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### PRODUCTIVITY AND COSTS BY INDUSTRY: MANUFACTURING AND MINING INDUSTRIES – 2018

Labor productivity declines were widespread among manufacturing industries in 2018, with decreases in 67 of the 86 four-digit NAICS industries. Of the 51 industries in durable manufacturing, 41 saw productivity decreases in 2018 led by a decline in the lime and gypsum products industry of 11.8 percent. Nondurable manufacturing also had widespread declines in 2018 with productivity falling in 26 of 35 industries, led by the textile and fabric finishing mills industry with a decrease of 11.3 percent. Of the 4 industries in the mining sector, 2 posted productivity gains in 2018 led by the oil and gas extraction industry with an increase of 12.1 percent. (See chart 1.)

**Chart 1. Manufacturing and mining industries with the largest change in productivity, 2018**  
(NAICS 4-digit industries)

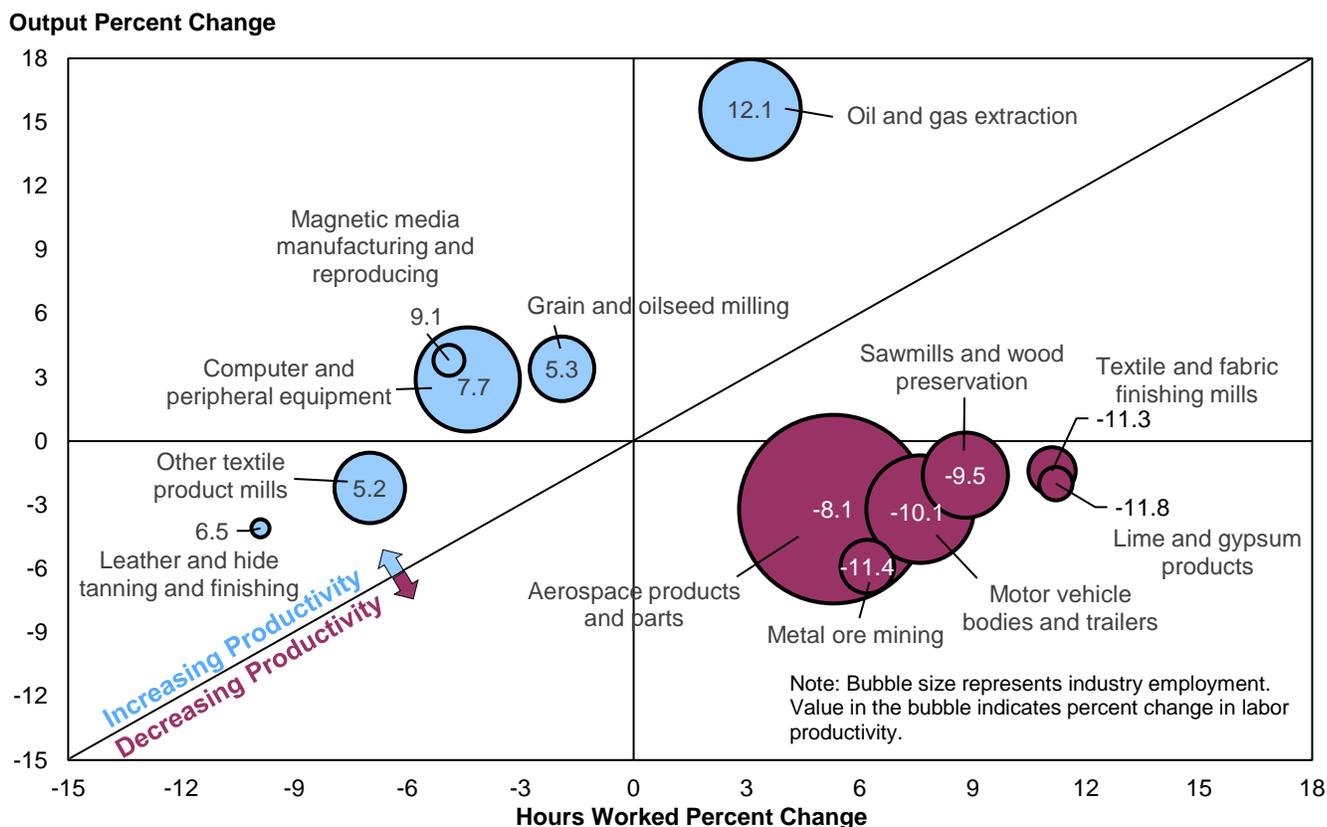


Chart 1 shows the industries with the largest changes in productivity in 2018. Change in productivity is approximately equal to the change in output minus the change in hours worked. All six industries with declining productivity (below the diagonal line) had growth in hours worked with declining output. Of the six industries with productivity gains (those above the diagonal line), only oil and gas extraction had growth in both output and hours worked.

### Labor Productivity Trends in NAICS 3-Digit Industries, 2018

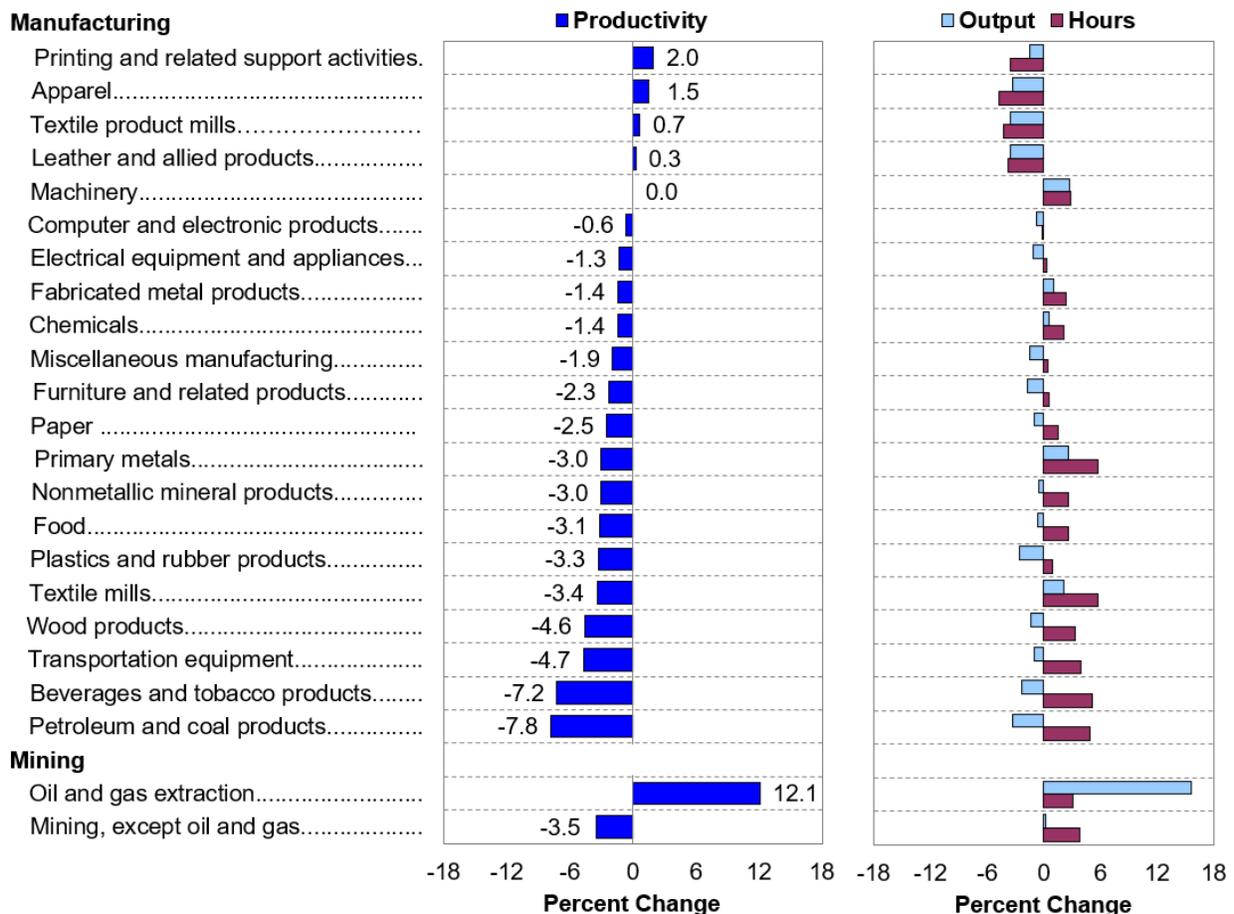
#### Manufacturing

- Labor productivity decreased in 16 of the 21 NAICS 3-digit manufacturing industries in 2018, as output declined in 16 industries and hours worked rose in 16. (See chart 2.)
- The printing and related support activities industry had the largest productivity gain, 2.0 percent, as output decreased but hours decreased more.
- The petroleum and coal products industry had the largest productivity decline, 7.8 percent, as output fell 3.3 percent and hours worked increased 4.9 percent.

#### Mining

- Labor productivity rose by 12.1 percent in the oil and gas extraction industry where a significant increase in output outpaced growth in hours worked. (See chart 2.)
- The mining, except oil and gas industry had a productivity decline of 3.5 percent, as the increase in hours worked was larger than a modest increase in output.

**Chart 2. Productivity growth in NAICS 3-digit manufacturing and mining industries, 2018**



## Trends in Unit Labor Costs in 2018

**Unit labor costs**, which reflect the total labor costs required to produce a unit of output, rose in 73 of the 86 NAICS 4-digit manufacturing industries. Of the 51 industries in durable manufacturing, 47 experienced rising unit labor costs, led by the audio and video equipment industry which increased 30.1 percent. Nondurable manufacturing also experienced widespread increases in unit labor costs with 26 of the 35 industries recording an increase, led by the other leather products industry with a rise of 8.6 percent. Of the 4 industries in the mining sector, 3 had increases in unit labor costs led by the metal ore mining industry which increased 17.1 percent. (See table 1.)

## Unit Labor Cost Trends in NAICS 3-Digit Industries, 2018

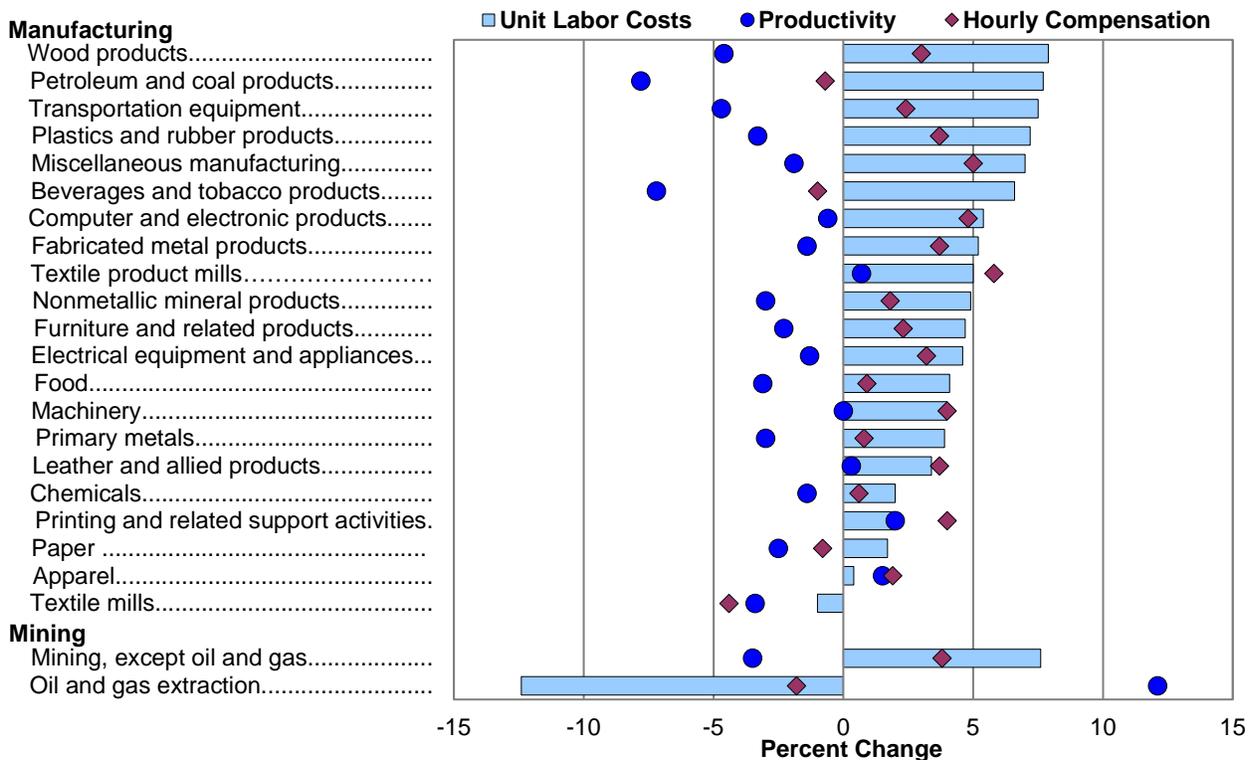
### Manufacturing

- Employers experience increased unit labor costs when hourly compensation growth exceeds productivity growth. Unit labor costs increased in 20 of the 21 manufacturing industries, as hourly compensation growth outpaced that of productivity. Textile mills was the exception and had a decrease in unit labor costs due to hourly compensation declines that exceeded productivity declines. (See chart 3.)

### Mining

- Unit labor costs declined in the oil and gas extraction industry by 12.4 percent, as productivity increased by 12.1 percent and hourly compensation decreased by 1.8 percent. (See chart 3.)
- The mining, except oil and gas industry saw a 7.6 percent increase in unit labor costs, as hourly compensation rose by 3.8 percent while productivity dropped by 3.5 percent.

**Chart 3. Unit labor costs, productivity, and hourly compensation in NAICS 3-digit manufacturing and mining industries, 2018**



## Long-Term Trends in Labor Productivity and Unit Labor Costs

Chart 4 displays the number of NAICS 4-digit manufacturing and mining industries with increases in productivity, output, and hours worked for selected time periods through 2018.

### Labor Productivity

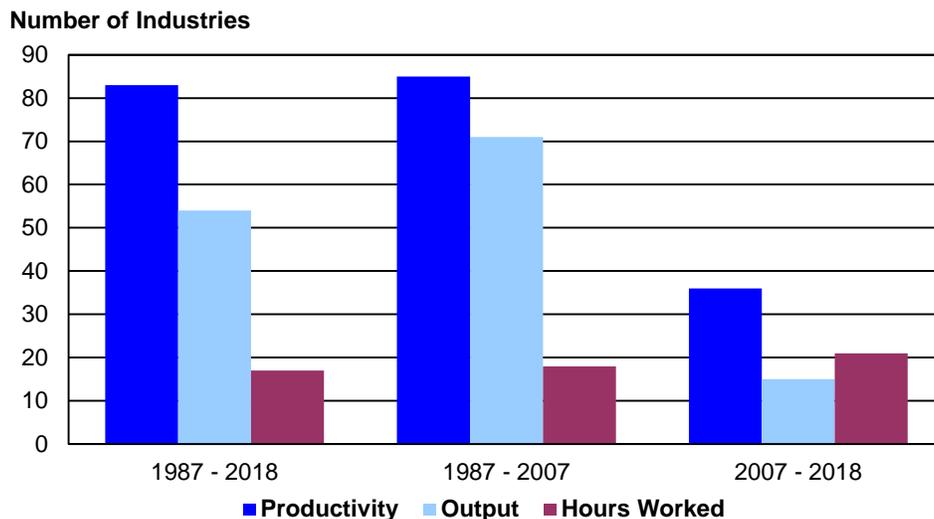
- Over the entire **1987-2018** period, labor productivity rose in 83 of the 90 manufacturing and mining industries. Output rose in 54 industries, while hours worked increased in only 17. In the 17 industries where hours worked increased, they rose at a slow pace, less than half a percent per year on average.
- During the more recent **2007-2018** period, which included the Great Recession of 2007-09, productivity increased in only 36 industries. These increases are predominantly the result of a decline in hours worked rather than an increase in output, as hours worked fell in 31 of these industries while output increased in only 10.

### Unit Labor Costs

- During the **1987-2018** period, unit labor costs increased in 77 of the 86 NAICS 4-digit manufacturing industries. All 4 mining industries saw an increase in unit labor costs.
- From **2007 to 2018**, unit labor costs increased in 80 of the 86 manufacturing industries and in 3 of the 4 mining industries. Unit labor costs increased the most in the audio and video equipment industry.

The computer and peripheral equipment industry recorded the largest productivity gain as well as the largest unit labor cost decline during both the 1987-2018 and 1987-2007 periods. However, between 2007 and 2018, the oil and gas extraction industry posted the greatest productivity growth and the largest unit labor cost decline.

**Chart 4. Manufacturing and mining industries with increases in labor productivity, output, and hours worked**  
(NAICS 4-digit industries)



## **Additional Information**

Manufacturing industry output measures for 2016 and earlier years are constructed primarily using data from the economic censuses and annual surveys of the U.S. Census Bureau together with data on price changes primarily from BLS. These measures have been revised due to new and revised data from the Bureau of Economic Analysis, used in part to construct intra-industry transactions. Manufacturing industry output for 2017 and 2018 is estimated based on historical relationships between BLS sectoral output, BLS price indexes, and data on industrial production from the Federal Reserve Board.

### **Want to know more?**

**Find data** at [www.bls.gov/lpc](http://www.bls.gov/lpc) for:

- Additional industries and sectors
- Detailed data series: indexes of productivity and related measures; rates of change; and levels of industry employment, hours worked, nominal value of production, and labor compensation
- Additional years and long-term data

### **Questions?**

Additional information can be obtained by calling the BLS productivity program at (202) 691-5606 or by sending an email to [productivity@bls.gov](mailto:productivity@bls.gov). Information in this release will be made available to sensory impaired individuals upon request. Voice phone: (202) 691-5200; Federal Relay Service: (800) 877-8339.

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## Technical Note

**Labor Productivity:** Labor productivity describes the relationship between real output and the labor hours involved in its production. These measures show the changes from period to period in the amount of goods and services produced per hour worked. Although the labor productivity measures relate output in an industry to hours worked of all persons in that industry, they do not measure the specific contribution of labor to growth in output. Rather, they reflect the joint effects of many influences, including: changes in technology; capital investment; utilization of capacity, energy, and materials; the use of purchased services inputs, including contract employment services; the organization of production; the characteristics and effort of the workforce; and managerial skill.

**Unit Labor Costs:** Unit labor costs represent the cost of labor required to produce one unit of output. The unit labor cost indexes are computed by dividing an index of nominal industry labor compensation by an index of real industry output. Unit labor costs also describe the relationship between compensation per hour worked (hourly compensation) and real output per hour worked (labor productivity). When hourly compensation growth outpaces productivity, unit labor costs increase. Alternatively, when productivity growth exceeds hourly compensation, unit labor costs decrease.

**Output:** Industry output is measured as an annual-weighted index of the changes in the various products (in real terms) provided for sale outside the industry. Real industry output is usually derived by deflating nominal sales or values of production using BLS price indexes, but for some industries it is measured by physical quantities of output. Industry output reflects sectoral value of production, derived by adjusting shipments for changes in inventories and removing intra-industry transactions. Industry output measures are constructed primarily using data from the economic censuses and annual surveys of the Census Bureau, U.S. Department of Commerce, together with data on price changes primarily from BLS. Data from the Bureau of Economic Analysis at the U.S. Department of Commerce is used in part to construct intra-industry transactions. Other data sources include the Energy Information Administration at the U.S. Department of Energy and the U.S. Geological Survey at the U.S. Department of the Interior. Manufacturing industry output for 2017 and 2018 is estimated based on historical relationships between BLS sectoral output, BLS price indexes, and data on industrial production from the Federal Reserve Board.

**Labor Hours:** Labor hours are measured as annual hours worked by all employed persons in an industry. Data on industry employment and hours come primarily from the BLS Current Employment Statistics (CES) survey and Current Population Survey (CPS). CES data on the number of total and production worker jobs held by wage and salary workers in nonfarm establishments are supplemented with CPS data on self-employed and unpaid family workers to estimate industry employment. Hours worked estimates are derived using CES and CPS employment, CES data on the average weekly hours paid of production workers, CPS data on hours of nonproduction, self-employed, and unpaid family workers, and ratios of hours worked to hours paid based on data from the National Compensation Survey (NCS). For some industries, employment and hours data are supplemented or further disaggregated using data from the BLS Quarterly Census of Employment and Wages (QCEW), the

Census Bureau, or other sources. Hours worked are estimated separately for different types of workers and then are directly aggregated; no adjustments for labor composition are made.

**Labor Compensation:** Labor compensation, defined as payroll plus supplemental payments, is a measure of the cost to the employer of securing the services of labor. Payroll includes salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind. Supplemental payments include both legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation, such as the employer portion of private health insurance and pension plans. Industry compensation measures are constructed primarily using data from the BLS QCEW and the economic censuses of the Census Bureau at the U.S. Department of Commerce.

**Table 1. Recent labor productivity, unit labor costs, and related data**

Industry	2012 NAICS code	2018 Employment (thousands)	Percent change, 2017-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
<b>Mining</b>							
Mining.....	21	696.0	2.1	-1.6	11.8	9.5	10.1
Oil and gas extraction.....	211	145.5	12.1	-12.4	15.6	3.1	1.2
Oil and gas extraction.....	2111	145.5	12.1	-12.4	15.6	3.1	1.2
Mining, except oil and gas.....	212	196.0	-3.5	7.6	0.2	3.8	7.7
Coal mining.....	2121	53.1	-4.9	7.6	-2.0	3.0	5.4
Metal ore mining.....	2122	41.5	-11.4	17.1	-5.9	6.2	10.2
Nonmetallic mineral mining and quarrying.....	2123	101.4	2.3	2.2	5.7	3.3	8.0
<b>Nondurable Manufacturing</b>							
Food.....	311	1,666.9	-3.1	4.1	-0.6	2.6	3.5
Animal food.....	3111	63.8	-2.8	2.4	2.0	4.9	4.4
Grain and oilseed milling.....	3112	60.1	5.3	-5.4	3.4	-1.9	-2.2
Sugar and confectionery products.....	3113	78.2	-7.1	8.4	-3.1	4.3	5.0
Fruit and vegetable preserving and specialty.....	3114	172.3	-2.8	6.1	-4.6	-1.8	1.2
Dairy products.....	3115	149.7	-5.7	3.8	-1.5	4.4	2.2
Animal slaughtering and processing.....	3116	526.1	-1.8	6.3	-0.3	1.6	6.0
Seafood product preparation and packaging.....	3117	37.7	-4.6	3.6	-2.7	2.0	0.8
Bakeries and tortilla products.....	3118	347.6	-4.4	1.8	0.7	5.3	2.5
Other food products.....	3119	231.4	-5.4	5.9	-1.4	4.2	4.4
Beverages and tobacco products.....	312	274.1	-7.2	6.6	-2.3	5.2	4.2
Beverages.....	3121	262.8	-6.1	6.1	-0.7	5.7	5.4
Tobacco.....	3122	11.3	-1.3	-4.3	-6.7	-5.5	-10.8
Textile mills.....	313	117.5	-3.4	-1.0	2.1	5.7	1.1
Fiber, yarn, and thread mills.....	3131	29.4	-1.8	-4.4	8.0	10.0	3.2
Fabric mills.....	3132	55.9	0.7	-0.9	1.3	0.6	0.4
Textile and fabric finishing mills.....	3133	32.2	-11.3	2.2	-1.4	11.1	0.8
Textile product mills.....	314	126.7	0.7	5.0	-3.5	-4.2	1.4
Textile furnishings mills.....	3141	55.1	-3.9	4.5	-4.4	-0.5	-0.1
Other textile product mills.....	3149	71.6	5.2	5.0	-2.2	-7.0	2.7
Apparel.....	315	126.2	1.5	0.4	-3.3	-4.7	-2.9
Apparel knitting mills.....	3151	11.2	-7.1	3.1	-6.2	1.0	-3.3
Cut and sew apparel.....	3152	102.5	3.2	0.5	-2.9	-5.9	-2.3
Accessories and other apparel.....	3159	12.5	-3.5	-3.8	-3.8	-0.3	-7.5
Leather and allied products.....	316	30.5	0.3	3.4	-3.5	-3.8	-0.2
Leather and hide tanning and finishing.....	3161	4.7	6.5	-7.9	-4.1	-9.9	-11.7
Footwear.....	3162	12.9	0.1	3.5	-1.1	-1.2	2.4
Other leather products.....	3169	12.9	-1.9	8.6	-6.2	-4.4	1.9
Paper.....	322	369.7	-2.5	1.7	-1.0	1.5	0.7
Pulp, paper, and paperboard mills.....	3221	96.2	-3.2	-2.3	-1.3	2.0	-3.6
Converted paper products.....	3222	273.5	-2.2	3.8	-0.9	1.3	2.9
Printing and related support activities.....	323	449.1	2.0	2.0	-1.5	-3.5	0.4
Printing and related support activities.....	3231	449.1	2.0	2.0	-1.5	-3.5	0.4
Petroleum and coal products.....	324	117.1	-7.8	7.7	-3.3	4.9	4.2
Petroleum and coal products.....	3241	117.1	-7.8	7.7	-3.3	4.9	4.2
Chemicals.....	325	854.7	-1.4	2.0	0.6	2.1	2.7
Basic chemicals.....	3251	152.8	-0.2	2.9	1.5	1.7	4.5
Resin, rubber, and artificial fibers.....	3252	95.6	3.5	2.9	2.0	-1.5	4.9
Agricultural chemicals.....	3253	36.1	2.2	-0.3	1.2	-1.0	0.9
Pharmaceuticals and medicines.....	3254	296.8	-3.4	2.4	-1.0	2.5	1.4
Paints, coatings, and adhesives.....	3255	64.8	-3.5	4.1	-1.4	2.1	2.6
Soaps, cleaning compounds, and toiletries.....	3256	123.4	-4.5	-0.4	2.1	7.0	1.8
Other chemical products and preparations.....	3259	85.2	-0.3	4.1	0.1	0.4	4.2
Plastics and rubber products.....	326	733.1	-3.3	7.2	-2.5	0.9	4.6

**Table 1. Recent labor productivity, unit labor costs, and related data — Continued**

Industry	2012 NAICS code	2018 Employment (thousands)	Percent change, 2017-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
Plastics products.....	3261	593.8	-3.3	7.3	-2.5	0.9	4.6
Rubber products.....	3262	139.3	-3.4	7.1	-2.5	1.0	4.5
<b>Durable Manufacturing</b>							
Wood products.....	321	438.7	-4.6	7.9	-1.3	3.4	6.5
Sawmills and wood preservation.....	3211	104.5	-9.5	6.8	-1.6	8.8	5.1
Plywood and engineered wood products.....	3212	81.4	-1.9	8.1	0.0	1.9	8.0
Other wood products.....	3219	252.8	-3.4	8.4	-1.7	1.7	6.5
Nonmetallic mineral products.....	327	424.8	-3.0	4.9	-0.5	2.6	4.4
Clay products and refractories.....	3271	43.0	0.9	0.4	-1.6	-2.5	-1.1
Glass and glass products.....	3272	87.9	-4.4	4.1	1.6	6.2	5.8
Cement and concrete products.....	3273	195.9	-3.2	7.2	-3.6	-0.4	3.3
Lime and gypsum products.....	3274	16.1	-11.8	16.1	-2.0	11.2	13.8
Other nonmetallic mineral products.....	3279	81.9	-2.6	1.1	5.1	7.9	6.3
Primary metals.....	331	379.9	-3.0	3.9	2.6	5.7	6.6
Iron and steel mills and ferroalloys.....	3311	83.6	-2.4	3.3	3.8	6.3	7.2
Steel products from purchased steel.....	3312	58.1	-4.6	4.0	3.1	8.1	7.2
Alumina and aluminum production.....	3313	58.1	-2.3	2.1	2.8	5.2	5.0
Other nonferrous metal production.....	3314	60.1	-5.4	5.5	-0.6	5.1	4.9
Foundries.....	3315	120.0	-2.1	5.0	2.4	4.6	7.4
Fabricated metal products.....	332	1,489.7	-1.4	5.2	1.0	2.4	6.2
Forging and stamping.....	3321	100.3	-0.5	6.0	-0.3	0.3	5.7
Cutlery and handtools.....	3322	38.9	-0.3	-7.0	10.3	10.7	2.6
Architectural and structural metals.....	3323	394.1	-1.8	7.0	1.0	2.9	8.0
Boilers, tanks, and shipping containers.....	3324	91.4	0.9	5.5	-1.1	-1.9	4.4
Hardware.....	3325	25.8	-1.7	1.6	1.6	3.4	3.2
Spring and wire products.....	3326	44.3	-1.1	2.6	0.2	1.3	2.8
Machine shops and threaded products.....	3327	371.7	-2.8	5.1	0.8	3.7	6.0
Coating, engraving, and heat treating metals.....	3328	140.4	0.2	2.3	4.3	4.1	6.7
Other fabricated metal products.....	3329	282.8	-0.7	6.1	0.0	0.7	6.1
Machinery.....	333	1,128.2	0.0	4.0	2.8	2.9	6.9
Agriculture, construction, and mining machinery.....	3331	220.0	1.0	3.2	6.5	5.5	9.9
Industrial machinery.....	3332	121.2	-2.5	9.7	-1.7	0.8	7.8
Commercial and service industry machinery.....	3333	95.4	-3.5	1.5	2.0	5.6	3.5
HVAC and commercial refrigeration equipment.....	3334	134.0	-0.3	2.1	-0.4	-0.2	1.6
Metalworking machinery.....	3335	184.3	-1.3	3.3	0.6	1.9	3.9
Turbine and power transmission equipment.....	3336	99.0	4.6	5.5	6.4	1.8	12.2
Other general purpose machinery.....	3339	274.3	-1.2	4.9	2.1	3.4	7.1
Computer and electronic products.....	334	1,059.7	-0.6	5.4	-0.7	-0.1	4.7
Computer and peripheral equipment.....	3341	156.6	7.7	-0.2	2.9	-4.4	2.7
Communications equipment.....	3342	85.8	-3.5	2.1	-1.8	1.8	0.3
Audio and video equipment.....	3343	20.5	-6.9	30.1	-2.6	4.6	26.8
Semiconductors and electronic components.....	3344	371.2	-1.2	5.9	-0.2	1.0	5.6
Electronic instruments.....	3345	411.8	-1.5	7.0	-1.4	0.1	5.5
Magnetic media manufacturing and reproducing.....	3346	13.8	9.1	-9.2	3.8	-4.9	-5.8
Electrical equipment and appliances.....	335	401.7	-1.3	4.6	-1.1	0.3	3.5
Electric lighting equipment.....	3351	50.3	-0.1	7.7	-5.7	-5.6	1.5
Household appliances.....	3352	63.1	1.6	0.7	-2.9	-4.4	-2.2
Electrical equipment.....	3353	142.1	-2.6	2.0	-0.4	2.3	1.6
Other electrical equipment and components.....	3359	146.2	-2.1	8.4	0.3	2.5	8.8
Transportation equipment.....	336	1,716.6	-4.7	7.5	-1.0	3.9	6.3
Motor vehicles.....	3361	234.0	-7.6	7.2	-0.1	8.2	7.2
Motor vehicle bodies and trailers.....	3362	166.9	-10.1	12.4	-3.2	7.6	8.7
Motor vehicle parts.....	3363	602.1	-1.2	5.4	0.2	1.5	5.6
Aerospace products and parts.....	3364	513.0	-8.1	10.3	-3.2	5.3	6.8
Railroad rolling stock.....	3365	23.2	-5.9	8.5	-1.5	4.7	6.8

**Table 1. Recent labor productivity, unit labor costs, and related data — Continued**

Industry	2012 NAICS code	2018 Employment (thousands)	Percent change, 2017-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
Ship and boat building.....	3366	141.8	-1.0	6.4	-1.0	0.1	5.4
Other transportation equipment.....	3369	35.6	2.1	-2.7	-0.9	-3.0	-3.6
Furniture and related products.....	337	424.0	-2.3	4.7	-1.7	0.6	2.9
Household and institutional furniture.....	3371	272.7	-2.0	3.7	-0.2	1.8	3.5
Office furniture and fixtures.....	3372	113.9	-2.5	4.1	-1.5	1.1	2.5
Other furniture related products.....	3379	37.4	1.7	10.1	-8.6	-10.1	0.7
Miscellaneous manufacturing.....	339	658.4	-1.9	7.0	-1.5	0.4	5.4
Medical equipment and supplies.....	3391	324.4	-1.8	7.8	-2.3	-0.5	5.3
Other miscellaneous manufacturing.....	3399	334.0	-1.8	6.0	-0.5	1.3	5.5

**Table 2. Long run labor productivity, unit labor costs, and related data**

Industry	2012 NAICS code	2018 Employment (thousands)	Average annual percent change, 1987-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
<b>Mining</b>							
Mining.....	21	696.0	1.3	2.5	1.4	0.1	3.9
Oil and gas extraction.....	211	145.5	2.9	2.2	1.7	-1.2	3.9
Oil and gas extraction.....	2111	145.5	2.9	2.2	1.7	-1.2	3.9
Mining, except oil and gas.....	212	196.0	1.4	1.6	0.1	-1.3	1.6
Coal mining.....	2121	53.1	1.7	1.0	-1.4	-3.0	-0.4
Metal ore mining.....	2122	41.5	0.5	3.3	0.7	0.2	4.0
Nonmetallic mineral mining and quarrying.....	2123	101.4	1.3	2.0	1.0	-0.4	3.0
Support activities for mining <sup>1</sup> .....	213	307.5	0.7	3.6	2.4	1.7	6.2
Support activities for mining <sup>1</sup> .....	2131	307.5	0.7	3.6	2.4	1.7	6.2
<b>Nondurable Manufacturing</b>							
Food.....	311	1,666.9	0.6	1.9	1.2	0.6	3.1
Animal food.....	3111	63.8	2.0	1.3	2.0	0.0	3.3
Grain and oilseed milling.....	3112	60.1	1.9	0.8	1.3	-0.6	2.0
Sugar and confectionery products.....	3113	78.2	0.8	2.2	0.3	-0.5	2.5
Fruit and vegetable preserving and specialty.....	3114	172.3	0.9	1.8	0.9	0.0	2.7
Dairy products.....	3115	149.7	1.1	2.2	1.0	0.0	3.2
Animal slaughtering and processing.....	3116	526.1	0.3	2.0	1.5	1.2	3.6
Seafood product preparation and packaging.....	3117	37.7	1.0	2.6	0.2	-0.8	2.7
Bakeries and tortilla products.....	3118	347.6	0.1	1.8	0.4	0.3	2.2
Other food products.....	3119	231.4	-0.1	2.4	1.9	2.1	4.4
Beverages and tobacco products.....	312	274.1	-0.6	2.6	-0.3	0.4	2.3
Beverages.....	3121	262.8	0.3	1.7	1.3	1.0	3.0
Tobacco.....	3122	11.3	1.7	1.9	-3.2	-4.8	-1.4
Textile mills.....	313	117.5	2.8	-0.1	-2.1	-4.8	-2.2
Fiber, yarn, and thread mills.....	3131	29.4	3.1	-1.0	-1.0	-4.0	-2.0
Fabric mills.....	3132	55.9	2.9	0.4	-2.7	-5.4	-2.3
Textile and fabric finishing mills.....	3133	32.2	1.4	0.9	-2.9	-4.2	-2.0
Textile product mills.....	314	126.7	0.5	2.4	-1.6	-2.1	0.7
Textile furnishings mills.....	3141	55.1	0.3	2.2	-2.2	-2.6	-0.1
Other textile product mills.....	3149	71.6	1.2	2.1	-0.4	-1.6	1.7
Apparel.....	315	126.2	-0.5	1.8	-6.7	-6.2	-5.0
Apparel knitting mills.....	3151	11.2	-0.6	1.9	-7.6	-7.1	-5.8
Cut and sew apparel.....	3152	102.5	-0.3	1.7	-6.6	-6.3	-5.0
Accessories and other apparel.....	3159	12.5	-2.8	2.6	-6.3	-3.6	-3.9
Leather and allied products.....	316	30.5	0.9	1.9	-4.1	-4.9	-2.2
Leather and hide tanning and finishing.....	3161	4.7	0.9	0.4	-3.0	-3.9	-2.6
Footwear.....	3162	12.9	1.2	2.1	-4.7	-5.8	-2.8
Other leather products.....	3169	12.9	0.0	2.6	-3.8	-3.9	-1.3
Paper.....	322	369.7	1.6	1.3	-0.2	-1.8	1.1
Pulp, paper, and paperboard mills.....	3221	96.2	2.5	0.7	-0.5	-2.9	0.2
Converted paper products.....	3222	273.5	1.3	1.7	0.1	-1.2	1.8
Printing and related support activities.....	323	449.1	1.3	1.2	-0.6	-1.8	0.6
Printing and related support activities.....	3231	449.1	1.3	1.2	-0.6	-1.8	0.6
Petroleum and coal products.....	324	117.1	1.9	2.6	1.0	-0.9	3.7
Petroleum and coal products.....	3241	117.1	1.9	2.6	1.0	-0.9	3.7
Chemicals.....	325	854.7	1.2	2.0	0.8	-0.4	2.9
Basic chemicals.....	3251	152.8	2.2	1.4	0.8	-1.4	2.2
Resin, rubber, and artificial fibers.....	3252	95.6	2.0	1.9	0.4	-1.5	2.4
Agricultural chemicals.....	3253	36.1	2.3	1.1	1.2	-1.1	2.3
Pharmaceuticals and medicines.....	3254	296.8	-0.5	3.7	1.2	1.6	4.9
Paints, coatings, and adhesives.....	3255	64.8	0.6	2.2	0.0	-0.5	2.3
Soaps, cleaning compounds, and toiletries.....	3256	123.4	1.2	1.0	1.2	0.0	2.2

See footnotes at end of table.

**Table 2. Long run labor productivity, unit labor costs, and related data — Continued**

Industry	2012 NAICS code	2018 Employment (thousands)	Average annual percent change, 1987-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
Other chemical products and preparations.....	3259	85.2	1.8	1.3	0.0	-1.8	1.3
Plastics and rubber products.....	326	733.1	1.3	1.6	1.1	-0.2	2.7
Plastics products.....	3261	593.8	1.3	1.7	1.4	0.1	3.1
Rubber products.....	3262	139.3	1.3	1.5	0.0	-1.2	1.5
<b>Durable Manufacturing</b>							
Wood products.....	321	438.7	0.9	2.2	-0.1	-1.0	2.1
Sawmills and wood preservation.....	3211	104.5	1.6	1.3	0.2	-1.3	1.5
Plywood and engineered wood products.....	3212	81.4	0.7	2.0	0.0	-0.7	2.0
Other wood products.....	3219	252.8	0.7	2.5	-0.2	-0.8	2.4
Nonmetallic mineral products.....	327	424.8	0.7	1.9	0.1	-0.6	2.0
Clay products and refractories.....	3271	43.0	0.9	1.5	-1.5	-2.4	0.0
Glass and glass products.....	3272	87.9	2.0	0.8	0.5	-1.5	1.4
Cement and concrete products.....	3273	195.9	-0.3	2.4	0.0	0.3	2.5
Lime and gypsum products.....	3274	16.1	0.9	3.3	-0.5	-1.4	2.8
Other nonmetallic mineral products.....	3279	81.9	0.9	1.8	1.0	0.1	2.8
Primary metals.....	331	379.9	2.3	0.7	0.5	-1.7	1.1
Iron and steel mills and ferroalloys.....	3311	83.6	3.5	-0.5	1.2	-2.3	0.7
Steel products from purchased steel.....	3312	58.1	0.3	2.1	-0.2	-0.4	2.0
Alumina and aluminum production.....	3313	58.1	2.1	1.1	0.3	-1.8	1.4
Other nonferrous metal production.....	3314	60.1	1.5	2.0	-0.1	-1.6	1.9
Foundries.....	3315	120.0	1.6	1.2	-0.3	-1.9	0.9
Fabricated metal products.....	332	1,489.7	0.8	1.9	0.6	-0.2	2.5
Forging and stamping.....	3321	100.3	1.9	1.0	0.9	-1.0	2.0
Cutlery and handtools.....	3322	38.9	1.4	1.3	-0.7	-2.1	0.6
Architectural and structural metals.....	3323	394.1	0.4	2.4	0.8	0.4	3.2
Boilers, tanks, and shipping containers.....	3324	91.4	0.6	1.6	0.2	-0.5	1.7
Hardware.....	3325	25.8	0.6	1.5	-2.1	-2.7	-0.7
Spring and wire products.....	3326	44.3	1.7	1.6	-0.2	-1.8	1.4
Machine shops and threaded products.....	3327	371.7	1.3	1.6	2.0	0.7	3.6
Coating, engraving, and heat treating metals.....	3328	140.4	1.7	1.2	1.9	0.2	3.1
Other fabricated metal products.....	3329	282.8	0.4	2.1	-0.1	-0.5	2.0
Machinery.....	333	1,128.2	1.7	1.1	1.1	-0.6	2.2
Agriculture, construction, and mining machinery.....	3331	220.0	1.7	1.0	1.8	0.1	2.8
Industrial machinery.....	3332	121.2	1.2	1.5	0.6	-0.6	2.1
Commercial and service industry machinery.....	3333	95.4	1.5	0.8	0.0	-1.5	0.9
HVAC and commercial refrigeration equipment.....	3334	134.0	1.5	1.2	0.9	-0.6	2.0
Metalworking machinery.....	3335	184.3	1.5	1.1	0.3	-1.1	1.5
Turbine and power transmission equipment.....	3336	99.0	1.4	0.7	1.2	-0.2	2.0
Other general purpose machinery.....	3339	274.3	1.7	1.7	1.3	-0.4	3.0
Computer and electronic products.....	334	1,059.7	8.2	-4.7	6.0	-2.0	1.0
Computer and peripheral equipment.....	3341	156.6	14.7	-13.3	11.2	-3.1	-3.6
Communications equipment.....	3342	85.8	4.7	-0.6	1.5	-3.1	0.9
Audio and video equipment.....	3343	20.5	1.8	2.4	-1.8	-3.5	0.6
Semiconductors and electronic components.....	3344	371.2	11.6	-7.6	9.9	-1.5	1.6
Electronic instruments.....	3345	411.8	2.7	0.7	1.2	-1.5	1.9
Magnetic media manufacturing and reproducing.....	3346	13.8	1.5	0.6	-1.9	-3.4	-1.4
Electrical equipment and appliances.....	335	401.7	1.6	1.4	-0.1	-1.6	1.3
Electric lighting equipment.....	3351	50.3	1.2	1.5	-0.5	-1.7	1.0
Household appliances.....	3352	63.1	2.8	-0.3	0.2	-2.5	-0.1
Electrical equipment.....	3353	142.1	1.1	1.7	-0.7	-1.8	1.0
Other electrical equipment and components.....	3359	146.2	1.2	2.1	0.3	-0.9	2.3
Transportation equipment.....	336	1,716.6	2.2	0.3	1.5	-0.6	1.8
Motor vehicles.....	3361	234.0	2.4	0.1	1.8	-0.7	1.9
Motor vehicle bodies and trailers.....	3362	166.9	0.9	2.4	1.6	0.7	4.1
Motor vehicle parts.....	3363	602.1	2.7	-1.0	2.6	0.0	1.6

See footnotes at end of table.

**Table 2. Long run labor productivity, unit labor costs, and related data — Continued**

Industry	2012 NAICS code	2018 Employment (thousands)	Average annual percent change, 1987-2018				
			Labor productivity	Unit labor costs	Output	Hours worked	Labor compensation
Aerospace products and parts.....	3364	513.0	1.6	1.3	0.2	-1.4	1.5
Railroad rolling stock.....	3365	23.2	3.4	-0.7	3.6	0.3	2.9
Ship and boat building.....	3366	141.8	1.5	1.9	0.7	-0.9	2.6
Other transportation equipment.....	3369	35.6	3.2	-0.8	3.3	0.1	2.5
Furniture and related products.....	337	424.0	1.2	1.7	-0.1	-1.4	1.6
Household and institutional furniture.....	3371	272.7	1.1	1.8	-0.4	-1.5	1.4
Office furniture and fixtures.....	3372	113.9	1.2	1.9	0.1	-1.1	1.9
Other furniture related products.....	3379	37.4	1.9	1.1	0.7	-1.1	1.9
Miscellaneous manufacturing.....	339	658.4	1.6	1.6	1.5	-0.2	3.1
Medical equipment and supplies.....	3391	324.4	2.0	1.5	2.9	0.9	4.4
Other miscellaneous manufacturing.....	3399	334.0	1.2	1.7	0.3	-1.0	2.0

<sup>1</sup> For NAICS industry 2131 average annual percent changes are for 1987-2017. Employment is for 2017.