

Employment and Wages in High Technology Industries

In the early 1980s, Bureau of Labor Statistics (BLS) researchers identified forty-eight manufacturing and service industries in which the percentages of “technology-oriented workers” (such as engineers, life and physical scientists, mathematical technicians, and computer specialists) were at least 1.5 times the average for all industries. This has been the standard for determining high tech industry statistics in New Hampshire to this point. More recently, BLS researchers have refined that list. Paul Hadlock, Daniel Hecker, and Joseph Gannon, in an article for the *Monthly Labor Review* (July 1991)¹, presented a definition of high technology based on an industry’s percentage of research and development (R&D) employment, further defined as the number of workers who spend the majority of their time in R&D, as determined by their employer. Thus, a high technology industry is defined as one with a significant concentration of R&D employment. Data collected in 1987, 1988, and 1989 for the Occupational Employment Statistics Survey was used to identify industries as high technology if the proportion of R&D employment in the industry was at least equal to the average proportion for all industries. The results produced thirty R&D-intensive industries, in which the number of R&D workers was at least 50 percent higher than the average proportion for all industries surveyed. In addition, ten R&D-moderate industries were identified, consisting of the remainder of industries meeting the initial criteria. The R&D-intensive group is labeled Level I; and the R&D-moderate group is labeled Level II.

Additional analysis of these industries, done by William Luker, Jr., and Donald Lyons, and reported in the *Monthly Labor Review* (June 1997)², further divided high tech industry classifications. The report examined trends in Level I manufacturing industries, the R&D-intensive group. Manufacturing industries were separated into defense-dependent manufacturing industries (those with at least fifty percent of their output for defense in 1987, the most recent peak year for defense expenditures) and civilian manufacturing industries. The following table lists those industries

identified as high tech industries by their three-digit Standard Industrial Classification (SIC) code, the R&D intensity level to which each belongs, and if it is either a defense-related or civilian manufacturing industry. Compilation of data into these groups will allow improved analysis of employment and wage trends in high technology industries.

It should be noted that the data presented here is “employment in” given high-tech industries, meaning that all employment in the industry deemed high tech is included, regardless of whether or not the individual worker is engaged in R&D work. In contrast, statistics referring to “high-tech employment” or “high-tech workers” refer to those workers actually engaged in R&D.³

The employment and wage data reported here was taken from the ES-202 program, and is final data for 1996. For each labor market area, the data is divided by Total High Tech, Level I, Level II, Total Manufacturing, Civilian Manufacturing, and Defense Manufacturing. The average annual number of employing units, average annual employment, total annual wages paid, and average weekly wage is reported for each. Those items marked as ‘n’ indicated that the data did not meet disclosure standards.

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Footnotes:

¹ Paul Hadlock, Daniel Hecker, and Joseph Gannon, “High technology employment: another view”, *Monthly Labor Review*, July 1991, pp. 26-30.

² William Luker, Jr., and Donald Lyons, “Employment shifts in high-technology industries, 1988-96”, *Monthly Labor Review*, June 1997, pp. 12-23.

³ Luker and Lyons, “Employment shifts in high-technology industries, 1988-96”, p. 13.

THREE-DIGIT SIC INDUSTRIES CLASSIFIED AS HIGH TECH

		Level I (R&D Intensive)	Level II (R&D Moderate)	Manufacturing	
				Civilian	Defense
131	Crude petroleum and natural gas operations	X			
211	Cigarettes	X		X	
229	Miscellaneous textile goods		X		
261	Pulp mills		X		
267	Miscellaneous converted paper products		X		
281	Industrial inorganic chemicals	X		X	
282	Plastics materials and synthetics	X		X	
283	Drugs	X		X	
284	Soap, cleaners, and toilet goods	X		X	
285	Paints and allied products	X		X	
286	Industrial organic chemicals	X		X	
287	Agricultural chemicals	X		X	
289	Miscellaneous chemical products	X		X	
291	Petroleum refining	X		X	
299	Miscellaneous petroleum and coal products	X		X	
335	Nonferrous rolling and drawing	X		X	
348	Ordnance and accessories, not elsewhere classified		X		
351	Engines and turbines		X		
355	Special industry machinery	X		X	
356	General industrial machinery		X		
357	Computer and office equipment	X		X	
359	Industrial machinery, not elsewhere classified		X		
362	Electrical industrial apparatus	X		X	
365	Household audio and video equipment		X		
366	Communications equipment	X		X	
367	Electronic components and accessories	X		X	
369	Miscellaneous electrical equipment and supplies		X		
371	Motor vehicles and equipment	X		X	
372	Aircraft and parts	X			X
376	Guided missiles, spaces vehicles, parts	X			X
379	Miscellaneous transportation equipment		X		
381	Search and navigation equipment	X			X
382	Measuring and controlling devices	X		X	
384	Medical instruments and supplies	X		X	
386	Photographic equipment and supplies	X		X	
737	Computer and data processing services	X			
871	Engineering and architectural services	X			
873	Research and testing services	X			
874	Management and public relations	X			
899	Services, not elsewhere classified	X			

*Note: Manufacturing (both Civilian-Related and Defense-Related) High Tech industries are taken from Level I (research and development intensive industries) only.

EMPLOYMENT AND WAGES IN HIGH TECH INDUSTRIES
1996 ANNUAL AVERAGES

	Average Units	Average Employment	Total Wages	Average Weekly Wage
NEW HAMPSHIRE				
Total High Tech	3,542	66,023	\$2,870,618,402	\$836.14
Level I	3,213	53,551	\$2,440,081,702	\$876.26
Level II	329	12,471	\$430,536,700	\$663.89
Manufacturing (Level I)	499	38,160	\$1,691,713,566	\$852.55
Civilian	477	31,885	\$1,353,488,675	\$816.33
Defense	22	6,275	\$338,224,891	\$1,036.55
BERLIN LABOR MARKET AREA				
Total High Tech	13	110	\$2,889,107	\$503.18
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	5	94	\$2,641,948	\$540.50
Civilian	5	94	\$2,641,948	\$540.50
Defense	0	0	\$0	\$0.00
NH PORTION OF THE BOSTON MA-NH PMSA				
Total High Tech	23	418	\$16,923,428	\$778.75
Level I	15	247	\$10,493,782	\$817.85
Level II	8	171	\$6,429,646	\$722.38
Manufacturing (Level I)	6	211	\$8,646,767	\$789.64
Civilian	6	211	\$8,646,767	\$789.64
Defense	0	0	\$0	\$0.00
CLAREMONT LABOR MARKET AREA				
Total High Tech	92	2,643	\$80,051,970	\$582.45
Level I	68	853	\$24,805,718	\$559.13
Level II	24	1,790	\$55,246,252	\$593.56
Manufacturing (Level I)	6	385	\$11,145,220	\$557.31
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
COLEBROOK LABOR MARKET AREA				
Total High Tech	4	7	\$296,631	\$814.92
Level I	4	7	\$296,631	\$814.92
Level II	0	0	\$0	\$0.00
Manufacturing (Level I)	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	0	0	\$0	\$0.00
CONCORD LABOR MARKET AREA				
Total High Tech	325	3,679	\$137,419,861	\$718.38
Level I	286	3,155	\$121,418,141	\$740.12
Level II	39	524	\$16,001,720	\$587.45
Manufacturing (Level I)	38	1,690	\$54,996,220	\$625.87
Civilian	38	1,690	\$54,996,220	\$625.87
Defense	0	0	\$0	\$0.00

High Tech Industries 1996	Average Units	Average Employment	Total Wages	Average Weekly Wage
CONWAY LABOR MARKET AREA				
Total High Tech	83	538	\$17,277,900	\$618.08
Level I	66	254	\$8,837,315	\$668.87
Level II	17	284	\$8,440,585	\$572.55
Manufacturing (Level I)	4	15	\$562,072	\$716.62
Civilian	4	15	\$562,072	\$716.62
Defense	0	0	\$0	\$0.00
NH PORTION OF THE HARTFORD-LEBANON, VT-NH LABOR MARKET AREA				
Total High Tech	111	2,068	\$93,090,252	\$865.67
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	10	278	\$11,829,751	\$818.33
Civilian	10	278	\$11,829,751	\$818.33
Defense	0	0	\$0	\$0.00
NH PORTION OF THE KEENE-BRATTLEBORO, NH-VT LABOR MARKET AREA				
Total High Tech	105	3,389	\$115,150,650	\$653.48
Level I	87	1,180	\$37,178,263	\$606.08
Level II	18	2,209	\$77,972,387	\$678.80
Manufacturing (Level I)	21	940	\$28,787,829	\$588.90
Civilian	21	940	\$28,787,829	\$588.90
Defense	0	0	\$0	\$0.00
LACONIA LABOR MARKET AREA				
Total High Tech	111	2,178	\$78,526,545	\$693.38
Level I	93	1,457	\$55,525,702	\$732.75
Level II	18	721	\$23,000,843	\$613.77
Manufacturing (Level I)	19	1,155	\$43,981,109	\$732.13
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
LANCASTER LABOR MARKET AREA				
Total High Tech	11	134	\$3,455,474	\$497.76
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	0	0	\$0	\$0.00
NH PORTION OF THE LAWRENCE, MA-NH PMSA				
Total High Tech	323	5,809	\$254,500,598	\$842.50
Level I	292	5,018	\$227,249,660	\$870.99
Level II	31	792	\$27,250,938	\$661.97
Manufacturing (Level I)	55	3,764	\$158,087,887	\$807.66
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>

High Tech Industries 1996	Average Units	Average Employment	Total Wages	Average Weekly Wage
LITTLETON LABOR MARKET AREA				
Total High Tech	25	443	\$12,604,896	\$547.80
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	0	0	\$0	\$0.00
NH PORTION OF THE LOWELL, MA-NH PMSA				
Total High Tech	19	61	\$1,940,168	\$616.71
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	5	18	\$448,083	\$487.75
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
MANCHESTER PMSA				
Total High Tech	548	8,459	\$345,557,175	\$785.55
Level I	511	8,220	\$335,086,414	\$783.91
Level II	37	239	\$10,470,761	\$841.93
Manufacturing (Level I)	94	5,436	\$203,554,076	\$720.06
Civilian	88	4,210	\$145,873,542	\$666.28
Defense	6	1,226	\$57,680,534	\$904.76
NASHUA PMSA				
Total High Tech	747	21,341	\$1,078,554,188	\$971.89
Level I	674	19,253	\$997,697,175	\$996.54
Level II	73	2,088	\$80,857,013	\$744.64
Manufacturing (Level I)	142	16,072	\$820,103,087	\$981.28
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
PETERBOROUGH LABOR MARKET AREA				
Total High Tech	90	1,059	\$43,722,101	\$793.78
Level I	81	263	\$15,838,849	\$1,160.36
Level II	9	797	\$27,883,252	\$673.00
Manufacturing (Level I)	6	36	\$818,942	\$441.56
Civilian	6	36	\$818,942	\$441.56
Defense	0	0	\$0	\$0.00
PLYMOUTH LABOR MARKET AREA				
Total High Tech	43	177	\$4,364,904	\$474.46
Level I	38	127	\$3,203,978	\$484.20
Level II	5	50	\$1,160,926	\$449.51
Manufacturing (Level I)	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	0	0	\$0	\$0.00

High Tech Industries 1996	Average Units	Average Employment	Total Wages	Average Weekly Wage
NH PORTION OF THE PORTSMOUTH-ROCHESTER, NH-ME PMSA				
Total High Tech	529	12,236	\$528,400,011	\$830.43
Level I	496	10,340	\$462,925,323	\$860.97
Level II	33	1,896	\$65,474,688	\$663.95
Manufacturing (Level I)	61	7,524	\$327,961,338	\$838.21
Civilian	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Defense	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
FIRMS NOT ASSIGNED TO A SPECIFIC LABOR MARKET AREA				
Total High Tech	340	1,274	\$55,892,543	\$843.52
Level I	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Level II	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Manufacturing (Level I)	15	88	\$6,665,469	\$1,460.76
Civilian	12	81	\$6,147,223	\$1,468.52
Defense	3	7	\$518,246	\$1,374.66

n: Not disclosable - indicates that data does not meet nondisclosure standards.

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