

Research and Evaluation Brief

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Manufacturing: Losses and Gains

Much attention has been paid to employment declines experienced by the Massachusetts manufacturing sector in recent years. This brief examines the employment trends

in this sector between 1992 and 2002, when manufacturing employment in Massachusetts declined sharply, despite an overall increase in total employment. Researchers used data made available by the Massachusetts Division of Unemployment Assistance (DUA), which incorporates the new North American Industrial Classification System.

During the 1992-2002 period, annual manufacturing employment fell by 89,000 jobs, a decrease of just over 20%, in contrast with total employment, which expanded by 453,700 jobs, an increase of 16.2%. This combination has resulted in the manufacturing

sector's employment share falling from 15.8% to 10.7% between 1992 and 2002.

Hard-hit Industries

The deterioration of manufacturing employment occurred in both the "durable," (those expected to last at least two years), and "non-durable" goods components (those lasting less than two years). Within durable goods, employment decreased by 60,600 or 20.9%, as compared to a job loss of 28,400 or 19.4% in non-durable goods. Durable goods accounted for approximately two-thirds of manufacturing employment in 2002, with non-durables comprising the remaining one-third.

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Trends in Manufacturing Employment in Massachusetts 1992 -2002

Table 1 Manufacturing Employment Trends in Massachusetts 1992-2002 (Numbers in Thousands)

Industry Title	1992 Employment	2002 Employment	Absolute Change	Percent Change
Total Employment	2795.1	3248.8	+453.7	+16.2
Total Manufacturing Employment	436.7	347.7	-89.0	-20.4

Source: DUA CES 790 Employment Reports

Note: The North American Industrial Classification System (NAICS) replaced the Standard Industrial Codes (SIC) as the basis for clarifying industry employment in 2001. DUA has produced a historical data series for NAICS for the 1990-2002 period, benchmarking these estimates to the ES 202 Employment Reports.

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Authors: Robert Vinson, Navjeet Singh

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The Massachusetts Division of Unemployment Assistance’s data series has produced employment estimates for 16 specific manufacturing industries. Collectively, these industries represented 84% of manufacturing employment in 2002. Most manufacturing industries (13 of 16) experienced significant employment declines during the

1992-2002 period. Among those especially hard hit were *Transportation Equipment*, which includes both *Automobiles and Aircraft Engines* (a decline of 12,200 or 43.1%) and *Machinery*, which registered job losses of 13,200 or 34.2%.

In terms of absolute job loss, the broad industry category of *Computer and Electronic Products* was the most severely impacted. Between 1992 and 2002 this sector fell by 36,300 jobs or 30.2%. All of the major sub-sectors in this category including *Computer and Peripherals* (-12,400), *Measuring and Controlling Instruments* (-8,800), *Semi Conductors* (-6,700) and *Communication Equipment* (-6,200) contributed to the overall job loss occurring in this industry.

Within the smaller non-durable goods sector, job losses were registered in *Printing* (-5,900, -25.0%), *Paper Products* (-4,400, -21.5%), *Textiles* (3,000, -22.0%) and *Rubber and Plastics* (-1,200, -6.1%). Among the 13 manufacturing industries experiencing job loss, *Rubber and Plastics* had the smallest declines in both absolute and relative terms.

Industries Adding Jobs

Among the manufacturing industries for which employment estimates were generated, three industries bucked the overall trend and actually added jobs during the 1992-2002 period. The one representative from durable goods, *Medical Equipment and Supplies* grew by

900 jobs, an increase of 6.4%. From the non-durable sector, *Food* (up by 1,900 or 9.1%) and *Chemicals* (an increase of 1,300, or 7.8%) also expanded employment.

It is worth noting that two of the industries experiencing growth were tied to the *Bio-Tech* (Chemicals) and *Bio-Medical* (Medical Equipment) sectors; these sectors have received a great deal of attention from state and local policymakers and the public at large. Given the relative employment performance of these two industries, it would appear that continued attention by state and local officials regarding their employment, education and training needs is warranted.

Decline of Manufacturing Employment in the US and Elsewhere

- U.S. annual average employment in manufacturing between 1992 and 2002 declined by 1.49 million or 8.9%. Employment fluctuated between 18.1 million to 17.6 million between 1992 and 2000, before declining sharply in 2001 and 2002.¹
- The decline in US manufacturing employment since 2000 has been very severe: 16% decline between June 2000 and September 2003. During this period employment decline is accompanied by a fall in output and a decline in real earnings in manufacturing.²
- Manufacturing jobs are declining around the globe: the 20 largest economies in the world lost 22 million jobs (11% decline) from 1995 to 2002.³
- And the biggest losses in relative terms were not in the US: losses in China (down 15%), Japan (down 16%) and Brazil (down 20%) were greater than in the US (down 11%).

1 Source: Bureau of Labor Statistics web-site, <http://www.bls.gov/> NAICS based data.

2 Bartik, Timothy J., *Thoughts on American Manufacturing Decline and Revitalization*. In Upjohn Institute Employment Research, October 2003, Kalamazoo.

3 *Factory Employment is Falling World-Wide: Study of 20 Big Economies Finds 22 Million Jobs Lost; Even China Shows Decline*, By Jon E. Hilsenrath and Rebecca Buckman. Wall Street Journal, October 20, 2003. A2-A5 based on (During same period decline in Massachusetts is 19%) “Manufacturing Payrolls Declining Globally” by Joseph G. Carson. US Weekly Economic.

Workforce Development Implications

The staffing patterns of the selected manufacturing industries will require a diverse set of responses from the employment and training community. For example, within *Food Products* more than one-third of all workers are employed in *Material Handling, Packaging,* and

Assembly occupations, which may represent reemployment opportunities for similar workers from other manufacturing industries, especially *Electrical Components* and *Machinery*.

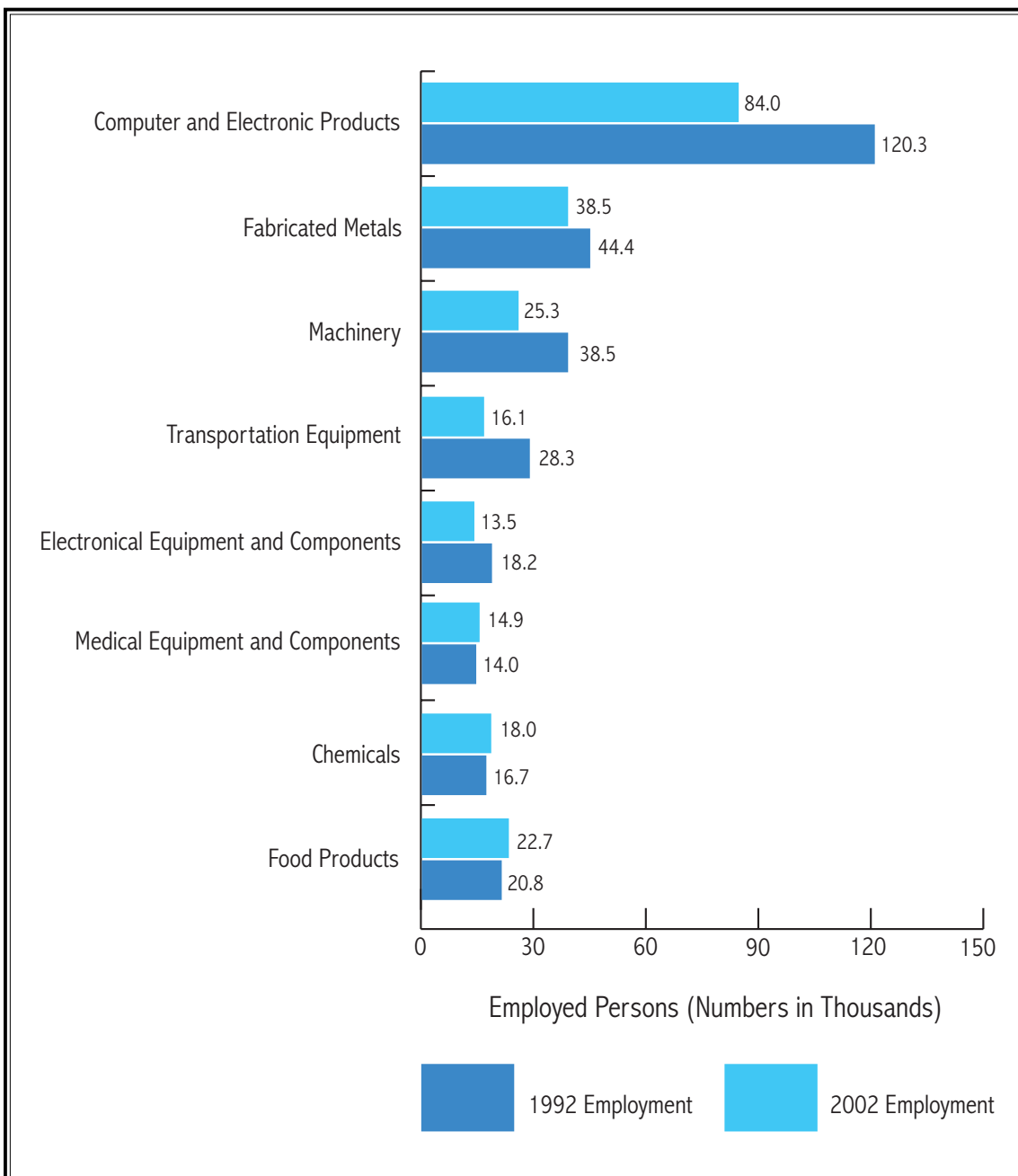
By contrast, the more sophisticated production process in *Chemicals* results in a very different set of occupational needs relative to *Food Products*. Nearly 30% of the

workers in this industry are employed as *Chemists, Biologists, Life and Physical Scientists* and *Chemical Engineers*. More traditional production occupations, including *Packing* and *Machine Operators* and *Assemblers* account for approximately one quarter of all workers in the *Chemical* industry, with another 10% employed as *Office and Administrative workers*.

Among many of the manufacturing industries, replacement needs will be the primary source of job openings. Particularly for highly skilled *Precision Metal Workers (Machinists and Tool and Die Makers)* in the *Fabricated Metals* and *Machinery* industries.

Unfortunately, the reality of sustained job loss in manufacturing over time may result in continued dislocation. Individuals in *Machine Operative* and

Table 2 Manufacturing Employment Trends in Massachusetts 1992-2002 (Numbers in Thousands)





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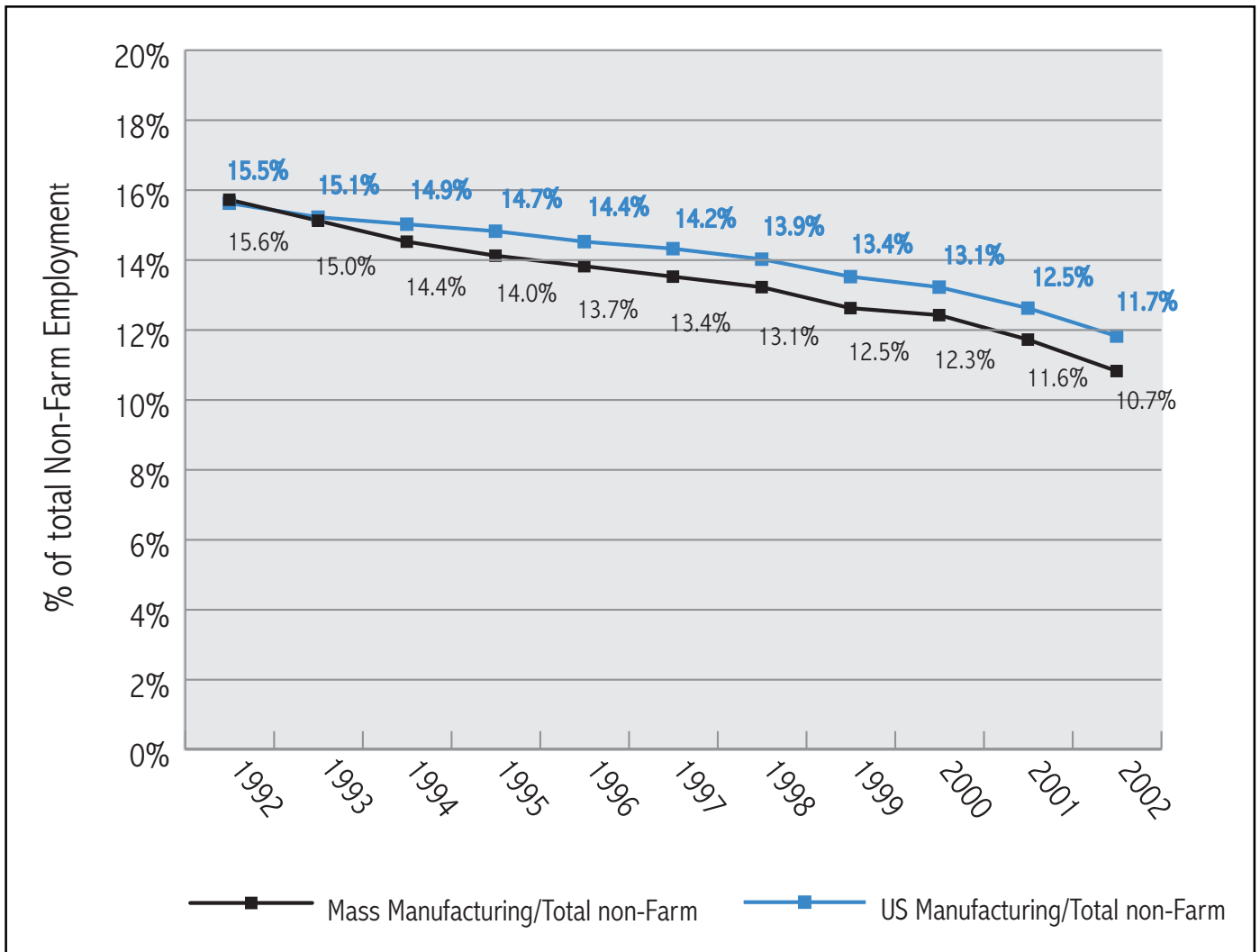
Assembly jobs are especially vulnerable as their skills are often acquired on the job and are not very transferable to other occupations. The employment and training community will need to be prepared to offer comprehensive assessment, testing and counseling services combined with access to education and training to assist workers.

On the positive side, pockets of growth do exist in areas such as medical equipment and supplies, and food and chemicals. Firms able to identify growing and specialized market niches and invest in new plant and equipment will

be best positioned to provide employment opportunities for both dislocated and newly trained workers.

For more information, contact Johan Uvin,
juvin@commcorp.org.
 Please visit the Center for Research and Evaluation's web site at www.commcop.org/wss/re for additional workforce development findings.

Table 3 Massachusetts Manufacturing Employment Declining Faster



Mitt Romney-Governor ♦ Kerry Healey-Lt. Governor

Jane C. Edmonds-Director, Department of Workforce Development and Chair, Commonwealth Corporation's Board of Directors ♦ Jonathan Raymond-President