

## A 30-year analysis of Northeast manufacturing employment trends

*This article examines high-level manufacturing employment trends in the U.S. Northeast region between 1990 and 2019. In addition, the article presents a detailed industry analysis looking at three different periods within this 30-year time span: 1990–99, 2000–09, and 2010–19. Each of these periods exhibited manufacturing employment changes affected by either economic downturns or postrecessionary recoveries.*

The year 2019 marked the 40th anniversary of the 1979 national manufacturing employment peak, at which manufacturing employment reached a record high of 19.4 million, making up 21.6 percent of total nonfarm employment.<sup>1</sup> Since 1979, manufacturing employment has declined substantially; in 2019, it was estimated at 12.8 million, accounting for 8.5 percent of total nonfarm employment. The manufacturing industry encompasses any establishment (usually a plant, a factory, or a mill) that transforms raw materials into new products, such as automobiles or steel.<sup>2</sup> Manufacturing goods are classified as either durable or nondurable. Manufactured durable goods include ready-made products that typically last 3 years or more, whereas manufactured nondurable goods are categorized as “consumables” and are used in less than 3 years. Because the manufacturing industry produces some of the most consumed products and is connected to a long supply chain, employment levels in areas such as trade, production, and innovation are closely monitored as economic indicators. Thus, the overall decline in the national employment share of manufacturing has captured the attention of policymakers and labor economists alike.

This *Monthly Labor Review* article—the first in a series of four examining long-term trends in U.S. regional manufacturing employment—provides an overview and analysis of the decline in Northeast manufacturing employment between 1990 and 2019. The article examines both high-level manufacturing employment trends over this 30-year timespan and detailed industry employment trends by decade (1990–99, 2000–09, and 2010–19). The analysis reveals that each decade exhibited manufacturing employment changes affected by either economic downturns or postrecessionary recoveries, contributing to the narrative through which the concentration of manufacturing jobs in the Northeast region has declined between 1990 and 2019. As defined by the U.S. Census



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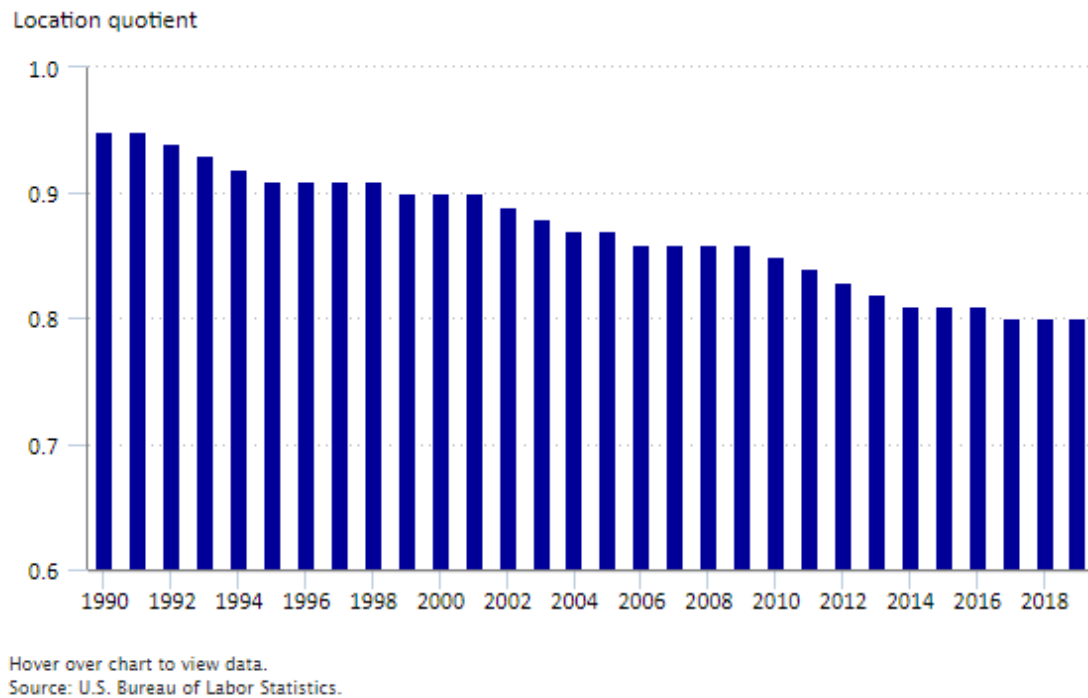
Bureau, the Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.<sup>3</sup>

## Context and methodological considerations

While the absolute level of manufacturing jobs peaked nationally in 1979, the manufacturing industry's share of total nonfarm employment peaked in 1943, when the industry made up 38 percent of total nonfarm employment.<sup>4</sup> At that peak, the United States was in the midst of World War II (1939–45), and there was high demand for defense-related manufactured products, whose production was concentrated in the Northeast region. In 1943, the region's absolute level of manufacturing jobs (6.6 million) and their share of total nonfarm employment (47.1 percent) both reached a peak. Over the course of the war, the U.S. federal government, aiming to boost war production efforts and stimulate the economy, increased its nationwide investment in manufacturing firms by 65 percent.<sup>5</sup> During this time, the Northeast's manufacturing employment concentration was about 1.3 times the national manufacturing employment concentration, indicating an industry specialization within the region.<sup>6</sup> However, much has changed since then, including the way in which the industry is classified. From 1939 to 2003, U.S. Bureau of Labor Statistics (BLS) employment data were recorded with the use of the Standard Industry Classification system rather than the present-day North American Industry Classification System (NAICS).<sup>7</sup> In 2003, the BLS Current Employment Statistics (CES) program adopted the NAICS and, to avoid time-series breaks, restructured all published state and metropolitan area series dating back to 1990. For consistency of analysis, this article focuses on Northeast manufacturing job numbers over the 30 years from 1990 to 2019, a period for which the data series have been restructured to accurately reflect modern NAICS code assignments.

In 1990, the Northeast region had 3.6 million manufacturing jobs, which made up roughly 15 percent of the region's total nonfarm employment. By 2019, the number of manufacturing jobs in the region declined to 1.8 million, representing 6.8 percent of total nonfarm employment. Location quotients are a useful tool for geographically comparing industry employment concentrations. Because these quotients are compared with national distributions, they can reveal local industry specializations. A location quotient is calculated by dividing the local employment concentration of a specific industry by the regional or national employment concentration of that same industry.<sup>8</sup> For example, in 1990, the location quotient for Northeast manufacturing employment was 0.95, meaning that the employment concentration of the Northeast region's manufacturing industry was 0.95 times the concentration of the national manufacturing industry. (See figure 1.) Because this quotient was less than 1.0, the Northeast did not exhibit a unique specialization in manufacturing jobs. In 2019, the location quotient for Northeast manufacturing employment was 0.80, indicating that the 2019 total nonfarm share of manufacturing jobs in the Northeast region was about four-fifths of what it was nationally.<sup>9</sup>

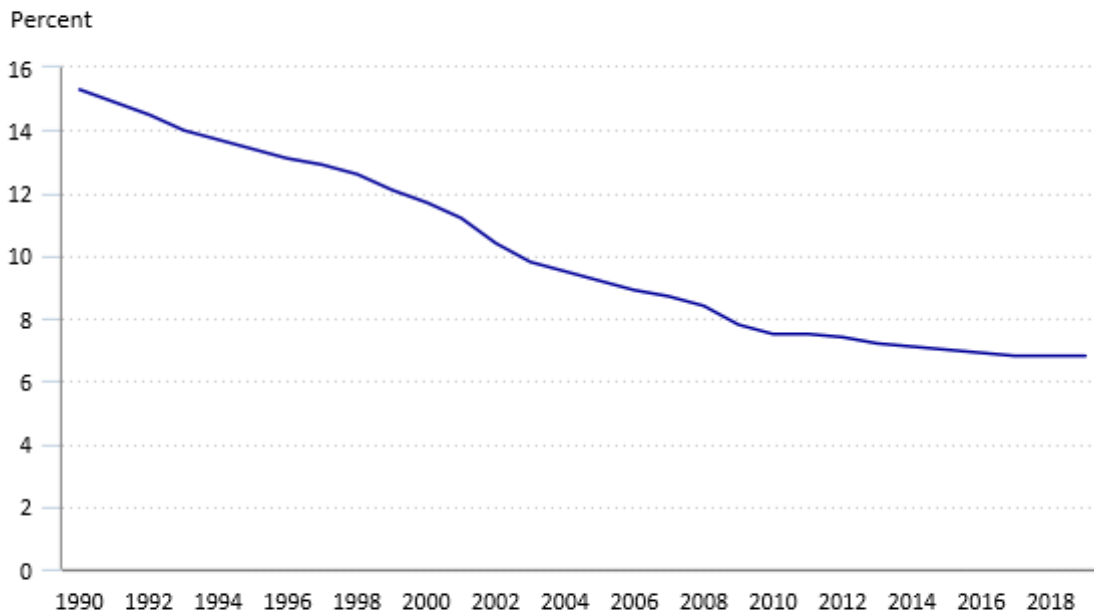
**Figure 1. Northeast manufacturing employment location quotients, not seasonally adjusted, 1990–2019**



## Northeast manufacturing employment trends

From 1990 to 2019, the share of manufacturing employment in total nonfarm employment within the Northeast region declined by 8.5 percentage points, and the region’s absolute level of manufacturing employment declined by 1.7 million. (See figures 2 and 3.) Total manufacturing employment for the region has been calculated by summing the region’s states’ annual manufacturing employment data.<sup>10</sup> Figure 2 shows that, in 2019, the manufacturing industry’s share of total nonfarm employment in the Northeast was 44.4 percent of what it was in 1990, indicating a shrinking concentration of manufacturing employment at the regional level.

**Figure 2. Northeast annual concentration of manufacturing employment, not seasonally adjusted, 1990–2019**

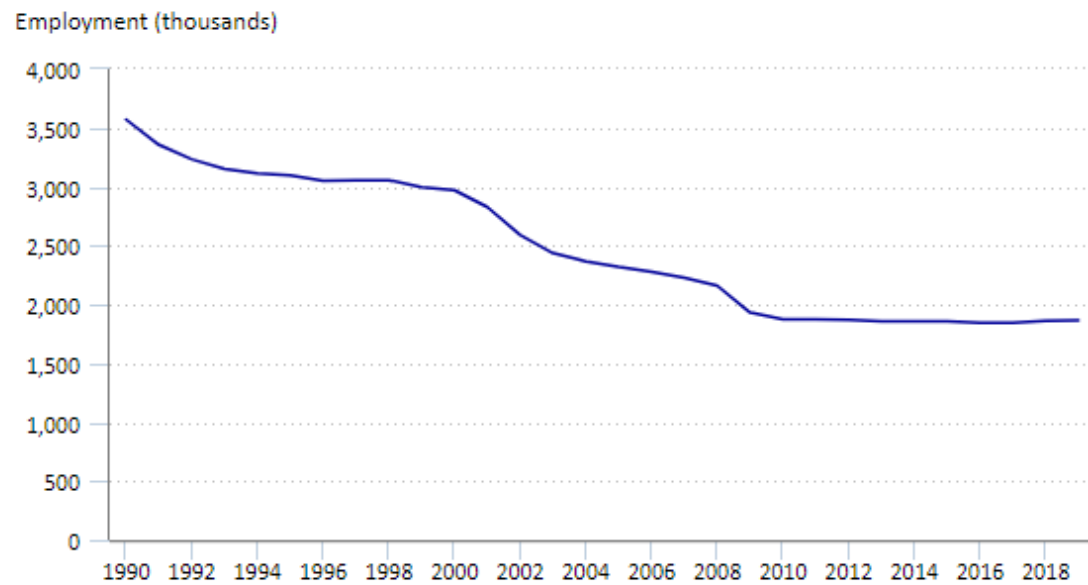


Hover over chart to view data.

Note: Between 1990 and 2019, there were three recessions: July 1990–March 1991, January 2001–November 2001, and December 2007–June 2009. Recession start and end dates are determined by the National Bureau of Economic Research.

Source: U.S. Bureau of Labor Statistics.

**Figure 3. Northeast manufacturing employment, not seasonally adjusted, 1990–2019**

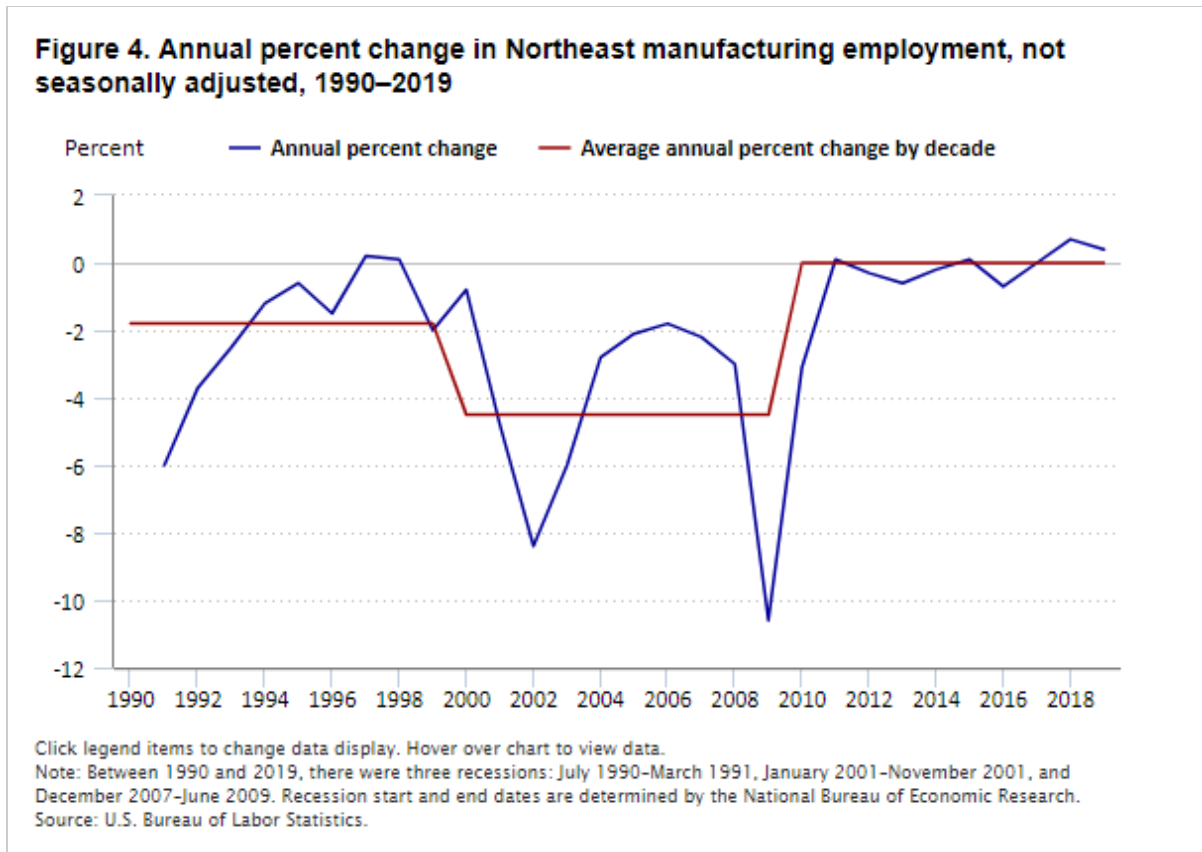


Hover over chart to view data.

Note: Between 1990 and 2019, there were three recessions: July 1990–March 1991, January 2001–November 2001, and December 2007–June 2009. Recession start and end dates are determined by the National Bureau of Economic Research.

Source: U.S. Bureau of Labor Statistics.

From 1990 to 1999, manufacturing employment in the Northeast region declined by an average of 1.8 percent annually.<sup>11</sup> (See figure 4.) During this period, the U.S. economy was recovering from the 1990–91 recession, and the manufacturing industry was attempting to rebound. In the late 1990s, however, the 1997–98 Asian financial crisis occurred, and while the United States incurred less economic damage than other countries, the crisis still had a negative effect on international demand for U.S. imports. In addition, Asian currency devaluations affected domestic demand for U.S. manufactured products, because American consumers could find cheaper product substitutes manufactured in Asia.<sup>12</sup> By 1999, Northeast manufacturing employment plateaued, and its location quotient declined to 0.90, a drop of 0.05 since 1990.



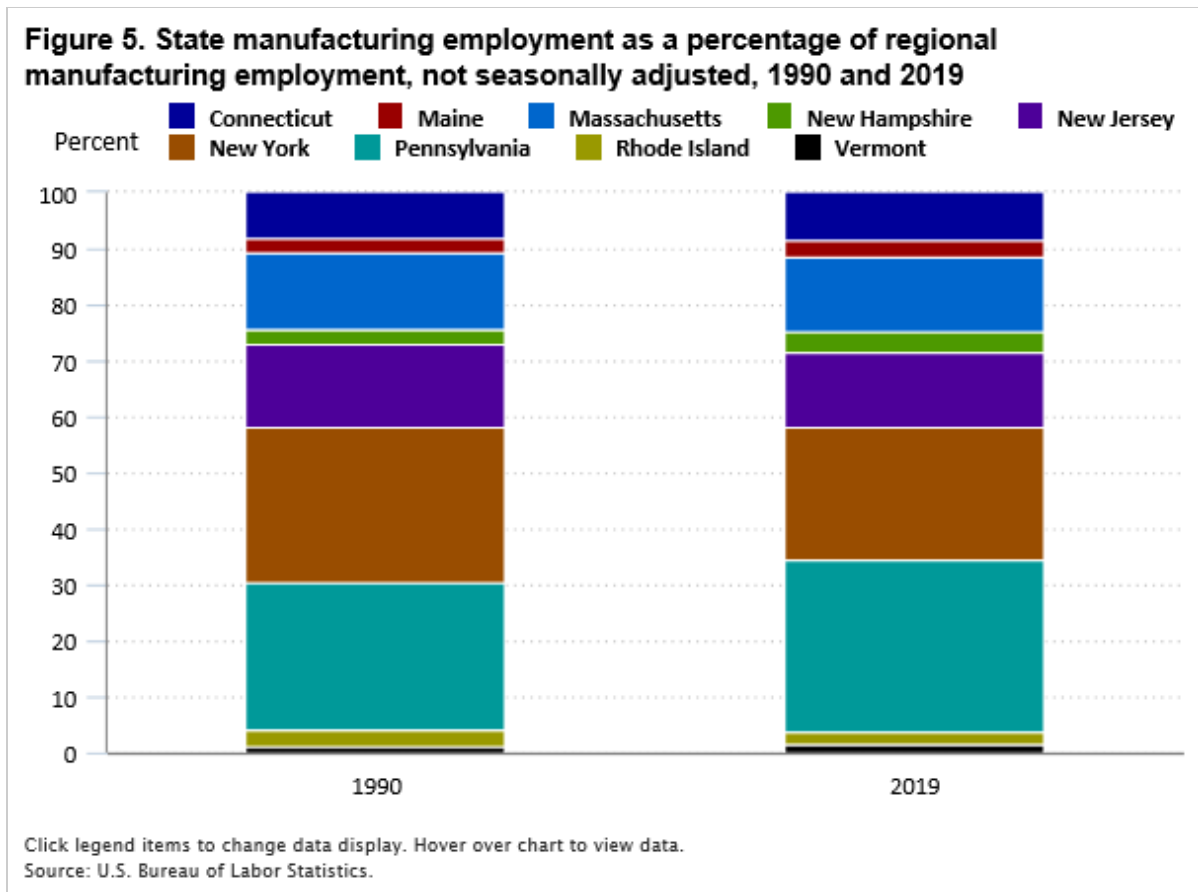
From 2000 to 2009, employment growth patterns in the Northeast shifted substantially, and the decline in manufacturing employment accelerated. Over the decade, regional manufacturing employment declined by an average of 4.5 percent annually. A similarly accelerated decline in manufacturing employment over the period was also observed at the national level, with the U.S. economy entering a recession in March 2001, which marked the end of the economy's second-longest expansion.<sup>13</sup> Between 2002 and 2006, the decline in Northeast manufacturing employment decelerated slightly, but it accelerated once more with the onset of the 2007–09 recession. Given the diversity of the manufacturing industry and the different employment populations of each state within the Northeast region, it is difficult to pinpoint specific manufacturing subindustries that suffered the most during this time.<sup>14</sup> What is known, however, is that, by 2009, the concentration of manufacturing jobs within the region was 0.86 of the national concentration, a drop of 0.04 since 1999.

Between 2010 and 2019, the concentration of manufacturing jobs in the Northeast region (relative to the national concentration) declined by 0.06, down to 0.80 in 2019. This happened because, over the decade, manufacturing employment at the national level recovered jobs, averaging 1.2-percent annual growth, whereas Northeast manufacturing employment trended lower, seeing an average annual decline of 0.03 percent.

## Regional distributions of manufacturing employment

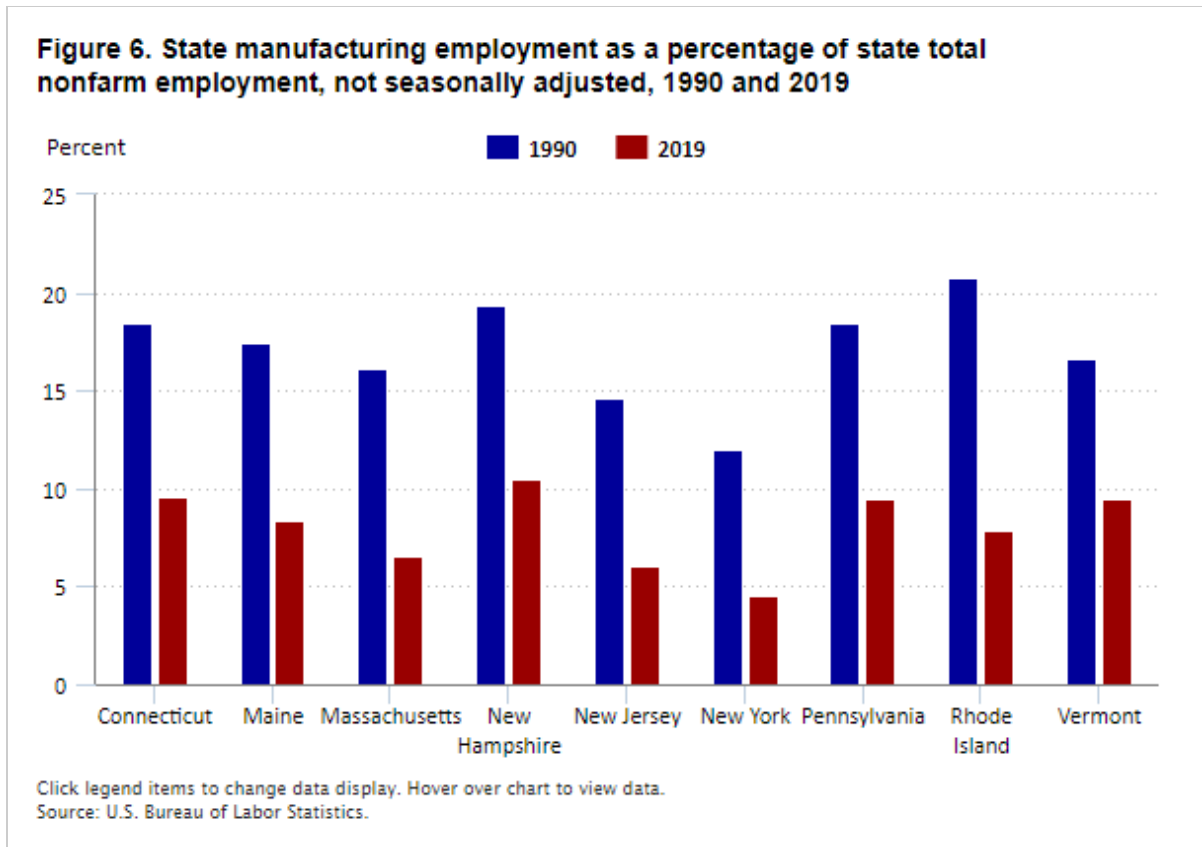
Although the overall size of the Northeast manufacturing industry declined between 1990 and 2019, the geographical distribution of manufacturing employment within the region remained fairly consistent. In 1990, three states made up more than 50 percent of regional manufacturing employment, with New York accounting for 27.5 percent, Pennsylvania for 26.6 percent, and New Jersey for 14.8 percent. (See figure 5.) These three states also represented more than 50 percent of regional manufacturing employment in 2019, although a slight shift in

representation occurred in that year, with Pennsylvania becoming the largest contributor to manufacturing employment at the regional level (30.8 percent) and New York becoming the second-largest contributor (23.5 percent).



However, the states that held the largest shares of manufacturing employment regionally did not hold the highest concentrations of manufacturing employment locally. The states with the highest local concentrations of manufacturing employment (relative to their total nonfarm employment) were, except for Pennsylvania, mostly smaller states with lower employment populations. In 1990, these states included Rhode Island, New Hampshire, and Connecticut, in which manufacturing jobs made up, respectively, 20.8 percent, 19.4 percent, and 18.4 percent of total nonfarm employment. These shares compare with 12.0 percent for New York, 18.4 percent for Pennsylvania, and 14.6 percent for New Jersey, the three states with the largest contributions to regional employment levels in 1990.

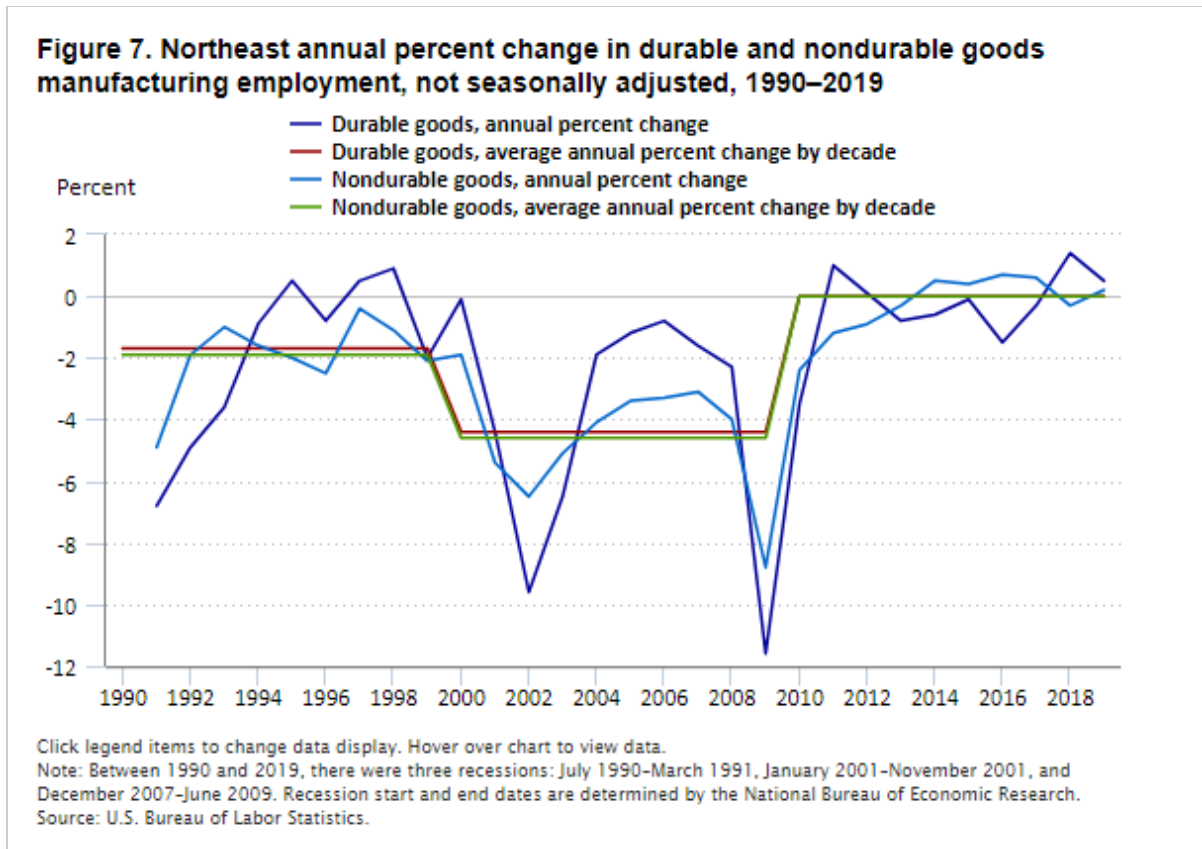
By 2019, the share of manufacturing employment within states shifted slightly. Rhode Island's share fell by 62.0 percent, New Hampshire's by 45.9 percent, and Connecticut's by 47.8 percent. In 2019, the states with the highest local shares of manufacturing employment (relative to their total nonfarm employment) were New Hampshire (10.5 percent), Connecticut (9.6 percent), Pennsylvania (9.5 percent), and Vermont (9.5 percent). (See figure 6.)



## Trends in durable and nondurable goods manufacturing employment

By 2019, in about half of Northeastern states, local manufacturing employment levels had declined by roughly 50 percent. Across the region, most of these declines came from the durable goods manufacturing sector. In 2019, the region's employment level for durable goods manufacturing was 53.2 percent of what it was in 1990, and the level for nondurable goods manufacturing was 50.9 percent of what it was in 1990. During years with steep declines in manufacturing employment, especially during recessions, nondurable goods manufacturing employment fared much better than durable goods manufacturing employment, with the latter absorbing most of the economic shock. (See figure 7.)





Comparing industry employment levels across Northeastern states can be helpful in identifying where relative concentrations of durable and nondurable goods manufacturing employment exist within the region. Over the 30-year study period, nearly every regional state had a higher share of manufacturing jobs in the durable goods industry than in the nondurable goods industry. (See figure 8.) The only exceptions were Maine, which had an average share of 47.2 percent from 1990 to 1999, and New Jersey, which had an average share of 44.1 percent from 1990 to 1999, 44.9 percent from 2000 to 2009, and 45.6 percent from 2010 to 2019.

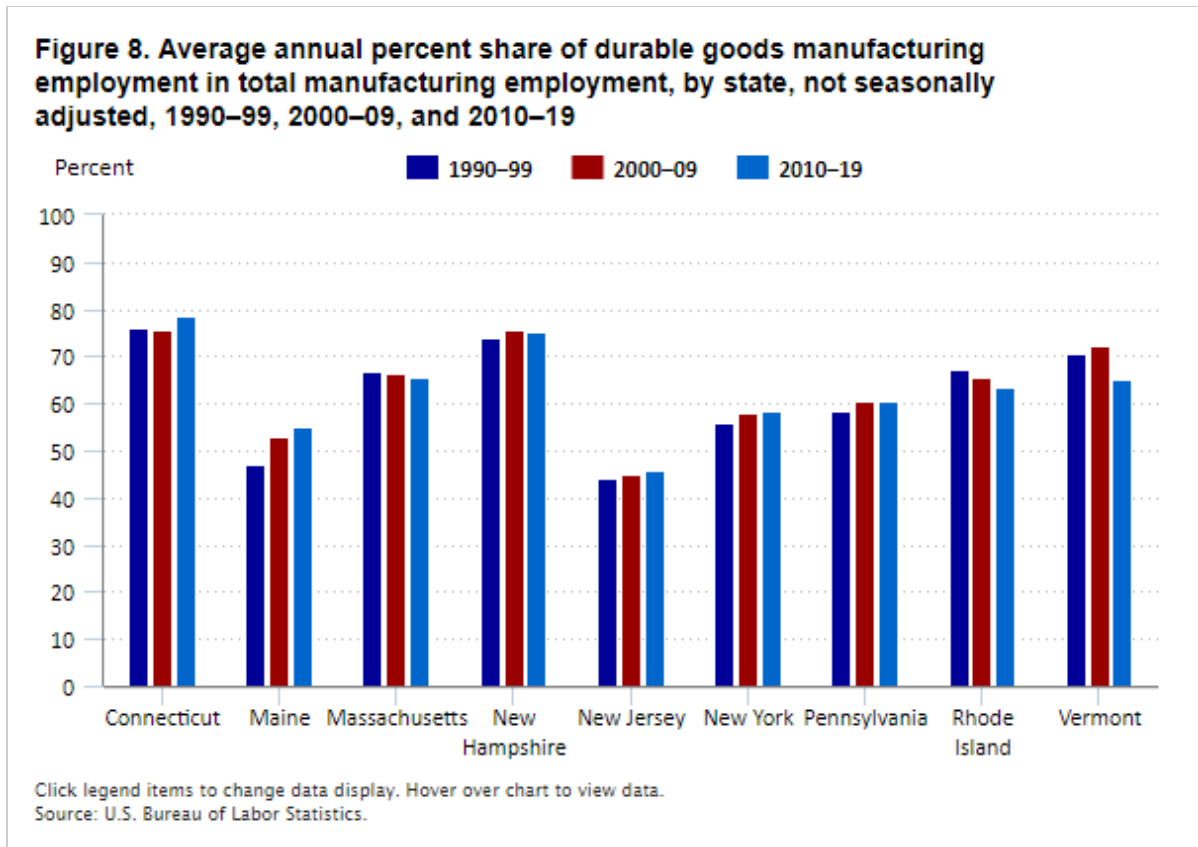


Table 1 shows each state’s durable and nondurable goods manufacturing employment as a percentage of state total manufacturing employment and total nonfarm employment. The table indicates how changes to these shares over the 30-year period may have affected the composition of the local and regional manufacturing industries. For example, in 1990, Maine’s manufacturing employment consisted primarily of nondurable goods employment (53.1 percent), but by 2019 it was made up mainly of durable goods employment (56.7 percent). This change in composition suggests that, over the 30-year period, the state’s specialization shifted from nondurable to durable goods manufacturing. However, because the state’s manufacturing employment population is low relative to that of other states in the region, this shift in specialization was unlikely to have a large impact on the regional manufacturing employment composition.

**Table 1. Northeast durable and nondurable goods manufacturing employment, by state, not seasonally adjusted, 1990 and 2019**

State	Industry	1990			2019		
		Employment (thousands)	Percent of state's manufacturing employment	Percent of state's total nonfarm employment	Employment (thousands)	Percent of state's manufacturing employment	Percent of state's total nonfarm employment
Connecticut	Durable goods	231.7	77.4	14.3	127.4	78.6	7.6

See footnotes at end of table.

**Table 1. Northeast durable and nondurable goods manufacturing employment, by state, not seasonally adjusted, 1990 and 2019**

State	Industry	1990			2019		
		Employment (thousands)	Percent of state's manufacturing employment	Percent of state's total nonfarm employment	Employment (thousands)	Percent of state's manufacturing employment	Percent of state's total nonfarm employment
	Nondurable goods	67.7	22.6	4.2	34.6	21.4	2.1
Maine	Durable goods	43.6	46.9	8.1	30.2	56.7	4.8
	Nondurable goods	49.4	53.1	9.2	23.2	43.5	3.7
Massachusetts	Durable goods	330.2	68.7	11.1	157.6	64.6	4.3
	Nondurable goods	150.3	31.3	5.0	86.2	35.4	2.3
New Hampshire	Durable goods	74.5	75.6	14.7	53.4	74.7	7.8
	Nondurable goods	24.0	24.4	4.7	18.1	25.3	2.6
New Jersey	Durable goods	244.7	46.2	6.7	116.9	46.5	2.8
	Nondurable goods	284.4	53.8	7.8	134.5	53.5	3.2
New York	Durable goods	555.6	56.6	6.8	254.5	57.9	2.6
	Nondurable goods	426.2	43.4	5.2	184.7	42.1	1.9
Pennsylvania	Durable goods	548.5	57.7	10.6	346.3	60.2	5.7
	Nondurable goods	402.5	42.3	7.8	229.1	39.8	3.8
Rhode Island	Durable goods	66.6	70.0	14.6	25.5	64.2	5.1
	Nondurable goods	28.6	30.1	6.3	14.2	35.8	2.8
Vermont	Durable goods	31.0	72.6	12.0	18.7	62.3	5.9
	Nondurable goods	11.8	27.6	4.6	11.3	37.7	3.6

Source: U.S. Bureau of Labor Statistics.

Focusing locally, one sees that, in 1990, Connecticut had the largest local ratio of durable goods to total manufacturing employment (77.4 percent), while New Jersey had the largest local ratio of nondurable goods to total manufacturing employment (53.8 percent). This pattern did not change in 2019. Connecticut's local ratio of durable goods to total manufacturing employment grew by 1.5 percent over the 30-year period and, in 2019, stood at 78.6 percent. New Jersey's local ratio of nondurable goods to total manufacturing employment declined by 0.6 percent, but it was still the largest in 2019, at 53.5 percent. These ratios suggest that manufacturing employment in Connecticut was more likely to be influenced by employment changes in the durable goods industry, whereas

manufacturing employment in New Jersey was more likely to be influenced by employment changes in the nondurable goods industry.

In examining the local ratios of durable and nondurable goods manufacturing employment to total nonfarm employment in 1990, one sees that New Hampshire had the highest local ratio of durable goods to total nonfarm employment (14.7 percent) and Maine had the highest local ratio of nondurable goods to total nonfarm employment (9.2 percent). By 2019, these ratios had declined to 7.8 percent and 3.7 percent, respectively. Throughout the 30-year period, New Hampshire's local ratio of durable goods to total nonfarm employment remained higher than that of any other state in the region. However, in 2019, Maine no longer had the highest local ratio of nondurable goods to total nonfarm employment, with Pennsylvania taking its place with a ratio of 3.8 percent. These figures suggest that, compared with other states in the region, New Hampshire was more likely to see its total nonfarm employment affected by changes in the durable goods industry. Similarly, relative to other regional states, Maine in 1990 was more likely to see its total nonfarm employment affected by changes in the nondurable goods industry, and the same was true for Pennsylvania in 2019.

Over the 30-year period, the three states with the greatest declines in durable goods manufacturing employment levels were New York (−301,100), Pennsylvania (−202,200), and Massachusetts (−172,600).<sup>15</sup> While Massachusetts' local ratio of durable goods to total manufacturing employment declined by 4.1 percentage points between 1990 and 2019, New York's and Pennsylvania's ratios increased by 1.3 and 2.5 percentage points, respectively. This suggests that, over the period, the local ratio of nondurable goods to total manufacturing employment increased in Massachusetts but declined in New York and Pennsylvania. In Massachusetts, the decline in the local ratio of durable goods to total manufacturing employment occurred mostly between 1990 and 1999, falling by 4.2 percent. In New York, the shift in industry composition occurred between 2000 and 2009, when the state's ratio of durable goods to total manufacturing employment increased by 3.0 percent. In Pennsylvania, the shift occurred mainly between 1990 and 1999, when the manufacturing share of durable goods employment increased by 4.3 percent.

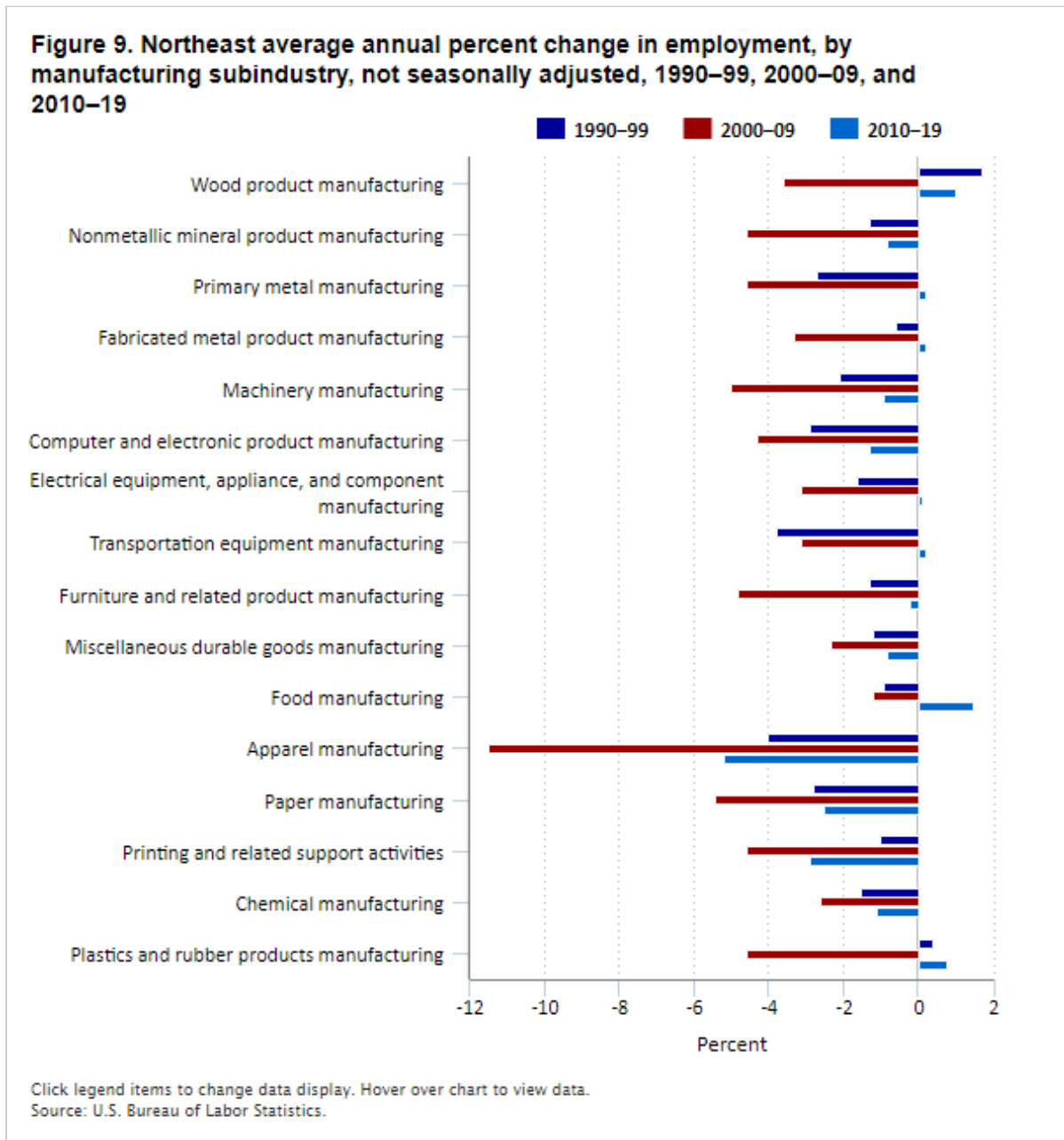
The three states with the largest declines in nondurable goods manufacturing employment levels between 1990 and 2019 were New York (−241,500), Pennsylvania (−173,400), and New Jersey (−149,900). These declines shrunk each state's local ratio of nondurable goods to total manufacturing employment, with New York's ratio declining by 1.4 percentage points, Pennsylvania's by 2.5 percentage points, and New Jersey's by 0.3 percentage points. In New York, the shift occurred mainly between 2000 and 2009, when the ratio of nondurable goods to total manufacturing employment declined by 4.1 percent. In Pennsylvania, the ratio declined mostly between 1990 and 1999, by 5.9 percent. Lastly, New Jersey saw a reversal in trend, with its ratio growing by 3.5 percent from 1990 to 1999 but declining by 0.4 percent from 2000 to 2009 and by 2.7 percent from 2010 to 2019.

## Detailed manufacturing industry employment trends

The CES program does not produce manufacturing employment data at the same subindustry employment levels across all states. The following analysis aggregates available detailed manufacturing data to estimate specific subindustry employment levels within the Northeast region.<sup>16</sup>

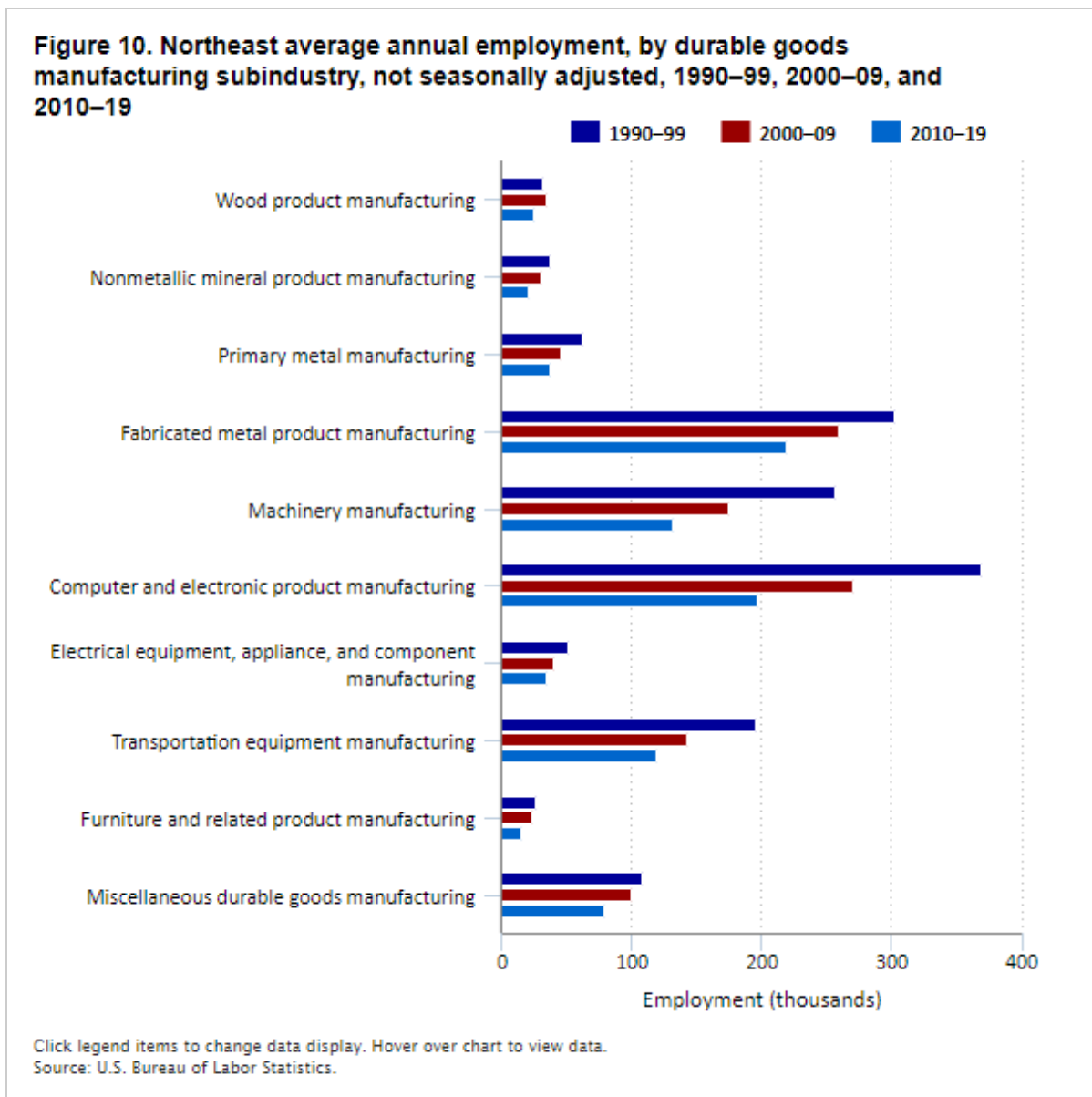
From 1990 to 1999, plastics and rubber products manufacturing and wood product manufacturing were the only two subindustries with growth in average annual employment levels. Apparel manufacturing, transportation equipment manufacturing, and computer and electronic product manufacturing had the highest average annual

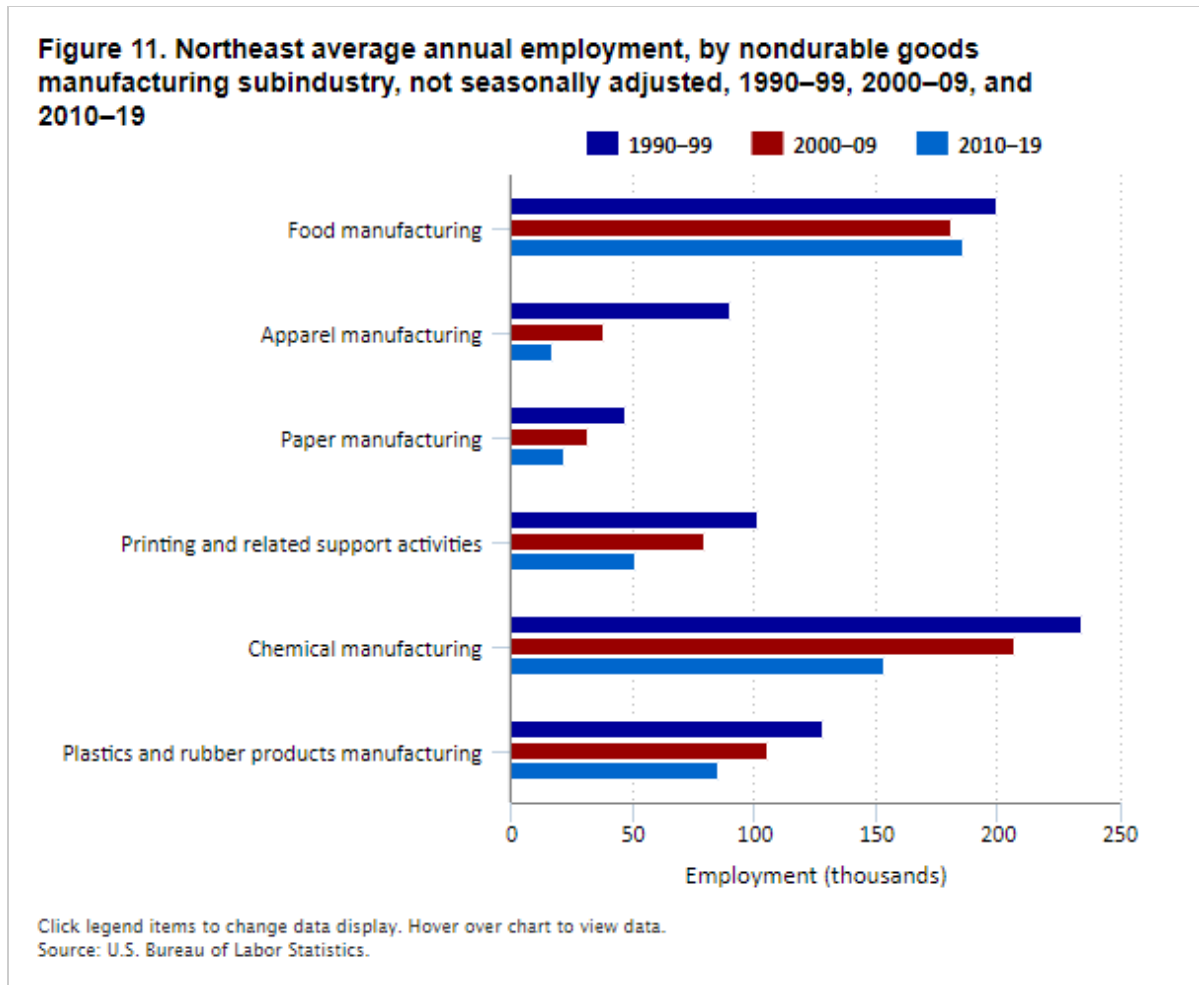
percent losses in employment. From 2000 to 2009, there were no subindustries with positive average annual changes in employment. As seen in figure 9, apparel manufacturing employment declined by an average of 11.5 percent annually, paper manufacturing employment declined by 5.4 percent, and machinery manufacturing employment declined by 5.0 percent. Apparel manufacturing employment continued to decline from 2010 to 2019, recording an average annual decrease of 5.2 percent. The next two subindustries with the largest percent declines in employment over the 2010–19 period were printing and related support activities, with an average annual decline of 2.9 percent, and paper manufacturing, with an average annual decline of 2.5 percent.



Because each of these subindustries only accounts for a small portion of overall Northeast regional manufacturing employment, the average annual percent changes in employment levels by subindustry do not provide a holistic representation of employment movements within the region. To provide context for the size of each manufacturing

subindustry, figures 10 and 11 show a breakdown of average employment levels for, respectively, durable and nondurable goods manufacturing subindustries. Between 1990 and 2019, the durable goods manufacturing subindustries with the highest employment levels were computer and electronic product manufacturing, fabricated metal product manufacturing, and machinery manufacturing.<sup>17</sup> The durable goods manufacturing subindustries with the lowest employment levels were furniture and related product manufacturing, wood product manufacturing, and nonmetallic mineral product manufacturing. For nondurable goods manufacturing, employment levels were the highest in chemical manufacturing, food manufacturing, and plastics and rubber products manufacturing. The nondurable goods manufacturing subindustries with the lowest employment levels were paper manufacturing, apparel manufacturing, and printing and related support activities.





Knowing the employment population level of a subindustry can help one gauge that subindustry's relative contribution to changes in regional manufacturing employment.<sup>18</sup> For example, between 1990 and 1999, wood product manufacturing recorded the highest positive average annual percent change in employment (1.7 percent); however, the subindustry's average employment level was 32,140, the second lowest among all durable goods subindustries, and therefore its growth rate was less likely to have a large effect on regional manufacturing employment trends. By comparison, over the same period, computer and electronic product manufacturing recorded the third-lowest negative average annual percent change in employment among all subindustries (–2.9 percent), but its average employment level was the highest (369,510). This indicates that changes in the growth rate of computer and electronic product manufacturing employment had a comparatively greater impact on regional manufacturing employment levels.

## Regional summary

Forty years after the national peak in manufacturing employment, the Northeast region's manufacturing employment concentration was 0.80 times the national manufacturing employment concentration. The region's location quotients over three decades (1990–99, 2000–19, and 2010–19) illustrate that, after recessions, the regional manufacturing industry did not recover as quickly as did the national manufacturing industry. This is especially evident in the recovery from the 2007–09 recession, when, between 2010 and 2019, the region's

manufacturing employment declined by an average of 0.03 percent annually, whereas the national manufacturing employment grew at an average annual rate of 1.2 percent.

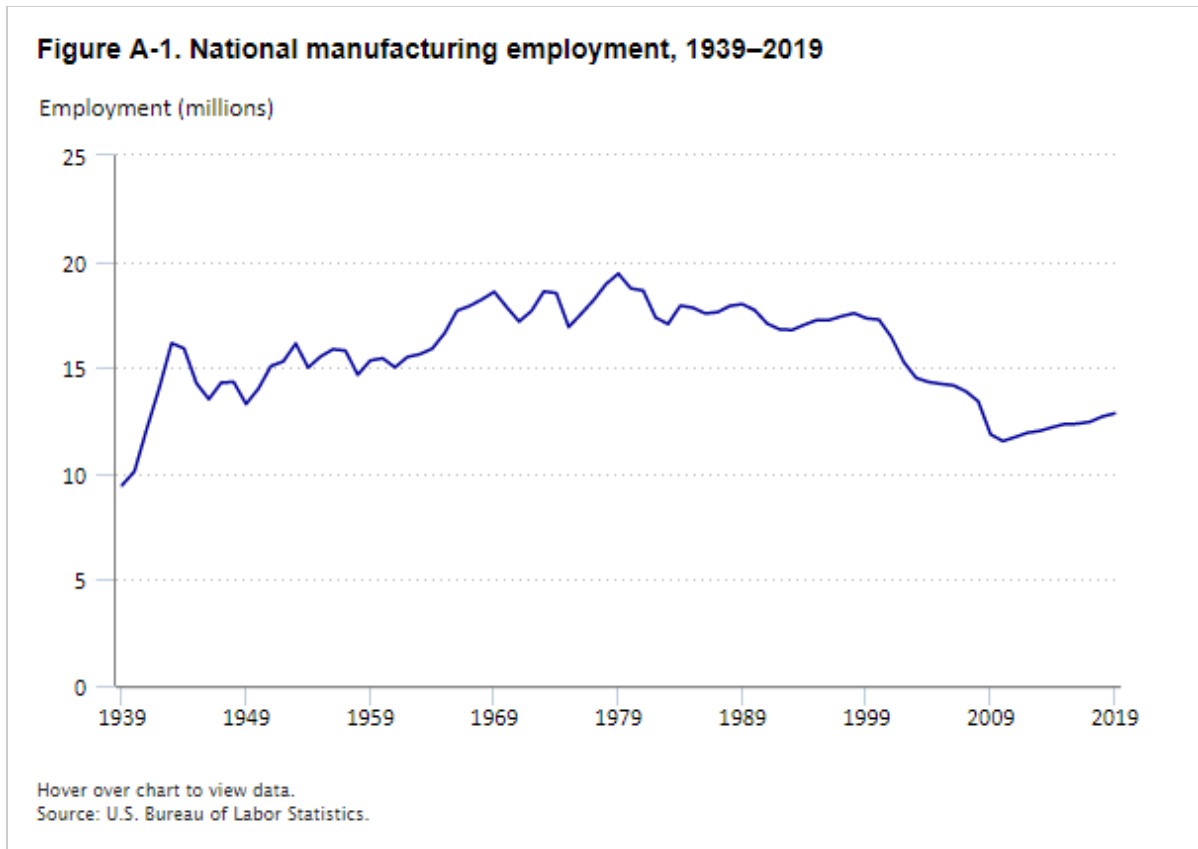
Between 1990 and 2019, over half of the Northeast region's manufacturing employment was consistently represented by New York and Pennsylvania alone. As a result, any substantial fluctuations within the local manufacturing industries of these states were usually indicators of larger changes to the regional manufacturing industry. States that represented a smaller portion of total regional manufacturing employment tended to have larger local manufacturing industries, and these industries made up a larger portion of those states' total nonfarm employment than they did in states with larger employment populations. New Hampshire and Connecticut consistently showed higher local ratios of manufacturing to total nonfarm employment than did any other states in the region.

Most states, except Maine from 1990 to 1999 and New Jersey from 1990 to 2019, had a higher percentage of employment in durable goods manufacturing than in nondurable goods manufacturing. After recessions, the region's nondurable goods manufacturing industry recovered faster than the durable goods manufacturing industry. Yet, the timing of the responses to and recoveries from these economic shocks differed by state. From 1990 to 2019, New York and Pennsylvania had the largest absolute declines in durable goods manufacturing employment, but each state's local ratio of durable goods to total manufacturing employment increased during the period. This means that, in each of these states, the overall manufacturing industry likely contracted more than the durable goods industry, a difference due to the nondurable goods industry shrinking within manufacturing.

States with positive average annual percent changes to their manufacturing employment share of durable goods experienced similarly sized negative average annual percent changes to their manufacturing employment share of nondurable goods, and vice versa. Published detailed data series show that manufacturing employment levels within the Northeast region were influenced mostly by employment changes in computer and electronic product manufacturing, fabricated metal product manufacturing, and primary metal manufacturing, which are the largest regional subindustries in terms of employment levels.

## **Appendix A: National manufacturing employment levels**





## Appendix B: Calculation of location quotients

Location quotients are used to compare a given industry's employment concentration at the local or regional level with that same industry's employment concentration at the national level. The following formula represents a general method for calculating location quotients for employment in a specific industry:

$$\begin{aligned} \text{Location quotient} &= \frac{\text{Local concentration of specific industry's employment}}{\text{National concentration of specific industry's employment}} \\ &= \frac{\text{Local specific industry's employment level/Local total nonfarm employment}}{\text{National specific industry's employment level/National total nonfarm employment}} \end{aligned}$$

## Appendix C: Detailed durable and nondurable goods manufacturing employment

**Table C-1. Differences in durable and nondurable goods manufacturing employment, by state, not seasonally adjusted, 1990–2019**

State	Industry	Percent difference in employment	Difference in employment levels (thousands)	Difference as percent of total manufacturing employment	Difference as percent of total nonfarm employment
Connecticut	Durable goods	-45.0	-104.3	1.3	-6.7
	Nondurable goods	-48.9	-33.1	-1.3	-2.1
Maine	Durable goods	-30.7	-13.4	9.8	-3.4
	Nondurable goods	-53.0	-26.2	-9.6	-5.6
Massachusetts	Durable goods	-52.3	-172.6	-4.1	-6.8
	Nondurable goods	-42.6	-64.1	4.1	-2.7
New Hampshire	Durable goods	-28.3	-21.1	-0.9	-6.9
	Nondurable goods	-24.6	-5.9	0.9	-2.1
New Jersey	Durable goods	-52.2	-127.8	0.2	-3.9
	Nondurable goods	-52.7	-149.9	-0.3	-4.6
New York	Durable goods	-54.2	-301.1	1.4	-4.2
	Nondurable goods	-56.7	-241.5	-1.4	-3.3
Pennsylvania	Durable goods	-36.9	-202.2	2.5	-4.9
	Nondurable goods	-43.1	-173.4	-2.5	-4.0
Rhode Island	Durable goods	-61.7	-41.1	-5.8	-9.5
	Nondurable goods	-50.3	-14.4	5.7	-3.4
Vermont	Durable goods	-39.7	-12.3	-10.3	-6.1
	Nondurable goods	-4.2	-0.5	10.0	-1.0

Source: U.S. Bureau of Labor Statistics.

## Appendix D: Count and percentage of Northeastern states represented within each manufacturing industry

**Table D-1. Details on Northeastern states with published manufacturing subindustry data series**

Manufacturing subindustry	Number of states with series published	States with series published	Percent of states in Northeast region with series published
Wood product manufacturing	2	Maine, Pennsylvania	22.2

See footnotes at end of table.

**Table D-1. Details on Northeastern states with published manufacturing subindustry data series**

Manufacturing subindustry	Number of states with series published	States with series published	Percent of states in Northeast region with series published
Nonmetallic mineral product manufacturing	1	Pennsylvania	11.1
Primary metal manufacturing	1	Pennsylvania	11.1
Fabricated metal product manufacturing	6	Connecticut, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island	66.7
Machinery manufacturing	5	Connecticut, Massachusetts, New Jersey, New York, Pennsylvania	55.6
Computer and electronic product manufacturing	7	Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island	77.8
Electrical equipment, appliance, and component manufacturing	2	Massachusetts, Pennsylvania	22.2
Transportation equipment manufacturing	5	Connecticut, Massachusetts, New York, Pennsylvania, Rhode Island	55.6
Furniture and related product manufacturing	1	Pennsylvania	11.1
Miscellaneous durable goods manufacturing	5	Connecticut, Massachusetts, New Jersey, Pennsylvania, Rhode Island	55.6
Food manufacturing	5	Massachusetts, New Jersey, New York, Pennsylvania, Vermont	55.6
Apparel manufacturing	1	New York	11.1
Paper manufacturing	2	Maine, New York	22.2
Printing and related support activities	3	Massachusetts, New Jersey, Pennsylvania	33.3
Chemical manufacturing	6	Connecticut, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island	66.7
Plastics and rubber products manufacturing	4	Massachusetts, New Jersey, New York, Pennsylvania	44.4

Source: U.S. Bureau of Labor Statistics.

## Appendix E: Northeast manufacturing subindustry employment levels and shares

**Table E-1. Northeast manufacturing subindustry employment in terms of average annual levels and as a percentage of total manufacturing employment, 1990–2019**

Subindustry	Average annual level (thousands)	Percent share
Wood product manufacturing	30.65	1.2
Nonmetallic mineral product manufacturing	29.32	1.2
Primary metal manufacturing	48.54	2.0
Fabricated metal product manufacturing	260.45	10.5
Machinery manufacturing	188.47	7.6
Computer and electronic product manufacturing	279.01	11.3
Electrical equipment, appliance, and component manufacturing	42.00	1.7
Transportation equipment manufacturing	152.57	6.2

See footnotes at end of table.

**Table E-1. Northeast manufacturing subindustry employment in terms of average annual levels and as a percentage of total manufacturing employment, 1990–2019**

Subindustry	Average annual level (thousands)	Percent share
Furniture and related product manufacturing	21.73	0.9
Miscellaneous durable goods manufacturing	95.82	3.9
Food manufacturing	188.90	7.6
Apparel manufacturing	48.33	1.9
Paper manufacturing	33.52	1.4
Printing and related support activities	77.13	3.1
Chemical manufacturing	198.51	8.0
Plastics and rubber products manufacturing	106.51	4.3

Note: The Current Employment Statistics program does not produce manufacturing employment data at the same subindustry employment levels across all states. Available detailed manufacturing data are aggregated to estimate specific subindustry employment levels within the Northeast region. Not all subindustries are represented, and therefore percent shares do not sum to 100 percent. The percent share of manufacturing employment is calculated by dividing the subindustry employment level by the total manufacturing employment level.

Source: U.S. Bureau of Labor Statistics.

**Table E-2. Northeast manufacturing subindustry employment as an average annual percentage of total manufacturing employment, 1990–99, 2000–09, and 2010–19**

Subindustry	1990–99	2000–09	2010–19
Wood product manufacturing	1.0	1.4	1.4
Nonmetallic mineral product manufacturing	1.2	1.2	1.1
Primary metal manufacturing	2.0	1.9	2.0
Fabricated metal product manufacturing	9.6	10.8	11.8
Machinery manufacturing	8.1	7.3	7.1
Computer and electronic product manufacturing	11.6	11.2	10.6
Electrical equipment, appliance, and component manufacturing	1.6	1.7	1.9
Transportation equipment manufacturing	6.2	6.0	6.4
Furniture and related product manufacturing	0.8	1.0	0.8
Miscellaneous durable goods manufacturing	3.4	4.2	4.2
Food manufacturing	6.3	7.6	10.0
Apparel manufacturing	2.8	1.5	0.9
Paper manufacturing	1.5	1.3	1.2
Printing and related support activities	3.2	3.3	2.7
Chemical manufacturing	7.4	8.6	8.3
Plastics and rubber products manufacturing	4.1	4.4	4.6

Source: U.S. Bureau of Labor Statistics.

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#### NOTES

<sup>1</sup> See appendix A for national manufacturing employment levels from 1939 to 2019.

<sup>2</sup> For more information on the manufacturing sector, see <https://www.bls.gov/iag/tgs/iag31-33.htm>.

<sup>3</sup> For a visual representation of the census regions and divisions of the United States, see [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf).

<sup>4</sup> This article uses nonseasonally adjusted Current Employment Statistics (CES) data rather than data from the Quarterly Census of Employment and Wages, because the CES data are maintained as a time series.

<sup>5</sup> Gregory Hooks and Leonard E. Bloomquist, “The legacy of World War II for regional growth and decline: the cumulative effects of wartime investments on U.S. manufacturing, 1947–1972,” *Social Forces*, vol. 71, no. 2, December 1992, pp. 303–337.

<sup>6</sup> The ratio of regional to national concentration (1.3) is defined as a location quotient. See appendix B for a general method for calculating location quotients.

<sup>7</sup> For information on the CES North American Industry Classification System (NAICS) series conversions and sample redesign, see Sharon Strifas, “Revisions to the Current Employment Statistics national estimates effective May 2003” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/ces/publications/benchmark/ces-benchmark-revision-2002.pdf>. For a general overview of the NAICS and the Standard Industrial Classification system, see <https://www.bls.gov/bls/naics.htm/>. For current NAICS classifications, see <https://www.census.gov/naics/>.

<sup>8</sup> Location quotients are defined by the U.S. Bureau of Economic Analysis as “an analytical statistic that measures a region’s industrial specialization relative to a larger geographic unit.” Because they are ratios of two percentages, location quotients are unitless measurements used for comparison. For more information, see [https://www.bea.gov/help/faq/478#:~:text=A%20location%20quotient%20\(LQ\)%20is.area%2C%20employment%2C%20etc.\)](https://www.bea.gov/help/faq/478#:~:text=A%20location%20quotient%20(LQ)%20is.area%2C%20employment%2C%20etc.)).

<sup>9</sup> Location quotients can change over time as a result of changes at the regional level, changes at the national level, or both. Because of this complexity, caution should be used when comparing ratios at different points in time.

<sup>10</sup> These calculations yield an estimated amount because the CES state and area data do not aggregate to the national level.

<sup>11</sup> The average annual percent change in manufacturing employment for the Northeast region is calculated by first determining the percent change in regional employment for each year in a given period and then averaging the resulting changes across all years in that period.

<sup>12</sup> Exports to Indonesia, South Korea, Malaysia, and Thailand—four Asian countries greatly affected by the 1997 currency collapse—decreased dramatically. Comparatively, the United States experienced small changes in demand for exports. Prices of goods and services imported from Asia had little impact on output prices in the United States. This lessened inflation pressures and aided the U.S. management of the trade impact. See James Harrigan, “The impact of the Asia crisis on U.S. industry: an almost-free lunch?” *Economic Policy Review* (Federal Reserve Bank of New York, September 2000), <https://www.newyorkfed.org/research/economists/medialibrary/media/research/epr/00v06n3/0009harr.pdf>; and Michael Carson and John Clark, “Asian financial crisis: July 1997–December 1998” (Federal Reserve Bank of New York, November 22, 2013), <https://www.federalreservehistory.org/essays/asian-financial-crisis>.

<sup>13</sup> See David S. Langdon, Terence M. McMenamin, and Thomas J. Krolik, “U.S. labor market in 2001: economy enters a recession,” *Monthly Labor Review*, February 2002, <https://www.bls.gov/opub/mlr/2002/02/art1full.pdf>.

<sup>14</sup> Because of the nature of the CES state and area employment estimation methodology, not every state has the same industries published at the same level of detail.

<sup>15</sup> See appendix C for a detailed table presenting differences in employment levels by state. These differences are calculated with data from table 1.

<sup>16</sup> See appendix D for a count and percentage of Northeastern states represented within each manufacturing subindustry.

<sup>17</sup> See appendix E for data on Northeast manufacturing subindustry employment levels and shares.

<sup>18</sup> Ibid.

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