheaper natural gas stimulates demand from organic chemicals, resins, and plastics. Cheaper natural gas will also benefit the housing market recovery as it lowers the costs for construction and building materials such as flat glass and cement. Domestic demand as well as that from growing global economies, combined with a regained competitive advantage will lead to extra capacity, higher output, job growth, decreased unemployment for the US, and an improved trade balance. Our nation's metropolitan areas contain the population, infrastructure and high productivity clusters that will make them attractive if not necessary destinations for these expanding industries. As a result, through 2020, 72% of the annual employment gains in these sectors will be in metropolitan areas.

INDUSTRIAL ANALYSIS AND OUTLOOK

BASIC ORGANIC CHEMICALS

In the coming years, energy-related chemicals manufacturing in the US will gain a significant competitive advantage in world markets via the abundance of cheap natural gas. Natural gas plays a key role in manufacturing both as fuel for plants and feedstock in the production of petrochemical products; it is also heavily used in the agriculture, pharmaceutical, transportation and construction industries. That natural gas is now available at a fraction of the price of its oil equivalent presents enormous market opportunities for the US. We expect that the United States will regain its status as a major chemicals producer and add capacity in the coming years. Metropolitan economies, with their skilled populations and existing infrastructure, are in a prime position to host new plants and to benefit from the jobs and income that follow.

FIGURE 2: BASIC CHEMICALS MANUFACTURING EMPLOYMENT IN THE 100 LARGEST METROS

	2012 Employment		Avg Annual % Change 2012-2020
Houston-Sugar Land-Baytown	20,225	Colorado Springs	18.9
Baton Rouge	5,331	Modesto	14.7
New York-Northern NJ-Long Island	4,935	Springfield	14.7
Philadelphia-Camden-Wilmington	2,689	Harrisburg-Carlisle	5.7
Chicago-Naperville-Joliet	2,668	El Paso	5.2

In 2012, the basic organic chemical manufacturing industry employed 143,000 people nationwide, of which 110,000 were in metropolitan areas, and more than 74,000 of those were in the 100 largest metros. Also as of 2012, the top 100 metropolitan areas were home to 52% of the jobs and 55% of the real gross sales of organic chemicals in the country. Houston dominates the basic organic chemicals industry, employing almost four times the amount of workers as New York, the number two city. In terms of future growth, Colorado Springs is expected to expand payrolls in this sector the fastest through 2020. Extra productivity may lead to a small amount of job cuts nationwide, however. (See Figure 2 for the largest and fastest growing basic chemicals metros and Appendix Table 1 for a detailed breakdown of employment and real sales across the 100 largest metros.)

IRON AND STEEL

The iron and steel industries have recently seen strong growth, though the long-term outlook is rather tepid. Nationwide, from 2010 to 2012, the sector added jobs and increased real sales at average annual rates of 5.1% and 5.3%, respectively. The flourishing oil and gas sectors, alongside the rebounding automotive, construction, machinery and appliance industries helped to drive demand for steel and iron after the recession. The energy sectors require iron and steel for the infrastructure of oil and gas extraction – i.e. machinery and pipelines. Recently, an alternative form of steel-making called direct reduced iron (DRI) has created increased demand for natural gas, a key component in creating DRI.

This new method is gaining traction and could eventually comprise 10% of the steel and iron mill industry. Nucor, one of the largest US steel makers, has opened a DRI facility in Louisiana, with possibly one or two more follow. We do not anticipate, however, a transformation in the industry. After bouncing back from a long-term decline in 2011 and 2012, steel and iron markets were down in 2013, as purchasing slowed due to both uncertainties regarding demand and a high global supply. This overabundance will keep prices relatively flat in the future, while rising input costs will cut into margins and force payrolls to remain relatively flat as well, despite eventually increasing demand.

The top 100 metros account for 65% of the jobs and 66% of the real gross sales in iron and steel manufacturing. As of 2012, Chicago ranked first in employment with more than twice the amount of the number two city, Pittsburgh. Through 2020, the fastest growth in these industries will be in Miami (25.1%) and Wichita (20.7%). (See Figure 3 for the largest and fastest growing steel and iron metros and appendix table 2 for a detailed breakdown of employment and real sales across the 100 largest metros.) Despite a strong rebound from the recession, IHS forecasts that without deep structural reforms or significant voluntary output cuts, these industries will not be sustainable in the long term. As a result, the forecast for iron and steel is lukewarm. From 2012-2020 employment in these sectors is expected to increase by just 0.7% in all metro areas and nationwide.

FIGURE 3: IRON AND STEEL MANUFACTURING EMPLOYMENT IN THE 100 LARGEST METROS

	2012 Employment		Average Annual % Change 2012-2020
Chicago-Naperville-Joliet	18,911	Miami-Fort Lauderdale-Pompano Beach	25.1
Pittsburgh	8,145	Wichita	20.7
Detroit-Warren-Livonia	4,023	Bakersfield-Delano	18.9
Birmingham-Hoover	3,553	Kansas City	17.0
St. Louis	2,653	Modesto	17.0

FABRICATED METALS

Naturally, the outlook of fabricated metals is closely tied to that of steel and iron. Since they are also critical components in the machinery, construction, energy and transportation equipment industries, they therefore will benefit from expansion and suffer from contraction in those sectors as well. The sector has recovered well from the recent recession, but in the long term is susceptible to the potential perils of the steel industry. From 2010 to 2012, the rebounding national economy drove increased capacity, consumer demand, and capital spending in the fabricated metals industry. Employment and real sales grew by average annual rates of 4.8% and 7.8%, respectively, in metropolitan economies. However, like iron and steel, growth in the fabricated metals industry slowed in 2013, as the sectors they supply faced global economic uncertainty.

Chicago and Los Angeles have the largest presence in this industry, employing more than 64,000 and 61,000 people, respectively. We forecast that the California cities of San Jose, Modesto and Fresno will be the fastest growers through 2020. (For more of the largest and fastest growing metropolitan areas in fabricated metals, please see figure 4, and for a detailed breakdown of the fabricated metals industry in US metros see appendix table 3.)

FIGURE 4: FABRICATED METALS MANUFACTURING EMPLOYMENT
100 LARGEST METROS

	2012 Employment		Average Annual Percent Change 2012-2020
Chicago-Naperville-Joliet	64,536	San Jose-Sunnyvale-Santa Clara	4.3
Los Angeles-Long Beach-Santa Ana	61,673	Modesto	4.2
Houston-Sugar Land-Baytown	50,793	Colorado Springs	4.2
Detroit-Warren-Livonia	34,598	Fresno	4.0
New York-Northern New Jersey-Long Island	34,465	Louisville-Jefferson County	3.7

MACHINERY

The machinery industry, on the other hand, roared back from the recession like a lion and will be a stalwart of the manufacturing sector in the long-term. Machinery employment and real sales surged by a respective 4.7% and 9.3% annually from 2010-12 in all metros, and 5.2% and 9.2% nationwide. Concerns about the US and global economies, however, and dealing with the deficit, tax policy, healthcare, and the regulatory climate stifled demand in 2013, but the recent budget agreement will likely remove some of the concern corporate managers have about their operating environment. US and global economic growth is set to improve in 2014 and accelerate in 2015, and with it the machinery industry – as capital spending programs ramp up.

In the short term, farm, construction, industrial, lawn and garden, HVAC and refrigeration, and metalworking will be the most productive areas of machinery manufacturing, as farm incomes will remain lofty, new home construction and logging activity are set to climb, automotive production and investment will expand, and capital spending will increase. The energy sector also plays an important role in the machinery industry. Relatively high energy prices will promote additional exploration, investment and development and support mining, oil, gas, and field machinery as well as construction equipment. Average annual machinery employment and real sales growth in the 100 largest metros and the US are expected to be around 1% and 3.7%, respectively through 2020. Roughly 55% of total machinery employment and 54% of the real sales are located in the 100 largest metros, with Houston and Chicago leading the way and Modesto and Honolulu expected to grow the fastest through 2020. (For more of the fastest growing metros in Machinery please see Figure 5. See Appendix Table 4 for a detailed look at the industry across the 100 largest metros.)

FIGURE 5: MACHINERY MANUFACTURING EMPLOYMENT
100 LARGEST METROS

	2012 Employment		Average Annual Percent Change 2012-2020
Houston-Sugar Land-Baytown	53,377	Modesto	5.2
Chicago-Naperville-Joliet	38,649	Honolulu	4.0
Detroit-Warren-Livonia	32,321	Greensboro-High Point	3.6
Los Angeles-Long Beach-Santa Ana	25,538	Winston-Salem	3.5
Milwaukee-Waukesha-West Allis	20,744	Chattanooga	3.5

NON-METALLIC MINERALS

Non-metallic minerals closely follow the path of real estate and construction industry growth and therefore have been slow to recover from the recession. However, the housing market looks to turn the corner in the near future, and the long-term outlook for non-metallic minerals remains steady. Spare capacity, although gradually falling, remains high and the Federal Reserve Board estimates that capacity utilization within the non-metallic mineral products industry currently stands just below 61%. As a result, producers will likely draw down inventories in the near term, which will in turn tighten supplies and support higher prices.

Currently the 100 largest metropolitan areas comprise more than half of the payroll and real sales in non-metallic minerals, with Chicago and Dallas having the largest presence in the industry. In the short term, 2014 is expected to be strong. The real estate and construction markets will make significant strides forward, increasing the demand for cement, concrete, flat glass and other building materials. Through 2020, we anticipate employment and real prices to increase by 1.2% and 4.9%, respectively, in the top 100 metros, with El Paso and Winston-Salem seeing the fastest payroll growth. (For more of the fastest growing metros in this industry please see Figure 6 and for a full detail of non-metallic minerals across the 100 largest metros see Appendix Table 5.)

FIGURE 6: NON-METALLIC MINERALS MANUFACTURING EMPLOYMENT
100 LARGEST METROS

	2012 Employment		Average Annual Percent Change 2012-2020
Chicago-Naperville-Joliet	8,816	El Paso	5.3
Dallas-Fort Worth-Arlington	7,607	Winston-Salem	4.9
New York-Northern New Jersey-Long Island	7,400	Baton Rouge	4.5
Los Angeles-Long Beach-Santa Ana	7,013	Springfield	4.4
Atlanta-Sandy Springs-Marietta	6,491	Colorado Springs	4.4

The evolving energy landscape plays a significant role in non-metallic minerals, as the cement and flat glass industries are both highly energy-intensive industries. In cement, purchased fuels and electricity account for 46% of the total cost of materials used in the manufacturing process, and between 25-30% of the total cost of production. Despite being a highly energy intensive industry, low natural gas prices will have a fairly limited impact on cement production in the coming years for a couple of reasons. First, the cement industry taps a diverse array of energy resources and including industrial waste and tires. In many cases plants are paid to incorporate these fuels into their production process. Second, it is costly to convert to gas kilns. The combustion of natural gas creates far more gas molecules than coal when trying to achieve the same temperature levels. Since all of the raw materials and combustion gases must be contained within the kiln, relying primarily on natural gas as a kiln fuel requires larger kilns to produce the same tonnage of clinker. The price of a new kiln is a large share of the cost of a new plant – upwards of $150 million – and therefore the energy savings would have to be significant to compel cement manufacturers to absorb these conversion costs. In the flat glass industry, however, furnaces run continuously for years on end at incredibly high temperatures – roughly 2,700°F – and natural gas is a critical factor. Fuel and energy costs combined account for around 26% of the total cost of materials consumed by the glass making industry and majority of flat glass facilities are already converted to operate on natural gas. Gaining a competitive edge on pricing relative to imports through lower natural gas prices will hopefully lead to an uptick in US based flat glass production, although a lower energy bill alone will not be enough to incentivize new plant construction. Overall, non-metallic minerals will be a source of economic growth for our nation’s metros, with a small benefit coming from affordable energy resources, such as natural gas.

RESINS AND SYNTHETIC MATERIALS

The resin and synthetic materials industry rode a wave of low cost natural gas and a recovering economy, and will steadily add jobs in the future. Resins act as intermediate goods in between basic organic chemicals and plastics, and therefore are influenced greatly by both industries. Their finished products are used in various mediums, and end products including packaging, construction, transportation, furniture and electronics.

From 2010 to 2012, the sector performed better in metros than nationwide, and outpaced overall macroeconomic growth; resins/synthetics employment expanded by an annual average rate of 2.6% in US metropolitan areas and 1.8% nationwide. In 2012, plastic resin shipments totaled $87.1 billion, a record high, and are expected to grow as the US economy continues to heal and new capacity comes on line in the coming years. A restored competiveness due to shale gas caused capital investments to boom in 2011 and 2012, reaching $4.4 billion in the latter year, and driving the US share of total global production up to 35%. This is an industry that relies on natural gas, oil and bio-fuels, and therefore benefitted greatly from the recent tapping of unconventional shale plays.

As of 2012, Houston and Chicago had the largest footprint in the resins industry, and IHS expects Ogden and Sarasota to grow the fastest though 2020. (Please see Figure 7 for more of the largest and fastest growing metros in the Industry.) Due to their position as an intermediate between organic chemicals and plastics, resins and synthetic materials have an optimistic outlook across metropolitan areas. Though 2020, resins and synthetic materials employment is expected to grow at an average annual rate of 1% nationwide and sales will expand at an average annual rate of 3.5%. In metropolitan economies over the same period payrolls will grow at 1.1% and sales by 3.6% annually. (For a detail of the resins and synthetic materials industry across the 100 largest metros please see Appendix Table 6.)

FIGURE 7: RESINS AND SYNTHETIC MATERIALS MANUFACTURING EMPLOYMENT 100 LARGEST METROS

	2012 Employment		Average Annual Percent Change 2012-2020
Houston-Sugar Land-Baytown	4,743	Ogden-Clearfield	17.0
Chicago-Naperville-Joliet	2,480	North Port-Bradenton-Sarasota	16.2
Philadelphia-Camden-Wilmington	2,389	Harrisburg-Carlisle	7.6
Columbia	2,062	Bridgeport-Stamford-Norwalk	7.1
New York-Northern New Jersey-Long Island	2,042	Scranton--Wilkes-Barre	6.9

PLASTICS AND RUBBER

Like other energy intensive sectors, plastics and rubbers have benefitted from the both the recovering economy and affordable natural gas. The industry saw payrolls expand by an average annual rate of 1.6% and real sales at 5.1%, nationwide in 2010-12; slightly ahead of metropolitan economies which saw plastics and rubber payrolls increase by 1.4%, and sales by 4.9% annually. In 2012, Chicago and Los Angeles had the largest payrolls in the industry, at just shy of 30,000, and L.A. just breaking 20,000.

The US may enjoy a long-term price advantage in plastics and rubber based on natural gas reserves keeping costs low and thereby sustaining a competitive advantage against foreign producers. In rubber, domestic economic recovery and growth in developing nations and emerging markets will support moderate demand, with the addition of potential upside opportunities in the rapidly expanding automobile markets of China, India and Latin America. Through 2020, IHS expects employment in this sector to average 1% growth and real sales to average 3.5% growth annually, with Chattanooga and Bakersfield topping the list of fastest growers – both over 8%.

FIGURE 8: PLASTICS AND RUBBER MANUFACTURING EMPLOYMENT
100 LARGEST METROS

	2012 Employment		Average Annual Percent Change 2012-2020
Chicago-Naperville-Joliet	29,468	Chattanooga	5.8
Los Angeles-Long Beach-Santa Ana	20,247	Bakersfield-Delano	5.1
New York-Northern New Jersey-Long Island	16,664	North Port-Bradenton-Sarasota	4.4
Dallas-Fort Worth-Arlington	13,731	Knoxville	4.2
Atlanta-Sandy Springs-Marietta	11,982	Modesto	4.0

Plastics also offer some benefits outside of employment growth, tax revenue, and investment because they are used to save energy and increase safety in the automobile industry. Plastic components can weigh 50% less than if made by other materials, reducing vehicle weights and fuel consumption, and fiber-reinforced plastics absorb more energy during crashes, creating a safer cabin for passengers. Plastics are also widely used to conserve energy in housing and real estate via vinyl windows, air sealing, air barriers, insulation, and cool roofing. (Please see Appendix Table 7 for more information on plastic and rubber.)

AGRICULTURAL CHEMICALS

Agricultural chemicals have been a mixed bag recently, but the prospect of cheap natural gas provides a sunnier long-term outlook. Despite declining sales, the agricultural chemicals industry saw payrolls expand nationwide by 2.2% annually from 2010-2012, and 2.6% across all metros. The 100 largest metropolitan areas accounted 47% of the industry's payrolls in 2012. The Louisiana metros of Baton Rouge and New Orleans had the largest payrolls in the industry, totaling almost 2,000 and 1,400, respectively.

Agricultural chemicals will benefit from the new unconventional shale plays, and this competitive advantage will lead to extra capacity and higher production. Lower costs will allow US farms to purchase more of their fertilizer and pesticides from domestic producers while offering an attractive price to foreign markets. This will help to increase real sales – particularly from the 100 largest metros which will see growth of 2% annually – and ultimately lead to increased exports, decreased imports and an improved trade balance. Overall, agricultural chemicals will be a source of economic growth for years to come, but despite a bright outlook, extra productivity in the industry may eventually lead to payroll cuts in the future. Across the 100 largest metros, Wichita will add jobs the fastest at 18.9% annually, followed by El Paso (12.1%) and Greenville (9.1%).

FIGURE 9: AGRICULTURAL CHEMICALS MANUFACTURING EMPLOYMENT IN THE 100 LARGEST METROS

	2012 Employment		Average Annual % Change 2012-2020
Baton Rouge	1,944	Wichita	18.9
New Orleans-Metairie-Kenner	1,391	El Paso	12.1
Tampa-St. Petersburg-Clearwater	1,233	Greenville-Mauldin-Easley	9.1
Houston-Sugar Land-Baytown	971	Raleigh-Cary	4.6
St. Louis	862	New Orleans-Metairie-Kenner	4.4

PETROLEUM AND COAL PRODUCTS

Petroleum and coal have struggled as of late due to slow economic growth and competition from affordable natural gas. While the short-term outlook has some bright spots, future prospects for these industries are fairly grim, as coal based electricity retirements and competition from other energy resources will cause the industries to shrink. In recent years access to abundant and cheap natural gas sharply drove down demand for coal. Natural gas prices are expected tick higher in 2014 and coal's demand should increase along with them, however, demand will not go high enough to fully recover as all of the boost will come from utility demand and the industrial sector's consumption will slide below 60 million short tons. IHS anticipates total US demand to reach 975 million short tons in 2014, which will be perhaps the last shining moment for the US coal industry, as the coal-based electricity generation capacity retirements start to bite by 2015.

The petroleum products industry has struggled as well, lagging the US economy despite developments in tight oil plays, as the oil industry faced setbacks attributed to the fallout from the Macondo Oil Spill. Offshore production in the Gulf of Mexico accounts for 29% of US oil production, and tighter regulations have posed obstacles to the development of offshore oil reserves. The higher cost of extraction, vulnerability to legislation, volatility in oil markets, and weakness in the economic recovery all pose risks to growth in the industry.

FIGURE 10: PETROLEUM AND COAL MANUFACTURING IN THE 100 LARGEST METROS

	2012 Employment		Average Annual % Change 2012-2020
Houston-Sugar Land-Baytown	10,229	Greensboro-High Point	-22.3
Los Angeles-Long Beach-Santa Ana	6,989	Fresno	-15.7
Chicago-Naperville-Joliet	5,166	San Jose-Sunnyvale-Santa Clara	-11.1
New Orleans-Metairie-Kenner	4,674	Baltimore-Towson	-8.4
San Francisco-Oakland-Fremont	4,484	Poughkeepsie-Newburgh-Middletown	-8.0

Currently, the 100 largest metropolitan areas account for roughly 62% of all employment and gross real sales in the petroleum and coal products industry. Houston once again finds itself atop the list of metros with the largest payrolls but will shed jobs in the future. The long-term outlook is pessimistic for the rest of the county as well, as through 2020 payrolls are expected to contract by 1.4% and sales will increase by just 0.6%, annually. The largest metropolitan areas will fare even worse as employment will fall by an average annual rate of 1.7%. (Refer to Figure 10 for a glance at the largest coal and natural gas metros as well as those that will decline the fastest. For a detailed breakdown of the 100 largest metros and the coal and petroleum products industry please see Appendix Table 9.)

CONCLUSION

Energy intensive manufacturing has played a key role in the recovery of our nation's metropolitan economies, and the recently new availability of inexpensive natural gas and unconventional oil plays will support long term economic growth in a variety of industries. Since 2010, the aforementioned industries have combined for 62% of the growth in metropolitan manufacturing employment and almost 6% of the total jobs recovered across all metros since the recession.

Expansion in these sectors have been driven by exploration and extraction of unconventional shale plays – it has fueled growth in the supporting industries of steel, iron, fabricated metals, machinery and through lower costs created a competitive advantage for plastics, resins, and organic chemicals. This competitive advantage, combined with additional exploration and global economic growth should lead to extra capacity, increased production and sales and overall job growth across the energy intensive industries in the coming years. Lower costs will make US produced goods more attractive to both domestic and foreign buyers and should act to improve the trade balance by decreasing imports and adding to exports. The nation's metropolitan areas offer skilled populations, advanced infrastructure and highly productive industry clusters, all of which make them attractive destinations for companies looking to expand. Through 2020, we anticipate energy intensive manufacturing employment to expand by more than 1% annually nationwide with 72% of those jobs coming to metropolitan areas.

Appendix Tables

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EMPLOYMENT AND REAL GROSS SALES OF KEY MANUFACTURING SECTORS

Table 1: Basic organic chemical manufacturing
Employment and real gross sales (2010$, millions)

	2012 employment rank	Employment 2012	Employment 2020	Employment average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales average annual percent change
	363 Metros	110,029	103,220	-0.8	183,649	233,301	3.0
	US	143,003	134,718	-0.7	228,658	291,309	3.1
1	Houston-Sugar Land-Baytown, TX	20,225	20,744	0.3	42,519.5	57,822.6	3.9
2	Baton Rouge, LA	5,331	4,856	-1.2	10,692.2	12,588.7	2.1
3	New York-Northern New Jersey-Long Island, NY-NJ-PA	4,935	4,568	-1.0	9,515.5	12,235.5	3.2
4	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2,689	2,302	-1.9	3,151.5	3,890.0	2.7
5	Chicago-Naperville-Joliet, IL-IN-WI	2,668	2,678	0.0	3,636.6	5,074.6	4.3
6	Cleveland-Elyria-Mentor, OH	2,306	2,134	-1.0	2,939.5	3,894.9	3.6
7	New Orleans-Metairie-Kenner, LA	2,145	1,890	-1.6	4,380.9	4,991.6	1.6
8	St. Louis, MO-IL	1,801	1,589	-1.6	2,377.4	2,802.6	2.1
9	Cincinnati-Middletown, OH-KY-IN	1,706	1,068	-5.7	2,108.5	1,614.8	-3.3
10	Buffalo-Niagara Falls, NY	1,555	1,449	-0.9	1,484.5	1,921.0	3.3
11	Albany-Schenectady-Troy, NY	1,482	1,882	3.0	2,948.2	4,793.3	6.3
12	Memphis, TN-MS-AR	1,398	1,104	-2.9	1,729.2	1,828.7	0.7
13	Columbia, SC	1,155	986	-2.0	1,005.7	1,303.5	3.3
14	Los Angeles-Long Beach-Santa Ana, CA	1,113	1,021	-1.1	1,657.2	2,263.5	4.0
15	Baltimore-Towson, MD	1,092	672	-5.9	1,221.8	1,159.0	-0.7
16	Milwaukee-Waukesha-West Allis, WI	1,088	949	-1.7	1,661.7	1,921.9	1.8
17	Indianapolis-Carmel, IN	993	986	-0.1	1,422.8	1,939.4	3.9
19	San Francisco-Oakland-Fremont, CA	986	768	-3.1	1,571.6	1,845.3	2.0
18	Richmond, VA	986	824	-2.2	1,715.4	1,865.6	1.1
20	Augusta-Richmond County, GA-SC	940	821	-1.7	1,399.0	1,631.1	1.9
21	Pittsburgh, PA	899	719	-2.8	1,089.2	1,145.6	0.6
22	Louisville-Jefferson County, KY-IN	806	824	0.3	877.8	1,378.2	5.8
23	Boston-Cambridge-Quincy, MA-NH	759	707	-0.9	1,551.8	2,124.0	4.0
24	Allentown-Bethlehem-Easton, PA-NJ	726	481	-5.0	1,345.0	1,216.3	-1.2
25	Dallas-Fort Worth-Arlington, TX	699	663	-0.7	1,042.3	1,321.5	3.0
26	Charleston-North Charleston-Summerville, SC	695	586	-2.1	1,173.9	1,347.5	1.7
27	Charlotte-Gastonia-Rock Hill, NC-SC	669	472	-4.3	770.0	761.7	-0.1
28	Bridgeport-Stamford-Norwalk, CT	612	481	-3.0	1,155.2	1,282.7	1.3
29	Greensboro-High Point, NC	585	710	2.5	817.6	1,304.7	6.0
30	Omaha-Council Bluffs, NE-IA	537	641	2.2	824.2	1,253.3	5.4
31	Atlanta-Sandy Springs-Marietta, GA	515	472	-1.1	566.5	718.3	3.0
32	Detroit-Warren-Livonia, MI	494	412	-2.2	690.8	773.5	1.4
33	Wichita, KS	480	514	0.9	539.7	749.5	4.2
34	Akron, OH	438	499	1.6	752.5	1,157.7	5.5
35	Raleigh-Cary, NC	407	463	1.6	769.3	1,142.4	5.1
36	San Diego-Carlsbad-San Marcos, CA	404	286	-4.2	960.0	844.7	-1.6
37	Riverside-San Bernardino-Ontario, CA	384	253	-5.1	574.5	606.5	0.7
38	Dayton, OH	382	488	3.1	605.7	1,077.3	7.5
39	Des Moines-West Des Moines, IA	378	475	2.9	652.7	1,021.7	5.8
40	Chattanooga, TN-GA	373	322	-1.8	478.5	532.6	1.3
41	Rochester, NY	348	372	0.8	678.8	939.6	4.1
42	Hartford-West Hartford-East Hartford, CT	322	398	2.7	388.0	663.1	6.9
43	New Haven-Milford, CT	312	340	1.1	638.1	970.3	5.4
44	Tulsa, OK	293	227	-3.1	392.9	367.9	-0.8
45	Lexington-Fayette, KY	274	308	1.5	494.1	697.7	4.4
46	Salt Lake City, UT	274	254	-0.9	170.3	224.2	3.5
47	Fresno, CA	270	204	-3.4	431.2	449.9	0.5
48	Portland-Vancouver-Hillsboro, OR-WA	267	237	-1.5	349.2	440.4	2.9
49	Austin-Round Rock-San Marcos, TX	234	290	2.7	377.3	721.9	8.4
50	Toledo, OH	232	208	-1.4	270.6	344.9	3.1
51	Jacksonville, FL	232	215	-0.9	413.0	513.8	2.8
52	Phoenix-Mesa-Glendale, AZ	227	171	-3.5	289.4	332.3	1.7
53	Kansas City, MO-KS	209	202	-0.4	186.1	246.2	3.6
54	Las Vegas-Paradise, NV	206	254	2.7	134.2	228.6	6.9
55	Sacramento--Arden-Arcade--Roseville, CA	186	127	-4.7	282.4	237.2	-2.2
56	Greenville-Mauldin-Easley, SC	170	129	-3.4	267.4	269.9	0.1
57	Minneapolis-St. Paul-Bloomington, MN-WI	165	134	-2.6	146.6	160.4	1.1
58	Providence-New Bedford-Fall River, RI-MA	163	108	-5.0	136.1	117.6	-1.8
59	Nashville-Davidson--Murfreesboro--Franklin, TN	157	132	-2.1	109.1	133.3	2.5
60	Poughkeepsie-Newburgh-Middletown, NY	149	105	-4.3	106.9	102.8	-0.5
61	San Jose-Sunnyvale-Santa Clara, CA	148	125	-2.1	291.3	341.6	2.0
62	Knoxville, TN	147	159	1.0	102.6	160.2	5.7
63	Columbus, OH	141	128	-1.2	227.0	306.1	3.8
64	Oklahoma City, OK	138	104	-3.5	165.2	184.4	1.4

		Employment			Real gross sales		
2012 employment rank		2012	2020	Average annual percent change	2012	2020	Average annual percent change
65	Stockton, CA	109	135	2.7	285.7	464.1	6.3
66	Little Rock-North Little Rock-Conway, AR	107	68	-5.5	54.6	48.8	-1.4
67	Syracuse, NY	96	77	-2.7	145.2	164.4	1.6
68	Jackson, MS	92	69	-3.5	49.1	52.8	0.9
69	Birmingham-Hoover, AL	91	82	-1.3	84.3	120.5	4.6
70	Scranton--Wilkes-Barre, PA	89	77	-1.8	99.6	116.2	2.0
71	San Antonio-New Braunfels, TX	79	78	-0.2	78.1	114.5	4.9
72	Seattle-Tacoma-Bellevue, WA	77	71	-1.0	124.4	155.7	2.8
73	Ogden-Clearfield, UT	73	69	-0.7	129.1	157.1	2.5
74	Tampa-St. Petersburg-Clearwater, FL	70	64	-1.1	46.4	62.4	3.8
75	Madison, WI	65	75	1.8	114.6	167.3	4.8
76	Miami-Fort Lauderdale-Pompano Beach, FL	57	61	0.9	84.9	136.9	6.2
77	Boise City-Nampa, ID	56	49	-1.7	34.1	44.3	3.3
78	El Paso, TX	54	81	5.2	120.0	232.1	8.6
79	Portland-South Portland-Biddeford, ME	46	48	0.5	30.8	47.5	5.6
80	Washington-Arlington-Alexandria, DC-VA-MD-WV	45	43	-0.6	45.5	76.1	6.6
81	Worcester, MA	43	42	-0.3	40.8	62.7	5.5
82	Durham-Chapel Hill, NC	43	39	-1.2	66.7	93.3	4.3
83	Oxnard-Thousand Oaks-Ventura, CA	42	40	-0.6	39.6	53.9	3.9
84	Bakersfield-Delano, CA	40	39	-0.3	103.7	131.1	3.0
85	Orlando-Kissimmee-Sanford, FL	37	40	1.0	33.1	61.3	8.0
86	Virginia Beach-Norfolk-Newport News, VA-NC	35	38	1.0	54.6	74.3	3.9
87	Albuquerque, NM	32	32	0.0	26.8	33.1	2.7
88	Denver-Aurora-Broomfield, CO	30	32	0.8	45.5	70.7	5.7
89	Grand Rapids-Wyoming, MI	28	27	-0.5	41.9	53.6	3.1
90	Youngstown-Warren-Boardman, OH-PA	14	16	1.7	11.9	22.9	8.5
91	Lancaster, PA	12	18	5.2	10.4	24.3	11.2
92	Harrisburg-Carlisle, PA	9	14	5.7	14.7	28.3	8.5
93	Tucson, AZ	7	10	4.6	16.7	30.6	7.9
94	Colorado Springs, CO	2	8	18.9	4.4	24.4	23.9
95	Modesto, CA	2	6	14.7	5.4	21.6	18.9
96	North Port-Bradenton-Sarasota, FL	2	3	5.2	1.3	2.9	10.4
97	Springfield, MA	1	3	14.7	1.0	4.0	19.7
98	Honolulu, HI	0	0	0.0	0.0	0.0	0.0
99	McAllen-Edinburg-Mission, TX	0	0	0.0	0.0	0.0	0.0
100	Winston-Salem, NC	0	0	0.0	0.0	0.0	0.0

Table 2: Iron and steel mills

Employment and real gross sales (2010$, millions)

		Employment			Real gross sales		
2012 employment rank		2012	2020	Average annual percent change	2012	2020	Average annual percent change
	363 Metros	89,305	94,252	0.7	69,219	90,759	3.4
	US	104,347	110,572	0.7	79,888	105,037	3.5
1	Chicago-Naperville-Joliet, IL-IN-WI	18,911	19,890	0.6	14,583.8	19,075.8	3.4
2	Pittsburgh, PA	8,145	7,592	-0.9	6,043.2	7,006.6	1.9
3	Detroit-Warren-Livonia, MI	4,023	4,116	0.3	3,316.7	4,071.5	2.6
4	Birmingham-Hoover, AL	3,553	3,906	1.2	2,324.6	3,230.1	4.2
5	St. Louis, MO-IL	2,653	4,181	5.9	2,260.4	4,410.7	8.7
6	Cleveland-Elyria-Mentor, OH	2,591	2,371	-1.1	1,950.5	2,217.8	1.6
7	Baltimore-Towson, MD	2,244	1,419	-5.6	2,087.3	1,662.3	-2.8
8	Youngstown-Warren-Boardman, OH-PA	2,009	2,132	0.7	1,500.0	1,977.1	3.5
9	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1,695	2,040	2.3	1,273.1	1,892.7	5.1
10	Cincinnati-Middletown, OH-KY-IN	1,511	1,506	0.0	1,138.5	1,410.4	2.7
11	Riverside-San Bernardino-Ontario, CA	1,350	1,189	-1.6	1,418.4	1,596.2	1.5
12	Tulsa, OK	1,151	1,322	1.7	790.2	1,161.8	4.9
13	Portland-Vancouver-Hillsboro, OR-WA	1,117	986	-1.5	947.4	1,056.1	1.4
14	Charleston-North Charleston-Summerville, SC	1,060	852	-2.7	755.2	768.6	0.2
15	Houston-Sugar Land-Baytown, TX	1,024	1,161	1.6	914.4	1,311.9	4.6
16	Harrisburg-Carlisle, PA	1,007	1,123	1.4	743.1	1,031.6	4.2
17	Milwaukee-Waukesha-West Allis, WI	969	1,097	1.6	685.7	952.2	4.2
18	Dallas-Fort Worth-Arlington, TX	874	954	1.1	781.3	1,078.9	4.1
19	San Antonio-New Braunfels, TX	790	1,046	3.6	706.7	1,185.0	6.7
20	San Francisco-Oakland-Fremont, CA	745	598	-2.7	780.9	800.4	0.3
21	Columbia, SC	701	789	1.5	496.9	709.4	4.6
22	Memphis, TN-MS-AR	612	707	1.8	438.0	625.9	4.6
23	Atlanta-Sandy Springs-Marietta, GA	553	594	0.9	396.7	530.2	3.7
24	New York-Northern New Jersey-Long Island, NY-NJ-PA	543	401	-3.7	528.0	480.8	-1.2
25	New Orleans-Metairie-Kenner, LA	541	591	1.1	465.8	623.3	3.7
26	Seattle-Tacoma-Bellevue, WA	529	324	-5.9	478.4	368.3	-3.2
27	Minneapolis-St. Paul-Bloomington, MN-WI	499	489	-0.3	385.2	455.6	2.1
28	Buffalo-Niagara Falls, NY	487	320	-5.1	387.6	310.3	-2.7
29	Charlotte-Gastonia-Rock Hill, NC-SC	446	334	-3.6	319.7	301.2	-0.7
30	Richmond, VA	431	407	-0.7	314.4	372.0	2.1
31	Indianapolis-Carmel, IN	417	406	-0.3	313.5	378.3	2.4
32	Syracuse, NY	411	581	4.4	327.3	566.1	7.1
33	Jacksonville, FL	396	307	-3.1	290.3	295.7	0.2
34	El Paso, TX	395	362	-1.1	352.5	408.4	1.9
35	Toledo, OH	356	468	3.5	264.9	433.6	6.4
36	Knoxville, TN	347	403	1.9	247.1	354.9	4.6
37	Los Angeles-Long Beach-Santa Ana, CA	318	296	-0.9	331.2	393.9	2.2
38	Jackson, MS	257	247	-0.5	150.9	185.5	2.6
39	New Haven-Milford, CT	228	179	-3.0	234.3	232.7	-0.1
40	Nashville-Davidson--Murfreesboro--Franklin, TN	193	224	1.9	136.8	196.4	4.6
41	McAllen-Edinburg-Mission, TX	175	221	3.0	155.5	248.7	6.0
42	Allentown-Bethlehem-Easton, PA-NJ	168	179	0.8	123.0	163.0	3.6
43	Winston-Salem, NC	168	171	0.2	121.1	155.4	3.2
44	Phoenix-Mesa-Glendale, AZ	131	136	0.5	121.5	156.6	3.2
45	Denver-Aurora-Broomfield, CO	118	94	-2.8	97.9	104.4	0.8
46	Boston-Cambridge-Quincy, MA-NH	115	77	-4.9	117.2	97.2	-2.3
47	Louisville-Jefferson County, KY-IN	95	213	10.6	70.9	197.9	13.7
48	Dayton, OH	89	27	-13.9	66.1	24.8	-11.5
49	Columbus, OH	78	62	-2.8	57.9	57.2	-0.2
50	Washington-Arlington-Alexandria, DC-VA-MD-WV	58	62	0.8	53.5	70.4	3.5
51	Virginia Beach-Norfolk-Newport News, VA-NC	49	52	0.7	35.3	46.9	3.6
52	Greenville-Mauldin-Easley, SC	29	35	2.4	20.2	31.0	5.5
53	Lancaster, PA	29	38	3.4	21.0	34.4	6.3
54	Tampa-St. Petersburg-Clearwater, FL	19	10	-7.7	13.7	9.4	-4.5
55	Poughkeepsie-Newburgh-Middletown, NY	12	18	5.2	9.4	17.2	7.9
56	Rochester, NY	12	13	1.0	9.4	12.4	3.6
57	Salt Lake City, UT	11	13	2.1	7.4	11.2	5.2
58	Worcester, MA	10	11	1.2	10.4	14.5	4.2
59	Des Moines-West Des Moines, IA	6	12	9.1	4.0	9.7	11.7
60	Hartford-West Hartford-East Hartford, CT	3	7	11.2	3.0	9.0	14.6
61	Orlando-Kissimmee-Sanford, FL	3	7	11.2	2.1	6.6	15.1
62	Sacramento--Arden-Arcade--Roseville, CA	3	10	16.2	3.0	13.1	20.0
63	Akron, OH	2	6	14.7	1.5	5.5	18.0
64	Bridgeport-Stamford-Norwalk, CT	2	6	14.7	2.0	7.7	18.2
65	Kansas City, MO-KS	2	7	17.0	1.4	6.1	20.2

	2012 employment rank	Employment 2012	2020	Average annual percent change	Real gross sales 2012	2020	Average annual percent change
66	Las Vegas-Paradise, NV	2	3	5.2	1.4	2.6	8.0
67	Little Rock-North Little Rock-Conway, AR	2	6	14.7	1.1	4.1	18.1
68	Modesto, CA	2	7	17.0	2.0	9.2	20.7
69	Oxnard-Thousand Oaks-Ventura, CA	2	6	14.7	2.0	7.8	18.4
70	San Diego-Carlsbad-San Marcos, CA	2	4	9.1	2.0	5.2	12.5
71	Wichita, KS	2	9	20.7	1.4	7.6	23.4
72	Albuquerque, NM	1	3	14.7	0.7	2.8	17.8
73	Bakersfield-Delano, CA	1	4	18.9	1.0	5.2	22.7
74	Miami-Fort Lauderdale-Pompano Beach, FL	1	6	25.1	0.7	5.6	29.6
75	Oklahoma City, OK	1	3	14.7	0.7	2.6	18.4
76	Albany-Schenectady-Troy, NY	0	0	0.0	0.0	0.0	0.0
77	Augusta-Richmond County, GA-SC	0	0	0.0	0.0	0.0	0.0
78	Austin-Round Rock-San Marcos, TX	0	3	0.0	0.0	3.3	0.0
79	Baton Rouge, LA	0	0	0.0	0.0	0.0	0.0
80	Boise City-Nampa, ID	0	0	0.0	0.0	0.0	0.0
81	Chattanooga, TN-GA	0	0	0.0	0.0	0.0	0.0
82	Colorado Springs, CO	0	0	0.0	0.0	0.0	0.0
83	Durham-Chapel Hill, NC	0	0	0.0	0.0	0.0	0.0
84	Fresno, CA	0	0	0.0	0.0	0.0	0.0
85	Grand Rapids-Wyoming, MI	0	3	0.0	0.0	2.9	0.0
86	Greensboro-High Point, NC	0	0	0.0	0.0	0.0	0.0
87	Honolulu, HI	0	0	0.0	0.0	0.0	0.0
88	Lexington-Fayette, KY	0	0	0.0	0.0	0.0	0.0
89	Madison, WI	0	0	0.0	0.0	0.0	0.0
90	North Port-Bradenton-Sarasota, FL	0	0	0.0	0.0	0.0	0.0
91	Ogden-Clearfield, UT	0	0	0.0	0.0	0.0	0.0
92	Omaha-Council Bluffs, NE-IA	0	0	0.0	0.0	0.0	0.0
93	Portland-South Portland-Biddeford, ME	0	0	0.0	0.0	0.0	0.0
94	Providence-New Bedford-Fall River, RI-MA	0	3	0.0	0.0	3.9	0.0
95	Raleigh-Cary, NC	0	0	0.0	0.0	0.0	0.0
96	San Jose-Sunnyvale-Santa Clara, CA	0	3	0.0	0.0	3.9	0.0
97	Scranton--Wilkes-Barre, PA	0	0	0.0	0.0	0.0	0.0
98	Springfield, MA	0	0	0.0	0.0	0.0	0.0
99	Stockton, CA	0	0	0.0	0.0	0.0	0.0
100	Tucson, AZ	0	0	0.0	0.0	0.0	0.0

Table 3: Fabricated metals

Employment and real gross sales (2010$, millions)

	2012 employment rank	Employment 2012	Employment 2020	Employment Average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales Average annual percent change
	363 Metros	1,140,601	1,318,832	1.8	283,193	353,507	2.8
	US	1,412,678	1,640,090	1.9	343,843	430,030	2.8
1	Chicago-Naperville-Joliet, IL-IN-WI	64,536	75,757	2.0	16,334.2	20,493.2	2.9
2	Los Angeles-Long Beach-Santa Ana, CA	61,673	66,739	1.0	19,492.9	23,266.3	2.2
3	Houston-Sugar Land-Baytown, TX	50,793	60,034	2.1	13,697.7	17,693.9	3.3
4	Detroit-Warren-Livonia, MI	34,598	39,414	1.6	8,570.4	10,120.5	2.1
5	New York-Northern New Jersey-Long Island, NY-NJ-PA	34,465	38,390	1.4	9,329.0	11,186.0	2.3
6	Dallas-Fort Worth-Arlington, TX	32,937	42,516	3.2	8,847.3	12,492.2	4.4
7	Cleveland-Elyria-Mentor, OH	28,446	31,937	1.5	6,453.3	7,782.5	2.4
8	Minneapolis-St. Paul-Bloomington, MN-WI	27,812	31,662	1.6	6,428.1	7,639.6	2.2
9	Milwaukee-Waukesha-West Allis, WI	24,669	28,221	1.7	5,250.5	6,365.9	2.4
10	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	20,245	23,087	1.7	4,717.2	5,789.5	2.6
11	Boston-Cambridge-Quincy, MA-NH	19,364	20,744	0.9	5,951.2	6,852.6	1.8
12	Pittsburgh, PA	14,872	16,602	1.4	3,308.3	3,970.1	2.3
13	Hartford-West Hartford-East Hartford, CT	14,803	18,495	2.8	4,573.9	6,242.4	4.0
14	Phoenix-Mesa-Glendale, AZ	14,653	18,130	2.7	4,083.6	5,419.4	3.6
15	San Jose-Sunnyvale-Santa Clara, CA	14,465	20,235	4.3	4,566.4	7,054.3	5.6
16	St. Louis, MO-IL	14,454	16,972	2.0	3,282.8	4,126.7	2.9
17	Cincinnati-Middletown, OH-KY-IN	14,176	16,808	2.2	3,178.6	4,036.0	3.0
18	Riverside-San Bernardino-Ontario, CA	12,294	14,313	1.9	3,863.4	4,964.3	3.2
19	Atlanta-Sandy Springs-Marietta, GA	12,220	13,775	1.5	2,633.8	3,191.2	2.4
20	Portland-Vancouver-Hillsboro, OR-WA	12,134	13,966	1.8	3,108.7	3,899.2	2.9
21	Seattle-Tacoma-Bellevue, WA	12,031	13,446	1.4	3,273.0	3,970.9	2.4
22	Tulsa, OK	11,826	14,083	2.2	2,441.0	3,215.6	3.5
23	Indianapolis-Carmel, IN	10,895	13,158	2.4	2,501.9	3,235.7	3.3
24	San Francisco-Oakland-Fremont, CA	10,373	11,672	1.5	3,254.2	4,041.1	2.7
25	Charlotte-Gastonia-Rock Hill, NC-SC	8,765	9,950	1.6	1,899.5	2,352.1	2.7
26	Rochester, NY	8,603	8,847	0.4	2,058.9	2,234.2	1.0
27	Columbus, OH	8,452	10,743	3.0	1,910.6	2,610.4	4.0
28	Knoxville, TN	8,357	8,713	0.5	1,794.3	1,999.6	1.4
29	Kansas City, MO-KS	8,203	8,604	0.6	1,744.1	1,935.4	1.3
30	Providence-New Bedford-Fall River, RI-MA	7,866	7,891	0.0	1,873.2	1,994.4	0.8
31	New Haven-Milford, CT	7,774	8,829	1.6	2,400.0	2,975.1	2.7
32	Louisville-Jefferson County, KY-IN	7,636	10,197	3.7	1,634.4	2,316.1	4.5
33	Dayton, OH	7,437	9,269	2.8	1,683.3	2,256.7	3.7
34	Tampa-St. Petersburg-Clearwater, FL	7,265	8,723	2.3	1,600.2	2,180.4	3.9
35	Springfield, MA	6,976	7,611	1.1	2,204.2	2,613.1	2.1
36	Miami-Fort Lauderdale-Pompano Beach, FL	6,842	7,001	0.3	1,504.0	1,745.3	1.9
37	Grand Rapids-Wyoming, MI	6,805	7,721	1.6	1,683.6	1,979.6	2.0
38	Akron, OH	6,667	7,866	2.1	1,508.0	1,912.6	3.0
39	San Diego-Carlsbad-San Marcos, CA	6,594	6,502	-0.2	2,071.9	2,252.1	1.0
40	Buffalo-Niagara Falls, NY	6,561	7,973	2.5	1,569.9	2,015.2	3.2
41	Denver-Aurora-Broomfield, CO	6,459	7,653	2.1	1,630.1	2,246.3	4.1
42	Toledo, OH	6,245	8,317	3.6	1,410.9	2,021.4	4.6
43	Birmingham-Hoover, AL	6,161	7,834	3.0	1,208.7	1,679.0	4.2
44	Worcester, MA	6,001	5,703	-0.6	1,898.4	1,960.6	0.4
45	Oklahoma City, OK	5,846	6,619	1.6	1,204.9	1,508.3	2.8
46	Nashville-Davidson--Murfreesboro--Franklin, TN	5,801	6,530	1.5	1,243.8	1,496.7	2.3
47	Youngstown-Warren-Boardman, OH-PA	5,314	6,121	1.8	1,192.0	1,475.0	2.7
48	Memphis, TN-MS-AR	4,921	5,621	1.7	1,011.7	1,246.3	2.6
49	Lancaster, PA	4,906	5,503	1.4	1,093.1	1,318.1	2.4
50	Little Rock-North Little Rock-Conway, AR	4,833	5,507	1.6	818.2	1,013.6	2.7
51	Baltimore-Towson, MD	4,781	4,238	-1.5	1,335.8	1,289.0	-0.4
52	Wichita, KS	4,297	5,654	3.5	910.5	1,240.3	3.9
53	Salt Lake City, UT	4,173	4,496	0.9	862.5	1,018.5	2.1
54	Scranton--Wilkes-Barre, PA	4,164	4,785	1.8	926.2	1,144.0	2.7
55	Austin-Round Rock-San Marcos, TX	4,143	5,365	3.3	1,106.4	1,567.4	4.4
56	Allentown-Bethlehem-Easton, PA-NJ	4,111	5,150	2.9	939.0	1,257.3	3.7
57	Virginia Beach-Norfolk-Newport News, VA-NC	3,852	5,064	3.5	844.4	1,202.5	4.5
58	Greenville-Mauldin-Easley, SC	3,763	3,718	-0.2	803.1	868.5	1.0
59	San Antonio-New Braunfels, TX	3,534	3,888	1.2	943.1	1,133.2	2.3
60	Chattanooga, TN-GA	3,416	4,003	2.0	733.5	920.2	2.9
61	Baton Rouge, LA	3,275	3,845	2.0	844.3	1,049.2	2.8
62	Columbia, SC	3,223	3,598	1.4	687.3	840.5	2.5
63	Raleigh-Cary, NC	3,204	4,164	3.3	697.0	988.0	4.5
64	Sacramento--Arden-Arcade--Roseville, CA	3,196	3,822	2.3	998.1	1,316.9	3.5
65	Greensboro-High Point, NC	3,122	3,555	1.6	676.9	840.2	2.7

2012 employment rank		Employment 2012	Employment 2020	Employment Average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales Average annual percent change
66	Bridgeport-Stamford-Norwalk, CT	3,060	3,136	0.3	941.5	1,052.9	1.4
67	Orlando-Kissimmee-Sanford, FL	3,029	3,105	0.3	665.1	773.7	1.9
68	Colorado Springs, CO	2,939	4,088	4.2	742.8	1,201.5	6.2
69	North Port-Bradenton-Sarasota, FL	2,887	2,977	0.4	634.6	742.0	2.0
70	Ogden-Clearfield, UT	2,846	3,311	1.9	586.6	748.3	3.1
71	Washington-Arlington-Alexandria, DC-VA-MD-WV	2,775	2,425	-1.7	703.6	657.5	-0.8
72	Lexington-Fayette, KY	2,699	2,940	1.1	559.5	638.9	1.7
73	Syracuse, NY	2,518	3,190	3.0	600.8	804.6	3.7
74	Jacksonville, FL	2,419	2,367	-0.3	530.9	588.7	1.3
75	Madison, WI	2,366	2,964	2.9	501.2	665.7	3.6
76	Oxnard-Thousand Oaks-Ventura, CA	2,361	2,555	1.0	737.7	881.1	2.2
77	Richmond, VA	2,331	2,441	0.6	509.2	577.4	1.6
78	Portland-South Portland-Biddeford, ME	2,238	2,702	2.4	459.9	584.2	3.0
79	Albany-Schenectady-Troy, NY	2,211	2,777	2.9	526.2	698.0	3.6
80	Modesto, CA	2,154	2,997	4.2	676.2	1,038.7	5.5
81	El Paso, TX	2,036	2,427	2.2	544.9	710.4	3.4
82	Harrisburg-Carlisle, PA	2,024	2,087	0.4	449.4	497.4	1.3
83	Las Vegas-Paradise, NV	1,957	2,422	2.7	412.4	544.5	3.5
84	Stockton, CA	1,953	2,341	2.3	612.7	810.3	3.6
85	Winston-Salem, NC	1,937	2,168	1.4	420.0	512.5	2.5
86	New Orleans-Metairie-Kenner, LA	1,831	1,894	0.4	471.1	515.7	1.1
87	Poughkeepsie-Newburgh-Middletown, NY	1,637	1,922	2.0	389.7	483.2	2.7
88	Tucson, AZ	1,631	1,846	1.6	450.6	547.2	2.5
89	Charleston-North Charleston-Summerville, SC	1,588	1,806	1.6	338.2	421.1	2.8
90	Des Moines-West Des Moines, IA	1,499	1,442	-0.5	308.2	307.4	0.0
91	Boise City-Nampa, ID	1,467	1,807	2.6	296.7	381.0	3.2
92	Omaha-Council Bluffs, NE-IA	1,456	1,597	1.2	265.0	307.4	1.9
93	Fresno, CA	1,430	1,959	4.0	447.3	677.8	5.3
94	Bakersfield-Delano, CA	1,388	1,681	2.4	433.9	579.8	3.7
95	Albuquerque, NM	1,247	1,378	1.3	281.3	331.8	2.1
96	Augusta-Richmond County, GA-SC	1,199	1,542	3.2	255.9	358.8	4.3
97	McAllen-Edinburg-Mission, TX	883	1,026	1.9	236.1	299.9	3.0
98	Jackson, MS	841	724	-1.9	148.8	141.7	-0.6
99	Durham-Chapel Hill, NC	830	846	0.2	179.7	199.6	1.3
100	Honolulu, HI	424	427	0.1	66.7	71.1	0.8

Table 4: Machinery manufacturing

Employment and real gross sales (2010$, millions)

		Employment			Real gross sales		
	2012 employment rank	2012	2020	Average annual percent change	2012	2020	Average annual percent change
	363 Metros	848,695	906,453	0.8	276,660	366,464	3.6
	US	1,100,016	1,190,445	1.0	359,089	481,241	3.7
1	Houston-Sugar Land-Baytown, TX	53,377	69,591	3.4	20,513.6	28,715.6	4.3
2	Chicago-Naperville-Joliet, IL-IN-WI	38,649	42,305	1.1	13,586.2	19,339.1	4.5
3	Detroit-Warren-Livonia, MI	32,321	34,890	1.0	7,975.9	10,481.2	3.5
4	Los Angeles-Long Beach-Santa Ana, CA	25,538	24,869	-0.3	8,927.8	11,340.2	3.0
5	Milwaukee-Waukesha-West Allis, WI	20,744	22,246	0.9	6,408.0	8,252.6	3.2
6	Minneapolis-St. Paul-Bloomington, MN-WI	18,925	19,495	0.4	5,896.2	7,527.8	3.1
7	Dallas-Fort Worth-Arlington, TX	18,696	17,624	-0.7	7,190.0	8,181.5	1.6
8	New York-Northern New Jersey-Long Island, NY-NJ-PA	17,513	18,413	0.6	5,169.8	6,661.4	3.2
9	Cleveland-Elyria-Mentor, OH	15,019	16,733	1.4	4,472.7	6,165.9	4.1
10	Boston-Cambridge-Quincy, MA-NH	13,552	13,464	-0.1	4,308.5	5,592.5	3.3
11	San Jose-Sunnyvale-Santa Clara, CA	13,177	14,328	1.1	3,850.9	5,383.1	4.3
12	St. Louis, MO-IL	13,151	13,392	0.2	3,548.0	4,397.1	2.7
13	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	12,468	12,627	0.2	3,791.8	4,839.9	3.1
14	Tulsa, OK	11,879	12,640	0.8	3,673.8	4,870.0	3.6
15	Rochester, NY	11,442	8,981	-3.0	1,978.6	1,940.8	-0.2
16	Pittsburgh, PA	10,865	10,669	-0.2	2,708.4	3,262.8	2.4
17	Cincinnati-Middletown, OH-KY-IN	10,447	11,757	1.5	2,770.1	4,026.9	4.8
18	Portland-Vancouver-Hillsboro, OR-WA	8,495	8,705	0.3	2,543.9	3,382.5	3.6
19	Oklahoma City, OK	8,389	9,617	1.7	2,589.8	3,807.7	4.9
20	Atlanta-Sandy Springs-Marietta, GA	8,183	9,342	1.7	2,460.2	3,409.8	4.2
21	Grand Rapids-Wyoming, MI	7,633	8,560	1.4	1,963.4	2,611.3	3.6
22	Durham-Chapel Hill, NC	7,366	6,754	-1.1	1,048.4	1,399.1	3.7
23	Seattle-Tacoma-Bellevue, WA	7,243	7,492	0.4	2,681.3	3,526.9	3.5
24	Greenville-Mauldin-Easley, SC	7,071	8,124	1.8	2,798.0	4,106.0	4.9
25	Hartford-West Hartford-East Hartford, CT	6,730	7,138	0.7	2,609.4	3,304.3	3.0
26	Dayton, OH	6,579	6,516	-0.1	1,754.8	2,245.6	3.1
27	Indianapolis-Carmel, IN	6,307	6,946	1.2	2,177.6	2,978.0	4.0
28	San Diego-Carlsbad-San Marcos, CA	6,156	6,628	0.9	2,913.3	3,991.3	4.0
29	Buffalo-Niagara Falls, NY	6,147	7,115	1.8	2,334.5	3,291.7	4.4
30	Charlotte-Gastonia-Rock Hill, NC-SC	6,129	6,852	1.4	1,956.5	2,852.4	4.8
31	San Francisco-Oakland-Fremont, CA	5,767	7,290	3.0	2,108.6	3,437.8	6.3
32	Louisville-Jefferson County, KY-IN	5,745	6,343	1.2	1,607.0	2,147.5	3.7
33	Akron, OH	5,607	6,137	1.1	1,427.6	1,986.6	4.2
34	Kansas City, MO-KS	5,285	5,694	0.9	1,507.2	1,952.1	3.3
35	Columbus, OH	5,191	5,886	1.6	1,442.4	1,997.8	4.2
36	Phoenix-Mesa-Glendale, AZ	5,162	6,094	2.1	1,835.9	2,796.1	5.4
37	Virginia Beach-Norfolk-Newport News, VA-NC	5,126	5,431	0.7	1,881.9	2,649.9	4.4
38	Miami-Fort Lauderdale-Pompano Beach, FL	4,882	5,046	0.4	1,510.4	2,043.4	3.9
39	Riverside-San Bernardino-Ontario, CA	4,724	5,455	1.8	1,738.5	2,540.6	4.9
40	Wichita, KS	4,706	5,206	1.3	1,546.0	2,052.0	3.6
41	Orlando-Kissimmee-Sanford, FL	4,579	5,642	2.6	1,820.6	2,967.4	6.3
42	Memphis, TN-MS-AR	4,073	3,944	-0.4	1,079.1	1,217.1	1.5
43	Austin-Round Rock-San Marcos, TX	3,996	3,086	-3.2	1,490.8	1,482.9	-0.1
44	Bridgeport-Stamford-Norwalk, CT	3,996	3,427	-1.9	1,246.1	1,597.9	3.2
45	Omaha-Council Bluffs, NE-IA	3,740	3,841	0.3	1,061.7	1,299.1	2.6
46	Tampa-St. Petersburg-Clearwater, FL	3,688	3,208	-1.7	1,010.7	1,224.0	2.4
47	Springfield, MA	3,599	3,849	0.8	1,048.0	1,356.1	3.3
48	Worcester, MA	3,597	3,373	-0.8	1,079.1	1,415.7	3.5
49	Lexington-Fayette, KY	3,501	2,754	-3.0	1,111.1	958.2	-1.8
50	Chattanooga, TN-GA	3,481	4,590	3.5	1,428.5	2,642.0	8.0
51	Madison, WI	3,468	3,962	1.7	995.9	1,486.1	5.1
52	Denver-Aurora-Broomfield, CO	3,428	3,781	1.2	1,263.6	1,936.6	5.5
53	Nashville-Davidson--Murfreesboro--Franklin, TN	3,352	3,414	0.2	749.2	984.9	3.5
54	Des Moines-West Des Moines, IA	3,348	3,553	0.7	1,073.0	1,285.4	2.3
55	Oxnard-Thousand Oaks-Ventura, CA	3,224	3,187	-0.1	1,099.8	1,392.0	3.0
56	Baltimore-Towson, MD	3,124	2,880	-1.0	1,316.4	1,538.2	2.0
57	Toledo, OH	3,048	3,980	3.4	744.8	1,220.9	6.4
58	Salt Lake City, UT	2,869	3,037	0.7	943.5	1,272.8	3.8
59	Richmond, VA	2,849	2,929	0.3	854.9	1,107.9	3.3
60	Raleigh-Cary, NC	2,764	3,057	1.3	887.8	1,185.0	3.7
61	Providence-New Bedford-Fall River, RI-MA	2,694	2,776	0.4	781.7	998.8	3.1
62	San Antonio-New Braunfels, TX	2,550	2,040	-2.8	990.2	1,005.3	0.2
63	Washington-Arlington-Alexandria, DC-VA-MD-WV	2,493	2,390	-0.5	744.6	870.1	2.0
64	Lancaster, PA	2,456	2,361	-0.5	794.9	942.9	2.2
65	New Haven-Milford, CT	2,410	2,941	2.5	892.3	1,372.5	5.5

2012 employment rank		Employment 2012	2020	Average annual percent change	Real gross sales 2012	2020	Average annual percent change
66	Albany-Schenectady-Troy, NY	2,375	2,325	-0.3	1,026.1	1,196.3	1.9
67	Sacramento--Arden-Arcade--Roseville, CA	2,278	2,626	1.8	892.0	1,344.7	5.3
68	Greensboro-High Point, NC	2,062	2,732	3.6	637.7	1,099.5	7.0
69	Birmingham-Hoover, AL	1,992	2,311	1.9	579.9	861.1	5.1
70	Youngstown-Warren-Boardman, OH-PA	1,982	2,011	0.2	520.1	670.0	3.2
71	Harrisburg-Carlisle, PA	1,971	2,154	1.1	502.2	741.7	5.0
72	Allentown-Bethlehem-Easton, PA-NJ	1,923	1,918	0.0	625.0	775.8	2.7
73	New Orleans-Metairie-Kenner, LA	1,913	1,656	-1.8	739.5	739.4	0.0
74	Winston-Salem, NC	1,898	2,504	3.5	778.7	1,450.5	8.1
75	Charleston-North Charleston-Summerville, SC	1,867	2,024	1.0	793.0	1,060.9	3.7
76	Little Rock-North Little Rock-Conway, AR	1,819	2,032	1.4	530.5	783.4	5.0
77	Columbia, SC	1,806	1,435	-2.8	468.0	399.4	-2.0
78	Ogden-Clearfield, UT	1,716	1,910	1.3	534.7	739.9	4.1
79	Jacksonville, FL	1,447	1,214	-2.2	465.8	521.8	1.4
80	Syracuse, NY	1,366	1,685	2.7	503.4	757.1	5.2
81	Fresno, CA	1,358	1,544	1.6	699.4	1,017.2	4.8
82	Knoxville, TN	1,355	1,489	1.2	427.2	585.0	4.0
83	Tucson, AZ	1,254	1,227	-0.3	398.6	465.7	2.0
84	North Port-Bradenton-Sarasota, FL	1,104	899	-2.5	321.2	336.5	0.6
85	Albuquerque, NM	1,040	955	-1.1	249.3	306.4	2.6
86	Scranton--Wilkes-Barre, PA	1,001	898	-1.3	267.7	292.1	1.1
87	Boise City-Nampa, ID	996	1,035	0.5	233.6	285.7	2.5
88	Jackson, MS	979	808	-2.4	287.9	300.9	0.6
89	Poughkeepsie-Newburgh-Middletown, NY	925	626	-4.8	209.8	171.6	-2.5
90	Portland-South Portland-Biddeford, ME	876	921	0.6	250.4	323.4	3.3
91	Augusta-Richmond County, GA-SC	862	843	-0.3	286.4	358.2	2.8
92	Baton Rouge, LA	793	763	-0.5	325.4	384.7	2.1
93	Modesto, CA	664	998	5.2	292.6	538.3	7.9
94	Bakersfield-Delano, CA	645	785	2.5	305.1	402.0	3.5
95	Las Vegas-Paradise, NV	495	556	1.5	159.2	234.1	4.9
96	Colorado Springs, CO	475	576	2.4	112.8	186.0	6.5
97	Stockton, CA	411	401	-0.3	197.0	253.6	3.2
98	El Paso, TX	316	226	-4.1	69.6	68.4	-0.2
99	McAllen-Edinburg-Mission, TX	50	51	0.2	15.3	19.7	3.2
100	Honolulu, HI	35	48	4.0	7.1	12.4	7.2

Table 5: Nonmetallic mineral manufacturing

Employment and real gross sales (2010$, millions)

		Employment			Real gross sales		
	2012 employment rank	2012	2020	Average annual percent change	2012	2020	Average annual percent change
	363 Metros	273,825	304,302	1.3	70,768	104,791	5.0
	US	364,414	410,752	1.5	92,233	138,065	5.2
1	Chicago-Naperville-Joliet, IL-IN-WI	8,816	10,518	2.2	2,327.8	3,641.9	5.8
2	Dallas-Fort Worth-Arlington, TX	7,607	8,883	2.0	2,152.7	3,370.2	5.8
3	New York-Northern New Jersey-Long Island, NY-NJ-PA	7,400	7,992	1.0	2,103.8	3,031.5	4.7
4	Los Angeles-Long Beach-Santa Ana, CA	7,013	7,839	1.4	2,335.3	3,533.8	5.3
5	Atlanta-Sandy Springs-Marietta, GA	6,491	7,492	1.8	1,471.7	2,239.9	5.4
6	Columbus, OH	5,809	7,060	2.5	1,386.3	2,221.9	6.1
7	Seattle-Tacoma-Bellevue, WA	5,381	5,068	-0.7	1,541.3	1,932.9	2.9
8	Houston-Sugar Land-Baytown, TX	5,354	5,724	0.8	1,517.3	2,173.8	4.6
9	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,123	5,781	1.5	1,346.4	2,016.4	5.2
10	Miami-Fort Lauderdale-Pompano Beach, FL	4,890	5,945	2.5	1,134.8	1,919.6	6.8
11	Riverside-San Bernardino-Ontario, CA	4,843	4,400	-1.2	1,609.3	1,976.5	2.6
12	Pittsburgh, PA	4,602	4,540	-0.2	1,077.2	1,401.2	3.3
13	Denver-Aurora-Broomfield, CO	4,150	5,216	2.9	1,104.3	1,979.3	7.6
14	Toledo, OH	3,449	3,631	0.6	822.7	1,140.8	4.2
15	Phoenix-Mesa-Glendale, AZ	3,277	2,722	-2.3	961.9	1,050.4	1.1
16	Austin-Round Rock-San Marcos, TX	3,184	4,242	3.7	901.5	1,610.9	7.5
17	Cincinnati-Middletown, OH-KY-IN	3,078	3,666	2.2	720.0	1,126.0	5.7
18	Portland-Vancouver-Hillsboro, OR-WA	2,937	3,025	0.4	795.9	1,094.5	4.1
19	Nashville-Davidson--Murfreesboro--Franklin, TN	2,750	2,425	-1.6	621.4	717.5	1.8
20	Boston-Cambridge-Quincy, MA-NH	2,612	3,185	2.5	823.1	1,336.4	6.2
21	Indianapolis-Carmel, IN	2,547	2,640	0.4	616.0	838.1	3.9
22	Kansas City, MO-KS	2,547	2,446	-0.5	568.8	701.1	2.7
23	St. Louis, MO-IL	2,435	2,274	-0.9	573.3	700.1	2.5
24	San Francisco-Oakland-Fremont, CA	2,403	2,304	-0.5	794.6	1,030.5	3.3
25	Washington-Arlington-Alexandria, DC-VA-MD-WV	2,356	2,198	-0.9	623.5	764.9	2.6
26	Worcester, MA	2,326	2,925	2.9	775.2	1,299.8	6.7
27	Virginia Beach-Norfolk-Newport News, VA-NC	2,279	3,026	3.6	525.8	927.8	7.4
28	San Antonio-New Braunfels, TX	2,167	2,183	0.1	612.5	826.2	3.8
29	Las Vegas-Paradise, NV	2,146	2,069	-0.5	476.5	601.0	2.9
30	Tulsa, OK	2,132	2,236	0.6	462.6	658.4	4.5
31	Buffalo-Niagara Falls, NY	2,112	2,179	0.4	531.7	710.5	3.7
32	Minneapolis-St. Paul-Bloomington, MN-WI	2,007	2,229	1.3	486.4	690.8	4.5
33	Tampa-St. Petersburg-Clearwater, FL	1,967	2,228	1.6	455.0	717.0	5.8
34	San Jose-Sunnyvale-Santa Clara, CA	1,927	2,231	1.8	638.8	1,001.3	5.8
35	Cleveland-Elyria-Mentor, OH	1,889	2,039	1.0	448.7	638.8	4.5
36	Sacramento--Arden-Arcade--Roseville, CA	1,879	2,155	1.7	622.0	965.5	5.6
37	Detroit-Warren-Livonia, MI	1,873	1,528	-2.5	486.7	504.5	0.4
38	Rochester, NY	1,815	2,045	1.5	457.1	667.6	4.8
39	Birmingham-Hoover, AL	1,803	2,203	2.5	372.1	609.1	6.4
40	Allentown-Bethlehem-Easton, PA-NJ	1,796	1,785	-0.1	441.7	580.2	3.5
41	Baltimore-Towson, MD	1,624	1,485	-1.1	477.8	583.3	2.5
42	Oklahoma City, OK	1,624	1,659	0.3	353.3	489.6	4.2
43	Charlotte-Gastonia-Rock Hill, NC-SC	1,615	1,495	-1.0	368.6	455.8	2.7
44	Orlando-Kissimmee-Sanford, FL	1,561	1,362	-1.7	360.7	437.3	2.4
45	Louisville-Jefferson County, KY-IN	1,518	2,000	3.5	342.8	591.5	7.1
46	Milwaukee-Waukesha-West Allis, WI	1,455	1,570	1.0	325.4	456.7	4.3
47	El Paso, TX	1,454	2,202	5.3	412.3	838.5	9.3
48	San Diego-Carlsbad-San Marcos, CA	1,449	1,750	2.4	480.9	786.5	6.3
49	Memphis, TN-MS-AR	1,440	1,717	2.2	310.4	493.5	6.0
50	Salt Lake City, UT	1,327	1,368	0.4	288.8	400.2	4.2
51	Stockton, CA	1,301	1,591	2.5	431.2	714.0	6.5
52	Hartford-West Hartford-East Hartford, CT	1,270	1,469	1.8	413.2	640.4	5.6
53	Lancaster, PA	1,261	1,258	0.0	296.4	389.6	3.5
54	Raleigh-Cary, NC	1,200	1,300	1.0	275.0	398.0	4.7
55	Jacksonville, FL	1,152	1,163	0.1	266.6	374.4	4.3
56	Bakersfield-Delano, CA	1,119	1,440	3.2	371.0	646.3	7.2
57	Albany-Schenectady-Troy, NY	1,095	1,110	0.2	275.2	361.1	3.5
58	Providence-New Bedford-Fall River, RI-MA	1,089	1,346	2.7	318.0	515.6	6.2
59	Richmond, VA	1,088	1,291	2.2	250.3	394.5	5.9
60	Scranton--Wilkes-Barre, PA	1,026	1,114	1.0	240.1	344.1	4.6
61	Knoxville, TN	1,022	1,170	1.7	230.5	345.9	5.2
62	Omaha-Council Bluffs, NE-IA	967	988	0.3	182.2	243.1	3.7
63	New Orleans-Metairie-Kenner, LA	954	1,128	2.1	259.1	397.6	5.5
64	Harrisburg-Carlisle, PA	933	850	-1.2	218.7	262.7	2.3
65	Lexington-Fayette, KY	869	916	0.7	190.2	257.8	3.9

	2012 employment rank	Employment 2012	2020	Average annual percent change	Real gross sales 2012	2020	Average annual percent change
66	Dayton, OH	854	895	0.6	203.1	280.6	4.1
67	Columbia, SC	839	1,026	2.5	188.5	309.9	6.4
68	Tucson, AZ	837	1,022	2.5	244.9	394.1	6.1
69	Charleston-North Charleston-Summerville, SC	835	681	-2.5	187.4	205.0	1.1
70	Augusta-Richmond County, GA-SC	825	1,004	2.5	186.4	300.6	6.2
71	Baton Rouge, LA	811	1,157	4.5	220.6	409.0	8.0
72	Greenville-Mauldin-Easley, SC	785	624	-2.8	176.2	188.0	0.8
73	Youngstown-Warren-Boardman, OH-PA	774	710	-1.1	183.5	221.7	2.4
74	Modesto, CA	764	1,008	3.5	253.6	452.8	7.5
75	Greensboro-High Point, NC	757	893	2.1	172.8	272.7	5.9
76	Oxnard-Thousand Oaks-Ventura, CA	732	853	1.9	242.3	382.4	5.9
77	Durham-Chapel Hill, NC	712	710	0.0	163.0	217.5	3.7
78	Albuquerque, NM	696	592	-2.0	165.2	183.9	1.4
79	Chattanooga, TN-GA	678	871	3.2	152.8	257.6	6.7
80	Wichita, KS	652	711	1.1	145.0	200.9	4.2
81	New Haven-Milford, CT	649	748	1.8	211.0	325.7	5.6
82	Grand Rapids-Wyoming, MI	628	650	0.4	163.6	215.2	3.5
83	Ogden-Clearfield, UT	619	730	2.1	134.4	213.2	5.9
84	Fresno, CA	618	727	2.1	204.5	325.3	6.0
85	North Port-Bradenton-Sarasota, FL	575	747	3.3	132.7	240.1	7.7
86	Madison, WI	569	761	3.7	126.9	220.7	7.2
87	Akron, OH	558	604	1.0	132.5	189.1	4.6
88	Jackson, MS	549	353	-5.4	102.7	89.5	-1.7
89	Colorado Springs, CO	548	771	4.4	145.7	292.6	9.1
90	Poughkeepsie-Newburgh-Middletown, NY	497	508	0.3	124.7	164.9	3.6
91	Portland-South Portland-Biddeford, ME	473	551	1.9	102.4	153.9	5.2
92	Syracuse, NY	455	473	0.5	113.9	153.3	3.8
93	Des Moines-West Des Moines, IA	438	442	0.1	95.1	122.0	3.2
94	Honolulu, HI	438	387	-1.5	72.6	83.3	1.7
95	Little Rock-North Little Rock-Conway, AR	404	368	-1.2	71.9	87.3	2.5
96	McAllen-Edinburg-Mission, TX	384	313	-2.5	108.5	118.4	1.1
97	Winston-Salem, NC	295	432	4.9	67.2	131.8	8.8
98	Springfield, MA	286	403	4.4	94.6	177.9	8.2
99	Boise City-Nampa, ID	259	299	1.8	55.1	81.4	5.0
100	Bridgeport-Stamford-Norwalk, CT	203	212	0.5	65.8	91.9	4.3

Table 6: Resin, rubber and fiber manufacturing

Employment and real gross sales (2010$, millions)

	2012 employment rank	Employment 2012	Employment 2020	Employment Average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales Average annual percent change
	363 Metros	75,272	82,266	1.1	79,335	105,449	3.6
	US	92,289	100,126	1.0	95,686	125,932	3.5
1	Houston-Sugar Land-Baytown, TX	4,743	4,382	-1.0	5,538.6	6,262.5	1.5
2	Chicago-Naperville-Joliet, IL-IN-WI	2,480	2,631	0.7	2,716.5	3,447.5	3.0
3	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2,389	3,174	3.6	2,573.1	4,182.0	6.3
4	Columbia, SC	2,062	2,422	2.0	1,910.2	2,752.3	4.7
5	New York-Northern New Jersey-Long Island, NY-NJ-PA	2,042	2,245	1.2	2,518.7	3,361.7	3.7
6	Los Angeles-Long Beach-Santa Ana, CA	2,041	3,128	5.5	2,799.4	5,300.9	8.3
7	Detroit-Warren-Livonia, MI	1,946	1,901	-0.3	2,092.4	2,372.2	1.6
8	Louisville-Jefferson County, KY-IN	1,792	1,544	-1.8	1,618.6	1,642.1	0.2
9	Baton Rouge, LA	1,717	1,763	0.3	1,923.1	2,338.8	2.5
10	Charlotte-Gastonia-Rock Hill, NC-SC	1,700	1,941	1.7	1,598.5	2,231.5	4.3
11	Boston-Cambridge-Quincy, MA-NH	1,649	1,627	-0.2	2,230.6	2,697.0	2.4
12	Cincinnati-Middletown, OH-KY-IN	1,297	1,562	2.4	1,210.0	1,730.2	4.6
13	Pittsburgh, PA	1,291	1,285	-0.1	1,247.5	1,494.0	2.3
14	Columbus, OH	1,198	1,480	2.7	1,177.6	1,751.8	5.1
15	Cleveland-Elyria-Mentor, OH	1,118	1,027	-1.1	1,097.2	1,210.8	1.2
16	Atlanta-Sandy Springs-Marietta, GA	1,104	1,164	0.7	1,030.7	1,308.9	3.0
17	Madison, WI	1,083	1,404	3.3	1,000.0	1,538.5	5.5
18	Chattanooga, TN-GA	1,024	1,447	4.4	953.5	1,612.4	6.8
19	Akron, OH	918	1,117	2.5	901.8	1,320.3	4.9
20	Richmond, VA	908	1,156	3.1	862.5	1,332.1	5.6
21	Riverside-San Bernardino-Ontario, CA	891	1,174	3.5	1,216.2	1,977.0	6.3
22	Charleston-North Charleston-Summerville, SC	884	856	-0.4	816.1	968.0	2.2
23	New Orleans-Metairie-Kenner, LA	822	953	1.9	919.2	1,262.5	4.0
24	Augusta-Richmond County, GA-SC	779	954	2.6	720.7	1,081.4	5.2
25	Minneapolis-St. Paul-Bloomington, MN-WI	681	603	-1.5	671.9	695.8	0.4
26	Allentown-Bethlehem-Easton, PA-NJ	667	723	1.0	717.8	963.6	3.7
27	Greenville-Mauldin-Easley, SC	660	681	0.4	608.2	768.5	3.0
28	St. Louis, MO-IL	501	631	2.9	476.9	716.7	5.2
29	Knoxville, TN	490	805	6.4	456.9	898.8	8.8
30	Albany-Schenectady-Troy, NY	480	470	-0.3	497.5	575.4	1.8
31	Worcester, MA	476	564	2.1	653.2	942.0	4.7
32	Dallas-Fort Worth-Arlington, TX	473	529	1.4	545.6	747.1	4.0
33	Milwaukee-Waukesha-West Allis, WI	472	575	2.5	433.8	627.4	4.7
34	Greensboro-High Point, NC	443	573	3.3	415.8	657.1	5.9
35	Hartford-West Hartford-East Hartford, CT	409	403	-0.2	548.4	661.2	2.4
36	Providence-New Bedford-Fall River, RI-MA	408	586	4.6	378.2	636.7	6.7
37	Toledo, OH	385	451	2.0	377.5	532.2	4.4
38	Seattle-Tacoma-Bellevue, WA	373	327	-1.6	439.7	469.0	0.8
39	Durham-Chapel Hill, NC	360	198	-7.2	339.4	226.8	-4.9
40	Dayton, OH	333	523	5.8	326.8	619.2	8.3
41	Grand Rapids-Wyoming, MI	315	426	3.8	337.3	530.4	5.8
42	Tampa-St. Petersburg-Clearwater, FL	306	216	-4.3	291.2	260.3	-1.4
43	New Haven-Milford, CT	304	179	-6.4	407.4	292.7	-4.0
44	Tulsa, OK	286	269	-0.8	255.8	297.9	1.9
45	Salt Lake City, UT	266	301	1.6	238.5	331.3	4.2
46	Springfield, MA	245	321	3.4	334.2	533.2	6.0
47	Phoenix-Mesa-Glendale, AZ	244	286	2.0	294.8	415.1	4.4
48	San Francisco-Oakland-Fremont, CA	237	314	3.6	321.2	525.0	6.3
49	San Diego-Carlsbad-San Marcos, CA	232	308	3.6	315.3	516.5	6.4
50	San Jose-Sunnyvale-Santa Clara, CA	199	211	0.7	270.6	353.6	3.4
51	Kansas City, MO-KS	190	159	-2.2	174.5	172.0	-0.2
52	Oxnard-Thousand Oaks-Ventura, CA	190	259	3.9	258.5	436.0	6.8
53	Bakersfield-Delano, CA	181	217	2.3	247.0	365.1	5.0
54	Winston-Salem, NC	164	152	-0.9	154.5	174.8	1.6
55	Birmingham-Hoover, AL	163	199	2.5	138.2	206.1	5.1
56	Baltimore-Towson, MD	152	221	4.8	184.3	327.0	7.4
57	Stockton, CA	152	132	-1.7	206.5	220.8	0.8
58	Miami-Fort Lauderdale-Pompano Beach, FL	148	108	-3.9	140.0	129.5	-1.0
59	Buffalo-Niagara Falls, NY	147	121	-2.4	151.8	147.3	-0.4
60	El Paso, TX	140	208	5.1	162.1	295.4	7.8
61	Denver-Aurora-Broomfield, CO	134	167	2.8	146.7	238.1	6.2
62	Memphis, TN-MS-AR	101	91	-1.3	93.6	100.5	0.9
63	Rochester, NY	85	83	-0.3	87.7	101.2	1.8
64	Scranton--Wilkes-Barre, PA	84	143	6.9	80.5	165.4	9.4
65	Bridgeport-Stamford-Norwalk, CT	79	137	7.1	105.5	224.2	9.9

2012 employment rank		Employment			Real gross sales		
		2012	2020	Average annual percent change	2012	2020	Average annual percent change
66	Indianapolis-Carmel, IN	76	93	2.6	74.5	109.4	4.9
67	Portland-Vancouver-Hillsboro, OR-WA	66	108	6.3	72.9	146.1	9.1
68	Jacksonville, FL	58	28	-8.7	54.7	33.4	-6.0
69	Little Rock-North Little Rock-Conway, AR	58	60	0.4	42.5	53.6	2.9
70	Austin-Round Rock-San Marcos, TX	55	76	4.1	63.1	106.8	6.8
71	Raleigh-Cary, NC	54	58	0.9	50.5	66.1	3.4
72	Wichita, KS	54	51	-0.7	49.3	54.0	1.2
73	Lancaster, PA	49	51	0.5	46.8	58.7	2.9
74	Nashville-Davidson--Murfreesboro--Franklin, TN	43	61	4.5	39.5	67.0	6.8
75	Orlando-Kissimmee-Sanford, FL	40	36	-1.3	37.6	42.9	1.7
76	Portland-South Portland-Biddeford, ME	35	45	3.2	31.2	47.2	5.3
77	Youngstown-Warren-Boardman, OH-PA	34	12	-12.2	32.5	13.8	-10.1
78	Boise City-Nampa, ID	28	33	2.1	24.5	33.7	4.1
79	San Antonio-New Braunfels, TX	18	27	5.2	20.5	37.8	7.9
80	Harrisburg-Carlisle, PA	15	27	7.6	14.3	31.2	10.2
81	Oklahoma City, OK	13	11	-2.1	11.5	12.1	0.6
82	Las Vegas-Paradise, NV	11	13	2.1	10.0	14.1	4.4
83	Syracuse, NY	11	13	2.1	11.3	15.8	4.3
84	Poughkeepsie-Newburgh-Middletown, NY	9	10	1.3	9.2	12.1	3.5
85	Honolulu, HI	8	11	4.1	5.5	8.9	6.3
86	Sacramento--Arden-Arcade--Roseville, CA	4	5	2.8	5.3	8.2	5.6
87	North Port-Bradenton-Sarasota, FL	3	10	16.2	2.8	11.9	19.9
88	Ogden-Clearfield, UT	2	7	17.0	1.7	7.6	20.1
89	Albuquerque, NM	0	4	0.0	0.0	4.7	0.0
90	Colorado Springs, CO	0	0	0.0	0.0	0.0	0.0
91	Des Moines-West Des Moines, IA	0	0	0.0	0.0	0.0	0.0
92	Fresno, CA	0	0	0.0	0.0	0.0	0.0
93	Jackson, MS	0	4	0.0	0.0	3.7	0.0
94	Lexington-Fayette, KY	0	4	0.0	0.0	4.1	0.0
95	McAllen-Edinburg-Mission, TX	0	0	0.0	0.0	0.0	0.0
96	Modesto, CA	0	0	0.0	0.0	0.0	0.0
97	Omaha-Council Bluffs, NE-IA	0	4	0.0	0.0	3.6	0.0
98	Tucson, AZ	0	0	0.0	0.0	0.0	0.0
99	Virginia Beach-Norfolk-Newport News, VA-NC	0	0	0.0	0.0	0.0	0.0
100	Washington-Arlington-Alexandria, DC-VA-MD-WV	0	5	0.0	0.0	7.3	0.0

Table 7: Plastics and rubber products manufacturing

Employment and real gross sales (2010$, millions)

		Employment			Real gross sales		
	2012 employment rank	2012	2020	Average annual percent change	2012	2020	Average annual percent change
	363 Metros	491,345	502,180	0.3	158,617	198,337	2.8
	US	644,766	663,184	0.4	203,755	255,759	2.9
1	Chicago-Naperville-Joliet, IL-IN-WI	29,468	30,182	0.3	9,916.7	12,310.9	2.7
2	Los Angeles-Long Beach-Santa Ana, CA	20,247	22,570	1.4	8,524.3	11,890.2	4.2
3	New York-Northern New Jersey-Long Island, NY-NJ-PA	16,664	16,324	-0.3	6,089.0	7,332.3	2.3
4	Dallas-Fort Worth-Arlington, TX	13,731	16,311	2.2	4,920.9	7,252.6	5.0
5	Atlanta-Sandy Springs-Marietta, GA	11,982	11,629	-0.4	3,439.7	4,069.7	2.1
6	Detroit-Warren-Livonia, MI	11,499	12,525	1.1	3,790.2	4,854.3	3.1
7	Minneapolis-St. Paul-Bloomington, MN-WI	10,725	10,757	0.0	3,292.0	3,908.5	2.2
8	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	9,028	8,933	-0.1	2,955.8	3,639.3	2.6
9	Houston-Sugar Land-Baytown, TX	8,398	8,149	-0.4	3,007.9	3,615.5	2.3
10	Cleveland-Elyria-Mentor, OH	8,355	8,468	0.2	2,518.9	3,111.4	2.7
11	St. Louis, MO-IL	6,791	6,972	0.3	1,998.9	2,479.1	2.7
12	Riverside-San Bernardino-Ontario, CA	6,615	5,654	-1.9	2,771.8	2,961.4	0.8
13	Akron, OH	6,494	6,864	0.7	1,962.5	2,527.9	3.2
14	Grand Rapids-Wyoming, MI	6,216	6,607	0.8	2,052.8	2,563.9	2.8
15	Boston-Cambridge-Quincy, MA-NH	5,972	5,834	-0.3	2,409.9	2,899.6	2.3
16	Greenville-Mauldin-Easley, SC	5,871	5,555	-0.7	1,668.8	1,960.9	2.0
17	Charlotte-Gastonia-Rock Hill, NC-SC	5,268	5,472	0.5	1,521.9	1,954.8	3.2
18	Cincinnati-Middletown, OH-KY-IN	5,118	5,213	0.2	1,512.3	1,872.9	2.7
19	Milwaukee-Waukesha-West Allis, WI	5,037	4,213	-2.2	1,427.1	1,433.6	0.1
20	Columbus, OH	4,922	6,294	3.1	1,483.5	2,315.0	5.7
21	Indianapolis-Carmel, IN	4,677	4,336	-0.9	1,426.2	1,605.0	1.5
22	Pittsburgh, PA	4,400	4,727	0.9	1,302.3	1,706.2	3.4
23	Seattle-Tacoma-Bellevue, WA	4,340	4,113	-0.7	1,570.7	1,832.2	1.9
24	Louisville-Jefferson County, KY-IN	4,275	4,863	1.6	1,225.5	1,667.1	3.9
25	Rochester, NY	4,158	5,298	3.1	1,326.3	2,024.5	5.4
26	Phoenix-Mesa-Glendale, AZ	4,153	3,365	-2.6	1,541.8	1,519.7	-0.2
27	Greensboro-High Point, NC	3,988	3,821	-0.5	1,153.4	1,365.8	2.1
28	Portland-Vancouver-Hillsboro, OR-WA	3,974	3,986	0.0	1,359.0	1,685.5	2.7
29	Buffalo-Niagara Falls, NY	3,648	3,076	-2.1	1,161.5	1,172.1	0.1
30	Kansas City, MO-KS	3,532	2,987	-2.1	1,001.4	1,016.9	0.2
31	Worcester, MA	3,518	3,478	-0.1	1,485.1	1,808.9	2.5
32	Nashville-Davidson--Murfreesboro--Franklin, TN	3,491	3,739	0.9	996.2	1,293.8	3.3
33	San Diego-Carlsbad-San Marcos, CA	3,465	3,057	-1.6	1,453.6	1,603.1	1.2
34	Baltimore-Towson, MD	3,337	3,583	0.9	1,242.3	1,647.7	3.6
35	Providence-New Bedford-Fall River, RI-MA	3,265	3,257	0.0	1,017.4	1,241.9	2.5
36	San Francisco-Oakland-Fremont, CA	3,120	2,591	-2.3	1,304.5	1,354.7	0.5
37	Lancaster, PA	3,104	2,802	-1.3	921.2	1,014.0	1.2
38	Scranton--Wilkes-Barre, PA	3,078	3,437	1.4	912.7	1,243.1	3.9
39	Tampa-St. Petersburg-Clearwater, FL	2,962	3,297	1.3	867.9	1,243.5	4.6
40	Miami-Fort Lauderdale-Pompano Beach, FL	2,858	2,859	0.0	837.3	1,077.4	3.2
41	Toledo, OH	2,711	2,424	-1.4	817.2	889.8	1.1
42	Oxnard-Thousand Oaks-Ventura, CA	2,705	2,647	-0.3	1,135.0	1,389.2	2.6
43	Des Moines-West Des Moines, IA	2,632	2,883	1.1	721.4	929.5	3.2
44	Allentown-Bethlehem-Easton, PA-NJ	2,549	2,442	-0.5	799.8	921.7	1.8
45	Salt Lake City, UT	2,539	2,080	-2.5	699.7	712.8	0.2
46	Columbia, SC	2,507	2,588	0.4	711.3	912.1	3.2
47	Denver-Aurora-Broomfield, CO	2,479	2,279	-1.0	833.2	1,010.2	2.4
48	Springfield, MA	2,438	2,137	-1.6	1,025.4	1,107.4	1.0
49	Dayton, OH	2,335	1,888	-2.6	702.6	691.4	-0.2
50	Richmond, VA	2,019	1,989	-0.2	588.5	712.2	2.4
51	Madison, WI	1,905	1,538	-2.6	538.6	522.2	-0.4
52	Knoxville, TN	1,885	2,624	4.2	538.1	908.9	6.8
53	Augusta-Richmond County, GA-SC	1,845	1,971	0.8	525.0	691.7	3.5
54	Las Vegas-Paradise, NV	1,813	1,963	1.0	508.6	666.1	3.4
55	Omaha-Council Bluffs, NE-IA	1,793	2,063	1.8	431.4	596.8	4.1
56	Birmingham-Hoover, AL	1,719	1,936	1.5	449.2	627.3	4.3
57	Wichita, KS	1,602	1,485	-0.9	451.4	491.1	1.1
58	Hartford-West Hartford-East Hartford, CT	1,546	1,418	-1.1	634.6	720.5	1.6
59	San Antonio-New Braunfels, TX	1,413	1,507	0.8	502.4	664.0	3.5
60	Memphis, TN-MS-AR	1,398	1,255	-1.3	371.0	414.2	1.4
61	Orlando-Kissimmee-Sanford, FL	1,381	1,045	-3.4	403.5	392.4	-0.3
62	New Haven-Milford, CT	1,366	1,780	3.4	561.7	908.0	6.2
63	Harrisburg-Carlisle, PA	1,336	1,345	0.1	395.5	485.7	2.6
64	Bridgeport-Stamford-Norwalk, CT	1,292	978	-3.4	531.6	497.5	-0.8
65	El Paso, TX	1,245	945	-3.4	444.3	417.4	-0.8

	2012 employment rank	Employment			Real gross sales		
		2012	2020	Average annual percent change	2012	2020	Average annual percent change
66	Raleigh-Cary, NC	1,237	1,129	-1.1	357.3	402.7	1.5
67	Stockton, CA	1,218	1,247	0.3	508.6	651.3	3.1
68	Youngstown-Warren-Boardman, OH-PA	1,211	1,056	-1.7	361.6	384.1	0.8
69	Tulsa, OK	1,187	1,057	-1.4	325.0	363.2	1.4
70	Syracuse, NY	1,159	1,216	0.6	369.0	463.4	2.9
71	New Orleans-Metairie-Kenner, LA	1,070	1,000	-0.8	367.4	412.3	1.4
72	Lexington-Fayette, KY	1,069	803	-3.5	294.3	262.2	-1.4
73	Albany-Schenectady-Troy, NY	1,055	1,015	-0.5	333.5	384.0	1.8
74	Portland-South Portland-Biddeford, ME	1,025	1,032	0.1	280.9	337.4	2.3
75	North Port-Bradenton-Sarasota, FL	1,004	1,413	4.4	293.8	532.7	7.7
76	Chattanooga, TN-GA	996	1,563	5.8	284.4	542.0	8.4
77	Washington-Arlington-Alexandria, DC-VA-MD-WV	991	1,190	2.3	321.0	465.3	4.8
78	Sacramento--Arden-Arcade--Roseville, CA	979	1,302	3.6	407.3	679.0	6.6
79	Virginia Beach-Norfolk-Newport News, VA-NC	949	881	-0.9	275.9	314.3	1.6
80	San Jose-Sunnyvale-Santa Clara, CA	908	889	-0.3	378.2	463.5	2.6
81	Oklahoma City, OK	902	805	-1.4	247.4	277.2	1.4
82	Jacksonville, FL	852	927	1.1	249.1	348.7	4.3
83	Little Rock-North Little Rock-Conway, AR	810	621	-3.3	182.2	172.2	-0.7
84	Baton Rouge, LA	724	714	-0.2	248.8	294.7	2.1
85	Austin-Round Rock-San Marcos, TX	712	660	-0.9	253.2	290.9	1.7
86	Fresno, CA	701	659	-0.8	292.3	343.7	2.0
87	Jackson, MS	622	562	-1.3	146.8	166.8	1.6
88	Poughkeepsie-Newburgh-Middletown, NY	605	411	-4.7	191.6	155.5	-2.6
89	Bakersfield-Delano, CA	593	880	5.1	248.5	462.6	8.1
90	Durham-Chapel Hill, NC	550	358	-5.2	158.5	127.1	-2.7
91	Modesto, CA	547	749	4.0	227.6	390.8	7.0
92	Albuquerque, NM	428	308	-4.0	128.4	111.8	-1.7
93	Ogden-Clearfield, UT	409	323	-2.9	111.7	109.6	-0.2
94	Boise City-Nampa, ID	397	317	-2.8	106.7	100.8	-0.7
95	Colorado Springs, CO	345	373	1.0	115.8	165.1	4.5
96	Winston-Salem, NC	308	326	0.7	88.6	115.8	3.4
97	Charleston-North Charleston-Summerville, SC	286	304	0.8	80.7	106.6	3.5
98	Tucson, AZ	263	271	0.4	96.7	121.4	2.9
99	Honolulu, HI	185	171	-1.0	38.8	43.0	1.3
100	McAllen-Edinburg-Mission, TX	184	77	-10.3	65.3	33.8	-7.9

Table 8: Agricultural chemical manufacturing

Employment and real gross sales (2010$, millions)

		Employment			Real gross sales		
	2012 employment rank	2012	2020	Average annual percent change	2012	2020	Average annual percent change
	363 Metros	25,300	20,926	-2.3	20,457	23,214	1.6
	US	36,937	30,443	-2.4	28,995	32,706	1.5
1	Baton Rouge, LA	1,944	1,758	-1.2	1,675.1	2,013.5	2.3
2	New Orleans-Metairie-Kenner, LA	1,391	1,963	4.4	1,203.2	2,258.1	8.2
3	Tampa-St. Petersburg-Clearwater, FL	1,233	994	-2.7	905.9	1,042.3	1.8
4	Houston-Sugar Land-Baytown, TX	971	816	-2.2	872.6	1,007.3	1.8
5	St. Louis, MO-IL	862	568	-5.1	614.4	543.9	-1.5
6	Greensboro-High Point, NC	806	696	-1.8	586.4	693.9	2.1
7	Atlanta-Sandy Springs-Marietta, GA	762	541	-4.2	548.6	526.3	-0.5
8	New York-Northern New Jersey-Long Island, NY-NJ-PA	671	487	-3.9	608.8	597.5	-0.2
9	Kansas City, MO-KS	661	692	0.6	471.8	662.9	4.3
10	Los Angeles-Long Beach-Santa Ana, CA	530	573	1.0	559.8	839.8	5.2
11	Columbus, OH	404	321	-2.8	306.2	328.6	0.9
12	Orlando-Kissimmee-Sanford, FL	339	278	-2.4	249.6	292.0	2.0
13	Toledo, OH	330	251	-3.4	250.0	256.9	0.3
14	Dallas-Fort Worth-Arlington, TX	289	311	0.9	259.1	383.6	5.0
15	Memphis, TN-MS-AR	243	112	-9.2	162.4	97.6	-6.2
16	Chicago-Naperville-Joliet, IL-IN-WI	230	208	-1.2	195.9	238.2	2.5
17	Fresno, CA	220	180	-2.5	231.3	262.6	1.6
18	Milwaukee-Waukesha-West Allis, WI	215	182	-2.1	152.8	172.3	1.5
19	Des Moines-West Des Moines, IA	209	121	-6.6	143.5	108.3	-3.5
20	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	209	175	-2.2	155.7	175.4	1.5
21	Riverside-San Bernardino-Ontario, CA	201	106	-7.7	211.7	154.4	-3.9
22	Stockton, CA	197	49	-16.0	207.8	71.3	-12.5
23	Phoenix-Mesa-Glendale, AZ	193	154	-2.8	179.4	193.0	0.9
24	Seattle-Tacoma-Bellevue, WA	188	150	-2.8	170.8	185.8	1.1
25	Tulsa, OK	177	140	-2.9	122.0	134.1	1.2
26	Augusta-Richmond County, GA-SC	165	102	-5.8	118.9	99.4	-2.2
27	Boston-Cambridge-Quincy, MA-NH	161	110	-4.6	170.1	157.7	-0.9
28	Minneapolis-St. Paul-Bloomington, MN-WI	161	137	-2.0	124.0	138.4	1.4
29	Portland-Vancouver-Hillsboro, OR-WA	147	106	-4.0	127.8	125.9	-0.2
30	Oxnard-Thousand Oaks-Ventura, CA	144	130	-1.3	151.6	189.6	2.8
31	Bakersfield-Delano, CA	143	112	-3.0	150.4	163.2	1.0
32	Buffalo-Niagara Falls, NY	142	90	-5.5	113.3	95.2	-2.1
33	Omaha-Council Bluffs, NE-IA	136	112	-2.4	83.7	91.5	1.1
34	Modesto, CA	128	125	-0.3	135.0	182.8	3.9
35	Baltimore-Towson, MD	116	126	1.0	108.4	161.2	5.1
36	Richmond, VA	114	102	-1.4	83.5	101.7	2.5
37	Sacramento--Arden-Arcade--Roseville, CA	109	79	-3.9	114.4	115.0	0.1
38	Durham-Chapel Hill, NC	101	69	-4.7	73.1	68.3	-0.9
39	Allentown-Bethlehem-Easton, PA-NJ	99	71	-4.1	78.6	73.5	-0.8
40	Cincinnati-Middletown, OH-KY-IN	89	73	-2.4	66.9	73.9	1.2
41	Denver-Aurora-Broomfield, CO	83	62	-3.6	70.3	76.6	1.1
42	Washington-Arlington-Alexandria, DC-VA-MD-WV	82	76	-0.9	68.6	88.0	3.2
43	Birmingham-Hoover, AL	77	68	-1.5	50.4	61.1	2.4
44	Cleveland-Elyria-Mentor, OH	77	60	-3.1	57.8	60.9	0.6
45	Detroit-Warren-Livonia, MI	76	42	-7.1	62.6	45.0	-4.1
46	Columbia, SC	75	22	-14.2	53.4	21.4	-10.8
47	Hartford-West Hartford-East Hartford, CT	69	68	-0.2	71.3	96.6	3.9
48	Lexington-Fayette, KY	67	78	1.9	46.6	71.5	5.5
49	San Francisco-Oakland-Fremont, CA	67	42	-5.7	70.3	61.0	-1.7
50	Pittsburgh, PA	63	43	-4.7	46.8	43.1	-1.0
51	San Jose-Sunnyvale-Santa Clara, CA	62	36	-6.6	65.4	52.6	-2.7
52	Virginia Beach-Norfolk-Newport News, VA-NC	61	32	-7.7	44.6	31.7	-4.2
53	Madison, WI	57	48	-2.1	40.4	45.4	1.5
54	Albuquerque, NM	56	64	1.7	42.2	64.7	5.5
55	Charlotte-Gastonia-Rock Hill, NC-SC	50	21	-10.3	36.2	20.8	-6.7
56	Miami-Fort Lauderdale-Pompano Beach, FL	50	49	-0.3	36.5	51.0	4.3
57	Salt Lake City, UT	50	54	1.0	34.5	51.3	5.1
58	Bridgeport-Stamford-Norwalk, CT	48	35	-3.9	49.5	49.5	0.0
59	Louisville-Jefferson County, KY-IN	46	43	-0.8	31.8	39.2	2.6
60	Springfield, MA	46	52	1.5	48.7	75.3	5.6
61	Colorado Springs, CO	45	63	4.3	38.0	77.9	9.4
62	Knoxville, TN	43	41	-0.6	30.7	39.5	3.2
63	Akron, OH	41	15	-11.8	30.8	15.2	-8.5
64	Austin-Round Rock-San Marcos, TX	40	36	-1.3	35.7	44.2	2.7
65	Rochester, NY	39	39	0.0	30.9	41.1	3.6

2012 employment rank		Employment 2012	Employment 2020	Employment Average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales Average annual percent change
66	Honolulu, HI	36	28	-3.1	18.9	19.6	0.4
67	San Antonio-New Braunfels, TX	36	26	-4.0	32.0	31.6	-0.2
68	Little Rock-North Little Rock-Conway, AR	33	30	-1.2	18.6	23.1	2.8
69	Winston-Salem, NC	31	15	-8.7	22.1	14.6	-5.0
70	Lancaster, PA	30	24	-2.8	22.2	24.0	1.0
71	Providence-New Bedford-Fall River, RI-MA	24	30	2.8	24.6	40.7	6.5
72	New Haven-Milford, CT	21	5	-16.4	21.6	7.0	-13.1
73	San Diego-Carlsbad-San Marcos, CA	20	5	-15.9	21.0	7.2	-12.4
74	Poughkeepsie-Newburgh-Middletown, NY	18	19	0.7	14.3	20.0	4.3
75	Las Vegas-Paradise, NV	16	9	-6.9	11.3	8.4	-3.5
76	Charleston-North Charleston-Summerville, SC	15	9	-6.2	10.7	8.8	-2.4
77	Portland-South Portland-Biddeford, ME	13	12	-1.0	8.9	10.8	2.6
78	Boise City-Nampa, ID	11	10	-1.2	7.4	8.8	2.2
79	Grand Rapids-Wyoming, MI	11	7	-5.5	9.0	7.5	-2.3
80	Ogden-Clearfield, UT	9	10	1.3	6.2	9.5	5.5
81	Youngstown-Warren-Boardman, OH-PA	8	11	4.1	5.9	11.0	8.1
82	Chattanooga, TN-GA	7	7	0.0	5.0	6.7	3.8
83	Raleigh-Cary, NC	7	10	4.6	5.0	9.7	8.8
84	North Port-Bradenton-Sarasota, FL	4	5	2.8	2.9	5.2	7.5
85	Syracuse, NY	4	5	2.8	3.1	5.2	6.6
86	El Paso, TX	2	5	12.1	1.8	6.0	16.8
87	Greenville-Mauldin-Easley, SC	2	4	9.1	1.4	3.9	13.6
88	Wichita, KS	1	4	18.9	0.7	3.7	23.0
89	Albany-Schenectady-Troy, NY	0	0	0.0	0.0	0.0	0.0
90	Dayton, OH	0	0	0.0	0.0	0.0	0.0
91	Harrisburg-Carlisle, PA	0	0	0.0	0.0	0.0	0.0
92	Indianapolis-Carmel, IN	0	0	0.0	0.0	0.0	0.0
93	Jackson, MS	0	0	0.0	0.0	0.0	0.0
94	Jacksonville, FL	0	0	0.0	0.0	0.0	0.0
95	McAllen-Edinburg-Mission, TX	0	0	0.0	0.0	0.0	0.0
96	Nashville-Davidson--Murfreesboro--Franklin, TN	0	3	0.0	0.0	2.9	0.0
97	Oklahoma City, OK	0	3	0.0	0.0	2.8	0.0
98	Scranton--Wilkes-Barre, PA	0	0	0.0	0.0	0.0	0.0
99	Tucson, AZ	0	0	0.0	0.0	0.0	0.0
100	Worcester, MA	0	0	0.0	0.0	0.0	0.0

Table 9: Petroleum & coal manufacturing

Employment and real gross sales (2010$, millions)

	2012 employment rank	Employment 2012	Employment 2020	Employment Average annual percent change	Real gross sales 2012	Real gross sales 2020	Real gross sales Average annual percent change
	363 Metros	98,531	88,226	-1.4	577,198	610,288	0.7
	US	113,116	101,266	-1.4	648,177	680,681	0.6
1	Houston-Sugar Land-Baytown, TX	10,229	7,471	-3.9	78,875.1	64,925.3	-2.4
2	Los Angeles-Long Beach-Santa Ana, CA	6,989	6,886	-0.2	63,046.1	73,764.7	2.0
3	Chicago-Naperville-Joliet, IL-IN-WI	5,166	4,297	-2.3	28,277.3	27,613.7	-0.3
4	New Orleans-Metairie-Kenner, LA	4,674	4,932	0.7	36,572.4	41,463.2	1.6
5	San Francisco-Oakland-Fremont, CA	4,484	3,185	-4.2	41,221.0	33,023.0	-2.7
6	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	3,614	3,217	-1.4	22,345.4	21,573.1	-0.4
7	New York-Northern New Jersey-Long Island, NY-NJ-PA	2,444	2,509	0.3	11,069.4	14,355.0	3.3
8	Baton Rouge, LA	2,315	2,180	-0.7	16,761.1	17,785.6	0.7
9	Minneapolis-St. Paul-Bloomington, MN-WI	1,924	1,535	-2.8	10,669.7	10,069.8	-0.7
10	St. Louis, MO-IL	1,646	1,571	-0.6	9,045.4	10,440.4	1.8
11	Detroit-Warren-Livonia, MI	1,335	943	-4.3	4,102.2	3,473.9	-2.1
12	Tulsa, OK	1,241	1,274	0.3	5,353.9	7,413.6	4.2
13	Ogden-Clearfield, UT	1,231	1,312	0.8	8,174.7	9,990.9	2.5
14	Denver-Aurora-Broomfield, CO	1,195	1,213	0.2	5,539.4	7,811.5	4.4
15	Dallas-Fort Worth-Arlington, TX	1,169	951	-2.5	1,549.6	1,657.8	0.8
16	Toledo, OH	1,158	807	-4.4	7,949.5	6,357.4	-2.8
17	Cleveland-Elyria-Mentor, OH	1,130	926	-2.5	1,029.4	1,100.2	0.8
18	Cincinnati-Middletown, OH-KY-IN	1,082	765	-4.2	994.0	910.2	-1.1
19	Miami-Fort Lauderdale-Pompano Beach, FL	1,055	1,196	1.6	1,152.9	1,772.6	5.5
20	Bakersfield-Delano, CA	909	774	-2.0	7,108.6	7,588.0	0.8
21	Pittsburgh, PA	909	795	-1.7	2,918.4	2,983.1	0.3
22	El Paso, TX	900	1,155	3.2	7,923.9	11,594.2	4.9
23	Memphis, TN-MS-AR	782	718	-1.1	2,837.2	2,422.5	-2.0
24	Salt Lake City, UT	713	657	-1.0	4,402.7	4,559.6	0.4
25	Atlanta-Sandy Springs-Marietta, GA	626	502	-2.7	538.6	541.7	0.1
26	Birmingham-Hoover, AL	611	493	-2.6	478.5	491.5	0.3
27	Wichita, KS	610	665	1.1	2,788.4	3,511.6	2.9
28	Honolulu, HI	550	673	2.6	2,825.2	3,823.8	3.9
29	San Antonio-New Braunfels, TX	457	430	-0.8	1,532.1	1,823.3	2.2
30	Virginia Beach-Norfolk-Newport News, VA-NC	411	269	-5.2	558.3	348.0	-5.7
31	Seattle-Tacoma-Bellevue, WA	401	298	-3.6	1,726.8	1,461.6	-2.1
32	Washington-Arlington-Alexandria, DC-VA-MD-WV	399	303	-3.4	406.4	364.0	-1.4
33	Riverside-San Bernardino-Ontario, CA	374	197	-7.7	470.0	318.1	-4.8
34	Portland-Vancouver-Hillsboro, OR-WA	370	330	-1.4	376.7	427.4	1.6
35	Indianapolis-Carmel, IN	361	357	-0.1	331.1	409.2	2.7
36	Boston-Cambridge-Quincy, MA-NH	340	275	-2.6	429.0	465.9	1.0
37	Tampa-St. Petersburg-Clearwater, FL	340	199	-6.5	323.1	296.2	-1.1
38	Kansas City, MO-KS	317	263	-2.3	468.3	526.2	1.5
39	Oklahoma City, OK	312	189	-6.1	274.3	240.4	-1.6
40	Baltimore-Towson, MD	247	122	-8.4	275.6	199.9	-3.9
41	Phoenix-Mesa-Glendale, AZ	245	145	-6.3	272.9	228.5	-2.2
42	Knoxville, TN	225	245	1.1	193.7	262.9	3.9
43	Buffalo-Niagara Falls, NY	214	159	-3.6	942.0	827.4	-1.6
44	Jacksonville, FL	212	143	-4.8	185.6	165.7	-1.4
45	Sacramento--Arden-Arcade--Roseville, CA	210	151	-4.0	264.8	245.0	-1.0
46	Milwaukee-Waukesha-West Allis, WI	198	207	0.6	180.2	250.3	4.2
47	Providence-New Bedford-Fall River, RI-MA	190	159	-2.2	235.3	248.2	0.7
48	Charlotte-Gastonia-Rock Hill, NC-SC	188	159	-2.1	162.5	175.0	0.9
49	Nashville-Davidson--Murfreesboro--Franklin, TN	187	196	0.6	159.8	208.8	3.4
50	Omaha-Council Bluffs, NE-IA	172	157	-1.1	139.4	154.3	1.3
51	Dayton, OH	149	134	-1.3	134.2	151.6	1.5
52	Columbus, OH	141	117	-2.3	372.6	446.4	2.3
53	Worcester, MA	140	158	1.5	177.6	253.8	4.6
54	Louisville-Jefferson County, KY-IN	127	90	-4.2	114.5	100.9	-1.6
55	Rochester, NY	122	116	-0.6	116.4	136.4	2.0
56	Albany-Schenectady-Troy, NY	120	73	-6.0	114.8	86.0	-3.6
57	Lancaster, PA	119	122	0.3	105.7	136.0	3.2
58	Little Rock-North Little Rock-Conway, AR	117	72	-5.9	79.1	61.7	-3.1
59	Allentown-Bethlehem-Easton, PA-NJ	114	95	-2.3	105.5	126.1	2.3
60	San Diego-Carlsbad-San Marcos, CA	113	78	-4.5	266.2	155.8	-6.5
61	Scranton--Wilkes-Barre, PA	111	93	-2.2	130.0	131.3	0.1
62	Charleston-North Charleston-Summerville, SC	103	91	-1.5	87.9	99.2	1.5
63	Fresno, CA	102	26	-15.7	136.5	81.6	-6.2
64	San Jose-Sunnyvale-Santa Clara, CA	97	38	-11.1	122.3	61.4	-8.3
65	New Haven-Milford, CT	83	108	3.3	102.7	170.2	6.5

	2012 employment rank	Employment 2012	2020	Average annual percent change	Real gross sales 2012	2020	Average annual percent change
66	Portland-South Portland-Biddeford, ME	81	73	-1.3	78.6	112.3	4.6
67	McAllen-Edinburg-Mission, TX	77	68	-1.5	82.7	93.0	1.5
68	Columbia, SC	72	84	1.9	117.2	182.0	5.7
69	Albuquerque, NM	61	45	-3.7	80.6	106.8	3.6
70	Orlando-Kissimmee-Sanford, FL	54	53	-0.2	91.3	186.7	9.4
71	Tucson, AZ	53	48	-1.2	220.6	280.5	3.0
72	Youngstown-Warren-Boardman, OH-PA	53	57	0.9	47.2	63.8	3.8
73	Bridgeport-Stamford-Norwalk, CT	51	53	0.5	62.9	83.2	3.6
74	Durham-Chapel Hill, NC	51	54	0.7	44.3	59.6	3.8
75	Austin-Round Rock-San Marcos, TX	48	39	-2.6	66.2	95.1	4.6
76	Stockton, CA	46	28	-6.0	57.4	44.9	-3.0
77	Jackson, MS	45	38	-2.1	31.9	34.7	1.1
78	Raleigh-Cary, NC	45	44	-0.3	58.0	97.8	6.8
79	Syracuse, NY	42	30	-4.1	40.0	35.1	-1.6
80	Poughkeepsie-Newburgh-Middletown, NY	41	21	-8.0	39.0	24.5	-5.6
81	Springfield, MA	37	23	-5.8	46.3	36.4	-3.0
82	Harrisburg-Carlisle, PA	29	24	-2.3	25.7	26.6	0.5
83	Hartford-West Hartford-East Hartford, CT	28	37	3.5	34.4	57.9	6.7
84	Akron, OH	23	31	3.8	20.5	55.8	13.4
85	Modesto, CA	22	14	-5.5	36.2	62.3	7.0
86	Grand Rapids-Wyoming, MI	21	15	-4.1	20.6	17.8	-1.8
87	Greensboro-High Point, NC	15	2	-22.3	13.0	2.2	-20.0
88	Greenville-Mauldin-Easley, SC	15	20	3.7	12.7	21.6	6.9
89	Las Vegas-Paradise, NV	15	21	4.3	12.6	22.0	7.2
90	Richmond, VA	15	28	8.1	12.9	51.7	18.9
91	Augusta-Richmond County, GA-SC	12	13	1.0	10.3	14.0	3.9
92	Winston-Salem, NC	10	9	-1.3	8.6	9.9	1.7
93	Lexington-Fayette, KY	9	15	6.6	48.5	59.7	2.6
94	North Port-Bradenton-Sarasota, FL	9	12	3.7	7.8	13.7	7.4
95	Oxnard-Thousand Oaks-Ventura, CA	8	13	6.3	45.2	121.1	13.1
96	Chattanooga, TN-GA	6	8	3.7	5.1	8.5	6.6
97	Des Moines-West Des Moines, IA	6	5	-2.3	4.9	4.9	0.1
98	Colorado Springs, CO	4	6	5.2	4.0	8.1	9.3
99	Boise City-Nampa, ID	0	3	0.0	0.0	2.9	0.0
100	Madison, WI	0	3	0.0	0.0	3.1	0.0

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