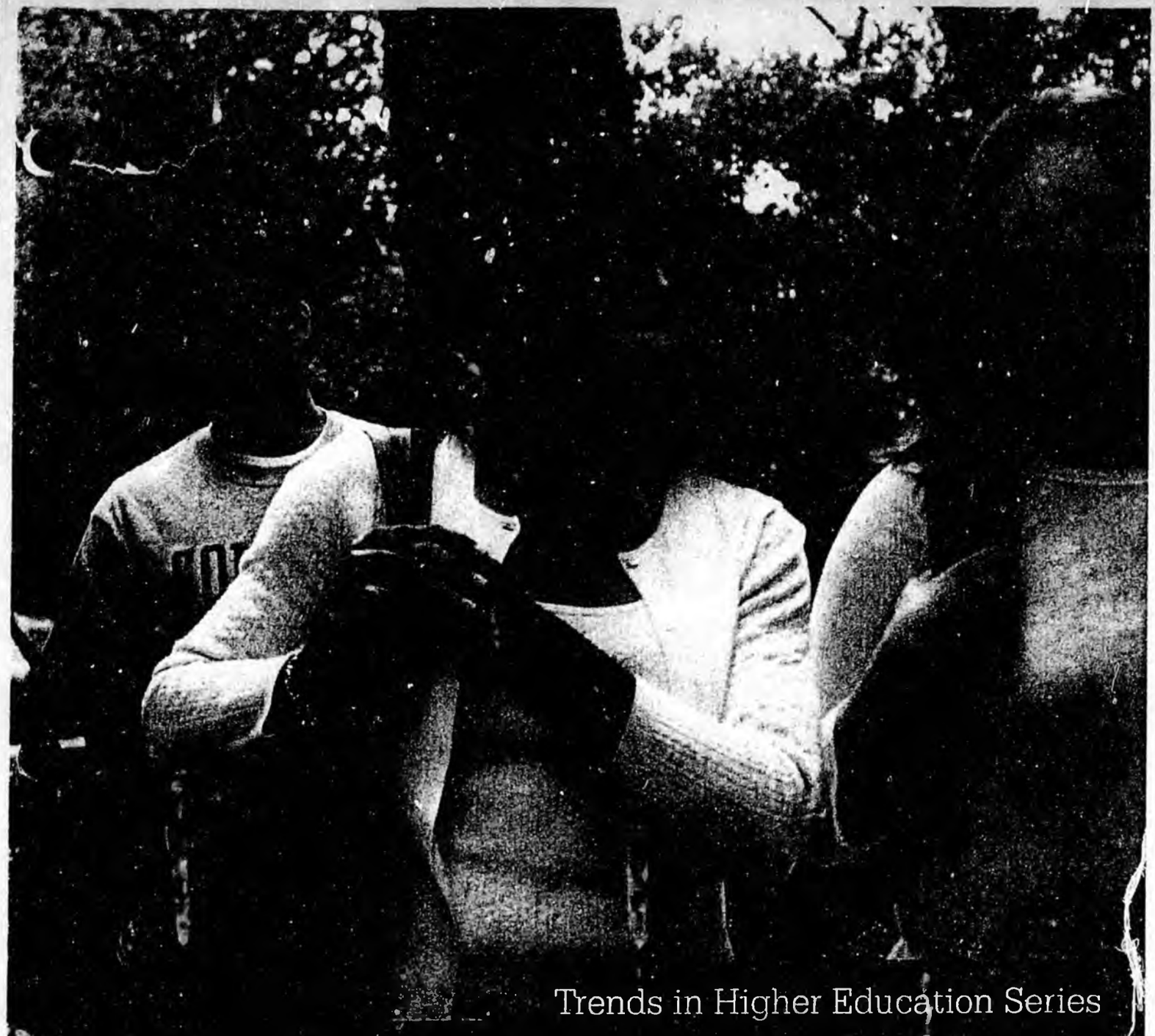
12121 HOUSE HESS



Trends in Higher Education Series

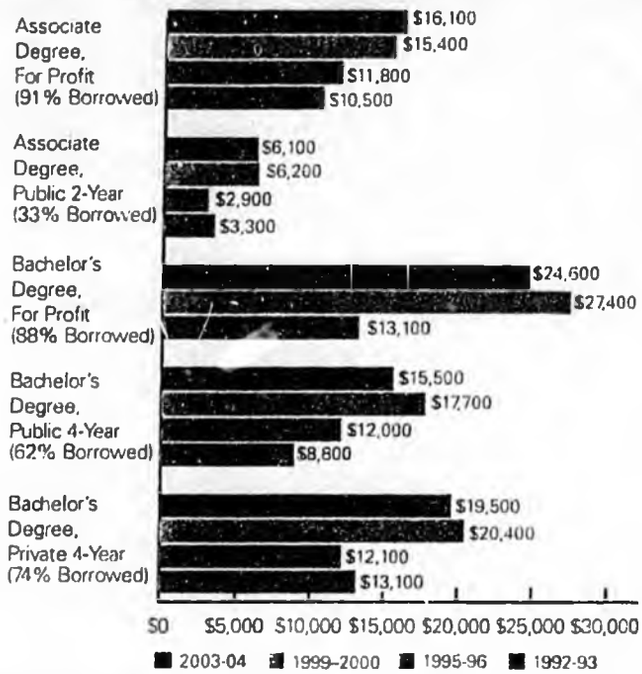
2006

Trends in Student Aid

CollegeBoard
connect to college success

Student Debt Levels

Figure 4a: Median Debt Levels of Undergraduate Degree Recipients Who Borrowed, by Degree and Institution Type in Constant (2003) Dollars, 1992-93 to 2003-04

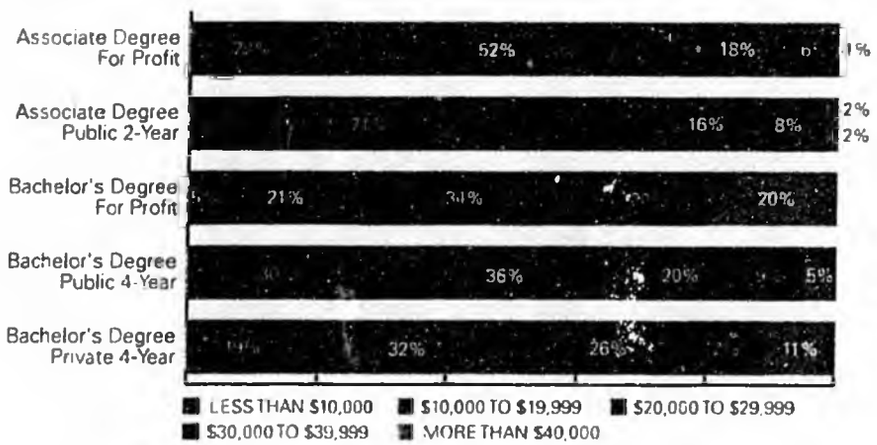


The median total debt levels of degree recipients increased sharply at all types of institutions between 1995-96 and 1999–2000. Between 1999–2000 and 2003-04, median debt levels declined in inflation-adjusted dollars for all graduates except those earning associate degrees from for-profit institutions.

- 2003-04 bachelor's degree recipients who borrowed to finance their education accumulated median debt levels of $24,600 in for-profit institutions, $19,500 in private nonprofit colleges, and $15,500 in public institutions. Overall the median debt level of bachelor's degree recipients was $19,300.

Note: Student loans from both federal and nonfederal sources are included. PLUS loans and credit card debt are not included. For 1992-93 and 1995-96, the NPSAS variable on which these figures are based includes loans from friends and family. Sample size is too small to report on for bachelor's degrees in for-profit institutions in 1995-96. The percent who borrowed is based on 2003-04 data.
Source: NPSAS: 1993, 1996, 2000, and 2004, Undergraduates; calculations by authors.

Figure 4b: Distribution of Total Debt Levels of Degree Recipients, 2003-04



There is wide variation in the debt levels of borrowers who earn degrees, even within institution types.

- Debt levels as high as $30,000 are rare among associate degree recipients, but 40 percent of students who borrowed and received bachelor's degrees from for-profit institutions in 2003-04 graduated with more than $30,000 in debt. Twenty-three percent of graduates of private nonprofit colleges and 14 percent of graduates of public four-year colleges who borrowed had debt of at least $30,000.

Note: Student loans from both federal and nonfederal sources are included. PLUS loans and credit card debt are not included.
Source: NPSAS: 2004, Undergraduates; calculations by authors.

Also important:

- About a quarter of student borrowers leave school without completing their programs. These students, who do not enjoy the same financial benefit from education as those who do graduate, are not included in this analysis. (Lawrence Gladieux and Laura Perna, *Borrowers Who Drop Out*, National Center for Public Policy and Higher Education, 2006)
- The debt reported here does not include credit card debt. About a quarter of undergraduates report using credit cards to help finance their education. (Nellie Mae, *Undergraduate Students and Credit Cards in 2004*, 2005) Among dependent undergraduate students with credit cards in their own names, 41 percent carry a balance with a median amount owed of about $1,000. (National Center for Education Statistics, *Profile of Undergraduates in U.S. Postsecondary Education Institutions*, NCES 2006-184, Table 4.3)

Alaska's 100 Largest Private Employers in 2005

Rank/Firm Name		Employment
1	Providence Health System	3,685
2	Carrs/Safeway	3,086
3	Fred Meyer	2,795
4	Wal-Mart/Sam's Club	2,694
5	Trident Seafoods	1,650
6	Alaska Airlines	1,515
7	ASRC Energy Services	1,506
8	Yukon-Kuskokwim Health Corporation	1,372
9	NANA Management Services	1,358
10	Banner Health (includes Fairbanks Memorial Hospital)	1,346
11	BP	1,341
12	GCI Communications	1,298
13	Alaska Native Tribal Health Consortium[2]	1,200
14	VECO	1,157
15	Southcentral Foundation[3]	1,098
16	FedEx	1,084
17	Wells Fargo	1,018
18	Alaska Communications Systems (ACS)	949
19	ConocoPhillips	936
20	Spenard Builders Supply	923
21	Alaska USA Federal Credit Union	858
22	Alyeska Pipeline Service Company	842
23	Alaska Regional Hospital	827
24	UniSea	819
25	SouthEast Alaska Regional Health Consortium (SEARHC)	804
26	McDonald's Restaurants of Alaska	790
27	First National Bank Alaska	736
28	Costco	713
29	Icicle Seafoods	688
30	Doyon/Universal Ogden, Joint Venture	670
31	Westward Seafoods	665
32	Alaska Commercial Company	656
33	Home Depot	641
34	The Alaska Club	634[1]
35	Job Ready	634[1]
36	Hope Community Resources	634[1]
37	ASRC Energy Services Pipeline, Power & Communications	617
38	Northwest Airlines	568
39	Ocean Beauty Seafoods	567
40	Peter Pan Seafoods	562
41	Mat-Su Regional Medical Center	561
42	Lowe's	560
43	Tanana Chiefs Conference	559
44	Maniilaq Association	557
45	ARAMARK	549
46	Anchorage Daily News	531
47	Immediate Care	528

48	Horizon Lines of Alaska	520
49	Alaska Hotel Properties (Princess Hotels)	515
50	Alyeska Resort (includes O'Malley's on the Green)	503
51	Peak Oilfield Services Company	471
52	Norton Sound Health Corporation	458[1]
53	PenAir	458[1]
54	Sears	457
55	Chugach Development Corporation	451
56	Schlumbergen Technologies	442[1]
57	Laidlaw Transit Services	442[1]
58	UPS	437
59	Alaska Consumer Direct Personal Care[4]	436
60	Fairbanks Gold Mining Company (Fort Knox)	423
61	Pizza Hut	413
62	Lithia Motors	408
63	Westmark Hotels	401[1]
64	Denali Foods (Taco Bell)	401[1]
65	Era Aviation	396
66	Assets	391
67	Carlile Enterprises	382
68	Teck Cominco Alaska (Red Dog mine)	381[1]
69	QAP (formerly Quality Asphalt Paving)	381[1]
70	Tesoro Northstore Company	367
71	Chugach Electric Association	366
72	Royal Highway Tours (Princess Tours)	359
73	Nabors Alaska Drilling	357
74	Ketchikan General Hospital	350
75	North Pacific Seafoods	347[1]
76	Bristol Bay Area Health Corporation	347[1]
77	Salvation Army-Alaska	345
78	Hotel Captain Cook	340
79	SMG of Alaska (Sullivan Arena, others)	339
80	Access Alaska	338
81	Udelhoven Oilfield System Services	335
82	Hilton Anchorage	334
83	NorQuest Seafoods	329
84	Nordstrom	322
85	Matanuska Telephone Association	318
86	JCPenney	316
87	Frontier Community Services	314
88	Rural Alaska Community Action Program	313
89	Union Oil of California (Unocal) (now Chevron)	311
90	Alaska Sales and Service	309
91	Gottschalks	307
92	The Arc of Anchorage	306
93	Swissport	299
94	Holiday Stationstores	293
95	Anchorage Cold Storage (Odom Corp.)	286
96	Doyon Drilling	282
97	Harpoon Construction Group	281[1]
98	Northrim Bank	281[1]
99	Crowley Marine	271[1]

100	Association of Village Council Presidents (AVCP)	271
Read complete *Alaska Economic Trends* article		

1/ When two or more employers had the same number of employees, they were ranked by unrounded employment.
2/ excludes its 597 federal employees
3/ excludes its 111 federal employees
4/ formerly Nightingale Nursing Services

Alaska's Hot Jobs 2004 to 2014

Occupations	Employment		Change		Total	Wage
	2004	2014	Numeric	Percent	Openings	Quartile
Bachelor's degree or above						
General and Operations Managers	**7,757**	**9,254**	**1,497**	**19.3%**	**2,960**	**$$$$**
Postsecondary Teachers	2,890	3,566	676	23.4%	1,330	$$$$
Accountants and Auditors	**1,702**	**2,028**	**326**	**19.2%**	**650**	**$$$$**
Construction Managers	**1,681**	**2,066**	**385**	**22.9%**	**690**	**$$$$**
Financial Managers	**1,542**	**1,886**	**344**	**22.3%**	**570**	**$$$$**
Administrative Services Managers	**1,523**	**1,755**	**232**	**15.2%**	**530**	**$$$$**
Chief Executives	**1,386**	**1,716**	**330**	**23.8%**	**590**	**$$$$**
Property, Real Estate, and Community Association Managers	1,169	1,342	173	14.8%	390	$$$$
Child, Family, and School Social Workers	1,092	1,349	257	23.5%	440	$$$
Civil Engineers	968	1,232	264	27.3%	420	$$$$
Instructional Coordinators	860	1,001	141	16.4%	270	$$$
Sales Managers	823	1,029	206	25.0%	360	$$$$
Physicians and Surgeons	796	925	129	16.2%	240	$$$$
Computer Systems Analysts	793	928	135	17.0%	230	$$$$
Social and Community Service Managers	756	964	208	27.5%	350	$$$
Educational, Vocational, and School Counselors	665	787	122	18.4%	270	$$$
Environmental Scientists and Specialists, Including Health	645	760	115	17.8%	230	$$$$
Medical and Health Services Managers	623	742	119	19.1%	240	$$$$
Special Education Teachers, Preschool, Kindergarten, and Elementary School	602	711	109	18.1%	250	$$$
Engineering Managers	548	669	121	22.1%	230	$$$$
Computer and Information Systems Managers	540	662	122	22.6%	220	$$$$
Surveyors	425	558	133	31.3%	280	$$$$
Network and Computer Systems Administrators	412	550	138	33.5%	180	$$$$
Substance Abuse and Behavioral Disorder Counselors	392	484	92	23.5%	180	$$$
Marketing Managers	390	478	88	22.6%	160	$$$$
Loan Officers	389	467	78	20.1%	140	$$$$
Mechanical Engineers	388	523	135	34.8%	240	$$$$
Pharmacists	363	457	94	25.9%	160	$$$$
Physical Therapists	309	385	76	24.6%	110	$$$$
Securities, Commodities, and Financial Services Sales Agents	290	460	170	58.6%	200	$$$$
Mental Health Counselors	256	338	82	32.0%	140	$$$

Alaska's Hot Jobs 2004 to 2014

Occupations	Employment		Change		Total Openings	Wage Quartile
	2004	2014	Numeric	Percent		
Associate degree or vocational training						
Registered Nurses	**4,902**	**6,432**	**1,530**	**31.2%**	**2,560**	**$$$$**
Automotive Service Technicians and Mechanics	**1,620**	**2,101**	**481**	**29.7%**	**910**	**$$$**
Real Estate Sales Agents	1,281	1,481	200	15.6%	450	$$$
Computer Support Specialists	955	1,112	157	16.4%	270	$$$
Mobile Heavy Equipment Mechanics, Except Engines	842	1,019	177	21.0%	360	$$$$
Commercial Pilots	593	760	167	28.2%	330	$$$$
Civil Engineering Technicians	342	425	83	24.3%	160	$$$$
Radiologic Technologists and Technicians	328	412	84	25.6%	150	$$$$
Emergency Medical Technicians and Paramedics	230	317	87	37.8%	110	$$$
Work experience in a related occupation						
First-Line Supervisors/Managers of Construction Trades and Extraction Workers	**2,013**	**2,467**	**454**	**22.6%**	**800**	**$$$$**
First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	**1,089**	**1,285**	**196**	**18.0%**	**470**	**$$$$**
First-Line Supervisors/Managers of Personal Service Workers	467	579	112	24.0%	230	$$$
Cost Estimators	398	514	116	29.2%	210	$$$$
Long-term on-the-job training						
Plumbers, Pipefitters, and Steamfitters	**1,492**	**1,716**	**224**	**15.0%**	**570**	**$$$$**
Welders, Cutters, Solderers, and Brazers	628	734	106	16.9%	280	$$$
Water and Liquid Waste Treatment Plant and System Operators	589	695	106	18.0%	310	$$$
Automotive Body and Related Repairers	292	370	78	26.7%	140	$$$
Moderate-term on-the-job training						
Maintenance and Repair Workers, General	**3,826**	**4,566**	**740**	**19.3%**	**1,480**	**$$$**
Construction Laborers	**3,605**	**4,232**	**627**	**17.4%**	**1,110**	**$$$**
Operating Engineers and Other Construction Equipment Operators	**2,741**	**3,561**	**820**	**29.9%**	**1,530**	**$$$**
Payroll and Timekeeping Clerks	638	761	123	19.3%	290	$$$
Roustabouts, Oil and Gas	451	535	84	18.6%	210	$$$
Short-term on-the-job training						
Production, Planning, and Expediting Clerks	680	813	133	19.6%	300	$$$

Earnings: $$$ = $18.20 - $25.82 hourly ($37,850 - $53,700 annually), $$$$ = More than $25.82 hourly ($53,700 annually)
Occupations with yellow background and bolded are included in the Focus Jobs list.

Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

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Health Care - In-Demand Occupations

Career Voyages exists to help you find out which occupations are in-demand. To learn more about how these occupations were selected, click here. (Source: U.S. Bureau of Labor Statistics) [1]

When you first come to this page, the following Health Care-related occupations are sorted by Projected Need for Employees. Notice that, generally speaking, **the more education you have, the higher your wage.**

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Health Care Related Occupations and Their Projected 10 Year Growth

Sort by Occupation Title (Sorted initially by Projected Need)		Sort by Projected Need for Employees (2004 - 2014)	Sort by Projected Growth	Sort by (Median) 2004 Hourly Wage Range[2]			Sort by (College degree) Education & Training[3]		
				Bottom 10%	Median	Top 10%	High School or less	Some College	College degree or higher
Registered Nurses Description State Report	real View View	1203	21-35%	$18	$26	$37	2%	40%	58%
Nursing Aides, Orderlies, and Attendants Description State Report	real View View	516	21-35%	$7	$10	$14	60%	33%	7%
Home Health Aides Description State Report	real View View	431	36+%	$7	$9	$13	60%	33%	7%
Personal and Home Care Aides Description State Report	real View View	400	36+%	$6	$8	$11	60%	30%	10%
Licensed Practical and Licensed Vocational Nurses Description State Report	real View View	282	10-20%	$12	$17	$23	23%	71%	6%
Medical Assistants Description State Report	real View View	273	36+%	$9	$12	$17	35%	53%	12%
Physicians and Surgeons Description State Report	(Video Not Available)	212	21-35%	$21	$67	>70	1%	2%	97%
Dental Assistants Description State Report	real View View	189	36+%	$9	$14	$20	33%	57%	10%
Medical Secretaries Description State Report	real View View	135	10-20%	$9	$13	$19	36%	46%	18%
Pharmacy Technicians Description State Report	real View View	107	21-35%	$8	$12	$17	32%	53%	15%

Medical and Health Services

Managers Description State Report	real View View	105	21-35%	$20	$33	$57	13% 27% 60%
Pharmacists Description State Report	real View View	101	21-35%	$30	$42	$54	1% 2% 97%
Dental Hygienists Description State Report	real View View	82	36+%	$18	$29	$41	4% 66% 30%
Medical and Clinical Laboratory Technicians Description State Report	real View View	76	21-35%	$10	$15	$23	18% 34% 48%
Radiologic Technologists and Technicians Description State Report	real View View	76	21-35%	$15	$22	$30	9% 68% 23%
Medical and Clinical Laboratory Technologists Description State Report	real View View	74	21-35%	$16	$22	$31	18% 34% 48%
Emergency Medical Technicians and Paramedics Description State Report	real View View	74	21-35%	$8	$12	$21	18% 65% 17%
Physical Therapists Description State Report	real View View	72	36+%	$21	$30	$43	2% 8% 90%
Medical Records and Health Information Technicians Description State Report	real View View	69	21-35%	$9	$13	$20	43% 45% 12%
Rehabilitation Counselors Description State Report	real View View	61	21-35%	$9	$13	$23	12% 16% 72%
Respiratory Therapists Description State Report	real View View	57	21-35%	$16	$21	$28	4% 68% 28%
Mental Health and Substance Abuse Social Workers Description State Report	real View View	51	21-35%	$11	$17	$26	8% 16% 76%
Mental Health Counselors Description State Report	real View View	48	21-35%	$10	$16	$27	12% 16% 72%
Medical and Public Health Social Workers Description State Report	real View View	48	21-35%	$12	$20	$29	8% 16% 76%
Medical Transcriptionists Description State Report	real View View	44	21-35%	$10	$14	$20	35% 53% 12%

85%

Occupational Therapists Description State Report	real View View	43	21-35%	$18	$27	$40	0% 15%
Massage Therapists Description State Report	real View View	42	21-35%	$7	$16	$33	16% 51% 33%
Physician Assistants Description State Report	real View View	40	36+%	$18	$33	$46	26% 68%
Substance Abuse and Behavioral Disorder Counselors Description State Report	real View View	39	21-35%	$10	$16	$25	12% 16% 72%
Dentists, General Description State Report	real View View	39	10-20%	$30	$59	>70	1% 1% 98%
Medical Scientists, Except Epidemiologists Description State Report	real View View	37	21-35%	$16	$29	$54	1% 1% 98%
Physical Therapist Assistants Description State Report	real View View	36	36+%	$12	$18	$25	18% 52% 30%
Surgical Technologists Description State Report	real View View	36	21-35%	$12	$17	$23	32% 53% 15%
Cardiovascular Technologists and Technicians Description State Report	real View View	23	21-35%	$11	$19	$29	9% 68% 23%
Diagnostic Medical Sonographers Description State Report	real View View	23	21-35%	$19	$26	$35	9% 68% 23%
Chiropractors Description State Report	real View View	22	21-35%	$16	$33	>70	0% 0% 99%
Dietitians and Nutritionists Description State Report	real View View	22	10-20%	$14	$21	$31	26% 11% 63%
Physical Therapist Aides Description State Report	real View View	22	21-35%	$7	$10	$16	18% 52% 30%
Pharmacy Aides Description State Report	real View View	18	10-20%	$7	$9	$14	35% 53% 12%
Optometrists Description State Report	real View View	16	10-20%	$21	$42	>70	8% 3% 89%
Medical Equipment Preparers Description State Report	real View View	16	10-20%	$8	$12	$17	35% 53% 12%

Dental Laboratory Technicians Description State Report	real View	View	15	0-9%	$9	$15	$25	
Occupational Health and Safety Specialists Description State Report	real View	View	14	10-20%	$15	$25	$39	
Occupational Therapist Assistants Description State Report	real View	View	10	21-35%	$12	$19	$26	
Psychiatric Technicians Description State Report	(Video Not Available)		10	0-9%	$9	$13	$21	

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(Source: Bureau of Labor Statistics 2004 wages and 2004-2014 projection series.)

For a complete list of health care occupations and to find more information on education requirements and salary ranges, please visit the U.S. Bureau of Labor Statistics Web page at http://www.bls.gov/emp/home.htm.

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State Report

Registered Nurses in Alaska

Occupation Report in: Select another state GO

Description: Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Include advance practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.

Wages Comparison	2005		
	10%	Median	90%
United States	$18.59	$26.28	$38.20
Alaska	$22.19	$28.54	$38.46

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	2,393,600	3,096,100	702,500	120,340
Alaska	4,900	6,430	1,530	260

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

Click one of the buttons below to learn about the educational opportunities in Health Care.

Education & Training in Health Care

Apprenticeship | Community Colleges | 4-year Colleges | Other Options

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State Report

Physicians and Surgeons, All Other in Alaska

Occupation Report in: Select another state GO

Description: All physicians and surgeons not listed separately.

Wages Comparison	2005		
	10%	Median	90%
United States	$21.56	$68.98	$70.01+
Alaska	$59.81	$70.01+	$70.01+

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	566,500	702,400	135,900	21,160
Alaska	800	930	130	20

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

Note: Employment trends for **Physicians and Surgeons, All Other** are included in trends for **Physicians and surgeons**.

Click one of the buttons below to learn about the educational opportunities in Health Care.

Education & Training in Health Care

Apprenticeship | Community Colleges | 4-year Colleges | Other Options

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State Report

Pharmacists in Alaska

Occupation Report in: Select another state GO

Description: Dispense drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.

Wages Comparison	2005		
	10%	Median	90%
United States	$30.94	$43.18	$54.48
Alaska	$35.45	$47.70	$57.08

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	230,000	286,600	56,600	10,110
Alaska	360	460	100	20

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

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State Report

Physical Therapists in Alaska

Occupation Report in: Select another state GO

Description: Assess, plan, organize, and participate in rehabilitative programs that improve mobility, relieve pain, increase strength, and decrease or prevent deformity of patients suffering from disease or injury.

Wages Comparison	2005		
	10%	Median	90%
United States	$21.51	$30.33	$43.66
Alaska	$23.81	$31.94	$50.94

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	154,500	211,300	56,800	7,200
Alaska	310	390	80	10

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

Click one of the buttons below to learn about the educational opportunities in Health Care.

Education & Training in Health Care

Apprenticeship | Community Colleges | 4-year Colleges | Other Options

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Energy - In-Demand Occupations

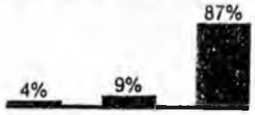
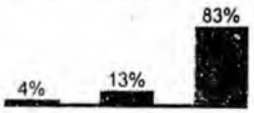
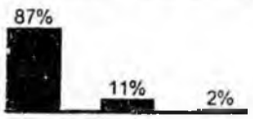
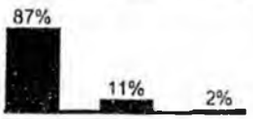
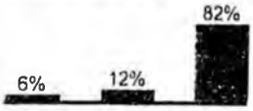
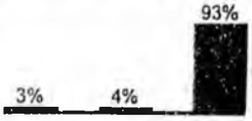
Career Voyages exists to help you find out which occupations are in-demand. To learn more about how these occupations were selected, click here. (Source: U.S. Bureau of Labor Statistics) [1].

When you first come to this page, the following Energy-related occupations are sorted by Projected Need for Employees. Notice that, generally speaking, **the more education you have, the higher your wage**.

Page 1 **Page 2** **Page 3** **Page 4** **Page 5** (All Pages Currently Displayed) Print (All Pages)

Energy Related Occupations and Their Projected 10 Year Growth

Sort by Occupation Title (Sorted initially by Projected Need)		Sort by Projected Need for Employees (2004 - 2014)	Sort by Projected Growth	Sort by (Median) 2004 Hourly Wage Range[2]			Sort by (College degree) Education & Training[3]		
				Bottom 10%	Median	Top 10%	High School or less	Some College	College degree or higher
Laborers and Freight, Stock, and Material Movers, Hand Description State Report	real View View	1,042,000	10-20%	$7	$10	$16	71%	23%	6%
Truck Drivers, Heavy and Tractor-Trailer Description State Report	real View View	507,000	10-20%	$10	$16	$24	72%	23%	5%
First-Line Supervisors/Managers of Construction Trades and Extraction Workers Description State Report	real View View	209,000	10-20%	$15	$25	$40	65%	25%	10%
Electricians Description State Report	real View View	207,000	10-20%	$12	$20	$34	51%	43%	6%
Plumbers, Pipefitters, and Steamfitters Description State Report	real View View	193,000	10-20%	$12	$20	$34	67%	28%	5%
Computer Support Specialists Description State Report	real View View	183,000	21-35%	$12	$20	$33	17%	42%	41%
Helpers-Production Workers Description State Report	real View View	174,000	0-9%	$7	$10	$15	80%	15%	5%
First-Line Supervisors/Managers of Production and Operating Workers Description State Report	real View View	173,000	0-9%	$13	$22	$35	59%	28%	13%
Industrial Truck and Tractor Operators Description State Report	real View View	170,000	0-9%	$9	$13	$20	81%	16%	3%

Welders, Cutters, Solderers, and Brazers Description State Report	real View View	125,000	0-9%	$10	$15	$22	
Helpers-Installation, Maintenance, and Repair Workers Description State Report	(Video Not Available)	82,000	10-20%	$7	$10	$17	
Civil Engineers Description State Report	real View View	77,000	10-20%	$21	$31	$47	
Electrical and Electronic Engineering Technicians Description State Report	real View View	56,000	10-20%	$14	$23	$33	
First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand Description State Report	(Video Not Available)	55,000	0-9%	$11	$19	$29	
Electrical Engineers Description State Report	real View View	49,000	10-20%	$23	$35	$53	
Helpers-Pipelayers, Plumbers, Pipefitters, and Steamfitters Description State Report	(Video Not Available)	44,000	10-20%	$8	$11	$17	
Industrial Machinery Mechanics Description State Report	real View View	44,000	0-9%	$12	$19	$28	
Helpers-Electricians Description State Report	(Video Not Available)	43,000	0-9%	$8	$11	$17	
Electrical Power-Line Installers and Repairers Description State Report	real View View	36,000	0-9%	$14	$24	$33	
Civil Engineering Technicians Description State Report	real View View	33,000	10-20%	$12	$19	$28	
Excavating and Loading Machine and Dragline Operators Description State Report	real View View	30,000	0-9%	$10	$15	$26	
Surveyors Description State Report	real View View	28,000	10-20%	$12	$21	$35	
Environmental Scientists and Specialists, Including Health Description State Report	real View View	26,000	10-20%	$15	$25	$42	
Environmental Engineers							87%

Description State Report	real View View	23,000	21-35%	$20	$33	$48	7% 6%	
Hazardous Materials Removal Workers Description State Report	real View View	22,000	21-35%	$10	$16	$27	69% 26% 5%	
Maintenance Workers, Machinery Description State Report	real View View	22,000	0-9%	$10	$16	$25	67% 24% 9%	
Pipelayers Description State Report	(Video Not Available)	21,000	10-20%	$9	$14	$25	67% 28% 5%	
Mechanical Engineering Technicians Description State Report	real View View	16,000	10-20%	$14	$21	$32	28% 54% 18%	
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders Description State Report	(Video Not Available)	15,000	0-9%	$10	$15	$24	75% 23% 2%	
Occupational Health and Safety Specialists Description State Report	real View View	14,000	10-20%	$15	$25	$39	7% 15% 78%	
Insulation Workers, Floor, Ceiling, and Wall Description State Report	real View View	14,000	0-9%	$9	$15	$29	76% 21% 3%	
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders Description State Report	(Video Not Available)	13,000	0-9%	$10	$16	$25	46% 37% 17%	
Engine and Other Machine Assemblers Description State Report	(Video Not Available)	13,000	0-9%	$9	$17	$26	74% 25% 1%	
Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders Description State Report	(Video Not Available)	12,000	0-9%	$8	$13	$21	69% 27% 4%	
Chemical Engineers Description State Report	real View View	12,000	10-20%	$24	$37	$54	2% 6% 92%	
Environmental Science and Protection Technicians, Including Health Description State Report	real View View	12,000	10-20%	$11	$17	$27	20% 33% 47%	
Electrical and Electronics Drafters	real View View	11,000	0-9%	$14	$21	$35	16% 62% 22%	

Description State Report							
Control and Valve Installers and Repairers, Except Mechanical Door Description State Report	(Video Not Available)	11,000	0-9%	$12	$21	$31	55% 32% 13%
Stationary Engineers and Boiler Operators Description State Report	real View View	11,000	0-9%	$13	$21	$32	49% 36% 15%
Roustabouts, Oil and Gas Description State Report	(Video Not Available)	10,000	0-9%	$8	$12	$19	79% 18% 3%
Environmental Engineering Technicians Description State Report	real View View	9,000	21-35%	$12	$19	$31	28% 54% 18%
Boilermakers Description State Report	(Video Not Available)	8,000	0-9%	$14	$23	$33	72% 25% 3%
Nuclear Engineers Description State Report	real View View	6,000	0-9%	$30	$42	$57	3% 8% 89%
Hydrologists Description State Report	real View View	4,000	21-35%	$19	$29	$45	3% 4% 93%

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(Source: Bureau of Labor Statistics 2004 wages and 2004-2014 projection series)

For a complete list of energy occupations and to find more information on education requirements and salary ranges, please visit the U.S. Bureau of Labor Statistics Web page at http://www.bls.gov/emp/home.htm

Top of the page

State Report

Civil Engineers in Alaska

Occupation Report in: Select another state GO

Description: Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. Exclude "Hydrologists".

Wages Comparison	2005		
	10%	Median	90%
United States	$21.35	$31.82	$48.10
Alaska	$24.53•	$35.82	$48.35

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	237,300	276,500	39,200	7,700
Alaska	970	1,230	260	40

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

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State Report

Civil Engineering Technicians in Alaska

Occupation Report in: Select another state GO

Description: Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.

Wages Comparison	2005		
	10%	Median	90%
United States	$11.78	$18.85	$28.54
Alaska	$19.67	$25.74	$34.23

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Alaska Wage Information

Employment Trends	Employment		Change	Average annual job openings
	2004	2014		
United States	93,500	106,700	13,200	3,280
Alaska	340	430	90	20

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Alaska Occupational Forecast

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Securing an Adequate Number of Physicians for Alaska's Needs

Report of the
Alaska Physician Supply Task Force

Prepared for
Mark Hamilton, President, University of Alaska and
Karleen Jackson, Ph.D., Commissioner, Alaska Department of Health & Social Services

August 2006

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Executive Summary

The Alaska Physician Supply Task Force was commissioned in January 2006 by the President of the University of Alaska and the Commissioner of the Department of Health and Social Services to address two questions:

1. What is the current and future need for physicians in Alaska?
2. What strategies have been used and could be used in meeting the need for physicians in Alaska? Strategies of interest are:

   - programs to attract and prepare students for health careers;
   - medical school opportunities;
   - graduate medical education; and
   - recruitment and retention of physicians.

The Task Force has met regularly and drawn on a wide variety of sources of information, including public participation. The consensus of the Task Force is that this report represents the best answer possible to these questions, within the constraints of time and budget, and the inherent uncertainties of available data and predictions. The major conclusions and reasoning of the group are summarized here, and detailed in the body of the report.

Alaska has a shortage of physicians.[1] Although not at crisis levels, the shortage is affecting access to care throughout the state, and increasing cost to hospitals and health care organizations. Up to 16% of rural physician positions in Alaska were vacant in 2004. Patients with Medicare are having difficulty finding a primary care physician. Several important specialties are in serious shortage in Alaska.

The shortage is very likely to worsen over the next 20 years as the state's population increases and ages. Physician supply nationwide is entering a period of shortage, according to the best current predictions. Physicians in Alaska are aging and one-third may be retiring in the next 10-15 years. The new generation of physicians wants a more balanced life, meaning fewer hours on duty and more predictable schedules. These trends mean that more physicians will be required to serve the same population. Technology and scientific advances have increased the amount of medical care available, adding to the need for physicians, as the patients expect more care than previously.

As the national supply of physicians shrinks, recruitment will become more competitive. Alaska's traditional system of recruiting physicians from federal assignment in the military and Indian Health Service is much less effective with changes in these systems. Although Alaska has two very successful programs to produce its own physicians, the Alaska WWAMI medical school program and the Alaska Family Medicine Residency,

[1] Unless otherwise specified, "physician" in this report means medical doctor as well as doctor of osteopathy.

Alaska is far behind the other states in production capacity. These two programs, even if expanded, cannot meet the need.

The current trend in physician growth in Alaska is inadequate to keep up with basic population growth and to correct the current deficit. Unless changes are made in the systems used to increase physician numbers, the deficit will worsen, with significant consequences for access and quality of care for Alaskans, as well as increased cost for health care delivery systems.

The time frames to increase physician supply are long; it takes from seven to 13 years from entry into medical school to entry into practice. The time it takes to develop new or expanded programs adds to this delay. It is important to act quickly to begin the programs that will yield more physicians in the next two decades. Delay will only add to the cost and worsen the deficit to recoup.

Responses to this problem involve preparing and attracting Alaskan youth so they can enter medical careers, improving recruitment of physicians to practice in Alaska, and retaining the physicians who currently practice here. The Task Force recommends specific strategies and action steps to achieve four goals related to assuring an adequate supply of physicians to meet Alaska's need.

Goals:

1. Increase the in-state production of physicians by increasing the number and viability of medical school and residency positions in Alaska and for Alaskans.
2. Increase the recruitment of physicians to Alaska by assessing needs and coordinating recruitment efforts.
3. Expand and support programs that prepare Alaskans for medical careers.
4. Increase retention of physicians by improving the practice environment in Alaska.

The following sections summarize the findings of the Alaska Physician Supply Task Force supporting these goals. The body of the report contains the full discussion of the goals, strategy recommendations, and the rationale behind the recommendations.

Assessment of need. The Task Force estimates that Alaska has a shortage of 375 physicians, based on the conclusion that Alaska should have 110% of the current national average physician-to-population ratio. In order to correct the deficit and reach an adequate supply of physicians by 2025, Alaska needs to add a net of 59 physicians per year, starting immediately. Alaska currently gains 78 physicians per year but loses 40 physicians yearly for various reasons. In order to improve its doctor to population ratio, and assure having an adequate supply in 20 years, the current net gain of 38 physicians per year will need to increase to 59 per year, more than a 50% increase. If the loss each year is greater than the recent average of 40 per year, Alaska will need more than 90 physicians to enter practice in Alaska each year.

These conclusions are supported by the following findings.

Finding 1. The ratio of physicians to population in Alaska is below the national average at 2.05 MDs per 1000 population vs. 2.38 MDs per 1000 population in the US.

Finding 2. Alaska should have 10% more physicians per population than the national average because Alaska's rural nature, great distances and severe weather result in structural inefficiencies of the health care system. Alaskan physicians' administrative and supervisory responsibilities in addition to patient care contribute to the need for more physicians to provide patient care services.

Finding 3. Competition for physicians will intensify since the entire nation is expected to experience a shortage of physicians, associated with the aging of the population and an inadequate production of physicians.

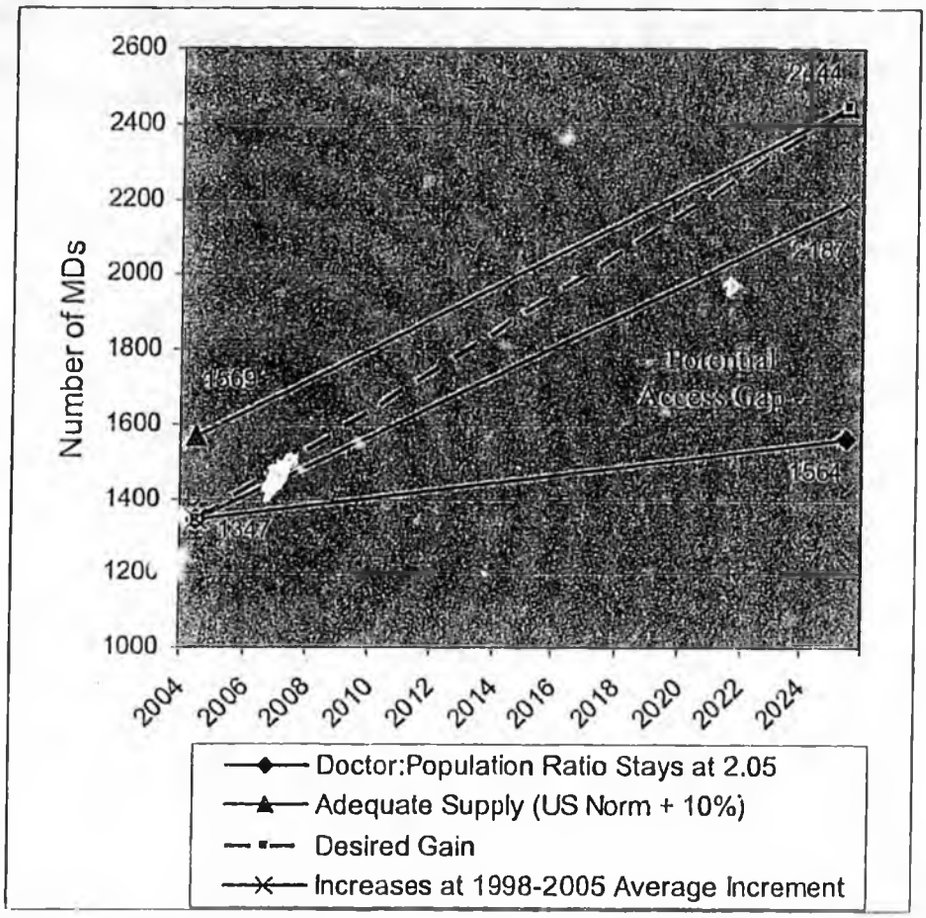
Finding 4. Retirement and practice reductions of aging physicians in Alaska and elsewhere, as well as changing preferences of physicians for more limited work hours, add to the need for more physicians.

Finding 5. Alaska has and should maintain a higher ratio of mid-level providers (advanced nurse practitioners and physician assistants) to physicians than the national average, in order to make it feasible to provide high quality and timely care to the population. Without these providers the need for physicians would be even higher.

Finding 6. Shortages are most apparent in internal medicine, medical subspecialties and psychiatry. It is important to evaluate the need for specialty types and distribution throughout Alaska, in order to plan for physician recruitment.

Over the next twenty years, nearly twice as many "physicians in practice" will be needed – about 1100 more than the current 1347 MDs in patient care – to meet expected demand as the state's elderly population triples and as medical practice patterns change. This projection assumes that doctors of osteopathy, advanced nurse practitioners and physician assistants will continue to increase proportionately over time.

Figure A. Gain in Alaskan Physicians: Static Doctor to Population Ratio vs. Desired Growth Scenario



Source: Based on HPSD analysis (AMA Master File 2006)

Basis for strategies for meeting the need for physicians for Alaska's health care system. After investigating the supply and need for physicians and reaching Findings 1- 6, the Task Force shifted its focus to investigating strategies for meeting the need. The Task Force drew on the knowledge of in-state professionals and educators, and of national experts, to identify lessons and information that form the basis for recommendations for action, as well as for further investigation and monitoring. The Task Force's selection of strategies is based on the following findings.

Finding 7. Alaska is one of six states without an independent in-state medical school. Alaska funds ten state-supported "seats" at the regional WWAMI medical school, administratively centered at the University of Washington School of Medicine. This number (10 seats) represents fewer seats per capita than all but five of the 50 states.

Finding 8. Residency programs are one of the most effective ways to produce physicians for a state or community. Alaska has only one in-state residency, the AFMR, which places 70% of its graduates in Alaska.

Maintaining and expanding residency opportunities will be critical in augmenting Alaska's physician numbers.

Finding 9. Over the last ten years, an increasing number of Alaskan students have applied to medical schools; the average number of applicants has been 65. In 2005, 29 of 73 applicants were admitted into medical school. Ten per year attend WWAMI and the remainder attends medical schools without state support from Alaska. Since 1996, only WWAMI has had Alaska-supported seats. Prior to 1996, Alaska supported programs for medical and osteopathic students through the WICHE program and student loans.

Finding 10. Recruitment for physicians is facilitated by the availability of loan repayment programs such as the IHS and NHSC loan repayment programs. Service obligations related to student loans have historically accounted for some recruitment and should be explored.

Finding 11. There are several initiatives to increase interest in medical careers among Alaskans, including efforts by the tribal health care system, hospitals, the University of Alaska's newly funded Area Health Education Center (AHEC) and the UA Scholars Awards, school system initiatives for improvement of math and science programs, and programs that encourage students to go into health careers. Collectively, these initiatives generate qualified applicants to medical schools, but too few applicants matriculate to replenish Alaska's shortage, and there is inadequate diversity.

Finding 12. Medical practice environments in Alaska have positive and negative aspects that affect the recruitment and retention of physicians.

Finding 13. Surveys of providers (physicians and mid-levels) by the AMA and many states have provided data on practice characteristics, preferences, and retirement plans.

Finding 14. Workforce development activities exist in multiple locations including the tribally managed system, private sector, and various state and federal agencies. However existing programs are not monitoring or analyzing specialty distribution or needs, changing roles of mid-level providers, or potential impact of electronic health records on all providers. Coordination of the efforts, and research and analysis of relevant trends, should inform policy.

In view of these findings, the relevant literature, and the experience of other states, the Task Force developed the following goals and strategies to respond to the physician shortage. The strategies are chosen because of their likely effectiveness, cost-to-benefit advantages, and achievability. Each strategy is discussed with respect to the time frame in which it will be effective, and the average expected cost to the state to produce each practicing physician, where such information is reasonably accessible. The listing below

	G. Empanel a group to assess medical education in Alaska, including the viability of establishing an Alaska-based medical school	Long	Undetermined at time of PSTF Report
2. Increase the recruitment of physicians to Alaska by assessing needs and coordinating recruitment efforts.	A. Create a Medical Provider Workforce Assessment Office to monitor physician supply and facilitate physician recruitment efforts	Short	$250,000 per year
	B. Research and test a physician re-location incentive payment program	Short	$65,000 per physician
	C. Expand loan repayment assistance programs and funding for physicians practicing in Alaska	Short	Undetermined – need to consult with other states
3. Expand and support programs that prepare Alaskans for medical careers	A. Expand and coordinate programs that prepare Alaskans for careers in medicine	Medium	Up to $1,000,000 per year
4. Increase retention of physicians by improving the practice environment in Alaska.	A. Develop a physician practice environment index for Alaska	Short	$100,000 to develop index; $20,000 annually to update
	B. Develop tools that promote community-based approaches to physician recruitment and retention	Short	$50,000 per year
	C. Support federal tax credit legislation Initiative for physicians that meet frontier practice requirements	Short	Zero cost to the state

Adoption of these strategies will depend on further analysis of resources and a balancing of effectiveness and achievability. Strategies to recruit and retain physicians promise the earliest positive results, but probably have a relatively low benefit ceiling, in that the maximum number of physicians achievable by those strategies will soon be reached. The

gives a brief identification of each goal and strategy. Full discussion of the strategies is included in the body of the report.

Goals and Strategies for Securing an Adequate Physician Supply for Alaska's Needs

Major Goal	Strategy	Timeline for Impact	Estimated Cost
1. Increase the in-state production of physicians by increasing the number and viability of medical school and residency positions in Alaska and for Alaskans.	A. Increase the number of state-subsidized medical school positions (WWAMI) from 10 to 30 per year	Medium	$250,000 per practicing physician
	B. Ensure financial viability of the AFMR through state support including Medicaid support	Short	$60,000 per practicing physician
	C. Increase the number of residency positions in Alaska, both in family medicine and appropriate additional specialties	Short	$100,000 per year plus $30,000 for planning in year 1 & 2
	D. Assist Alaskan students to attend medical school by: i) reactivating and funding the use of the WICHE Professional Student Exchange Program with a service obligation attached, and ii) evaluating the possibility of seats for Alaskans in the planned osteopathic school at the Pacific Northwest University of the Health Science	Medium	i) $550,000 per practicing physician for WICHE; ii) cost unknown at time of PSTF report
	E. Investigate mechanisms for increasing Alaska-based experiences and education for WWAMI Students	Medium	Unknown at time of PSTF Report
	F. Maximize Medicare payments to teaching hospitals in Alaska	Short	Zero cost to the state

strategies likely to produce significant numbers of doctors over time are those designed to train physicians in Alaska, i.e. medical school and residency programs, but the time to realize the benefit in most cases is longer.

Implementation strategy – next steps for key policy makers. The shortage of physicians and other health care providers creates one of Alaska's most challenging public health and higher education issues. To ensure the work of the Task Force is carried forward, it is recommended that the President and Commissioner establish permanent structures to implement these recommendations. One component of this action would be creation of a Medical Provider Workforce Assessment Office (Strategy 2A).

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NAM National Association of Manufacturers

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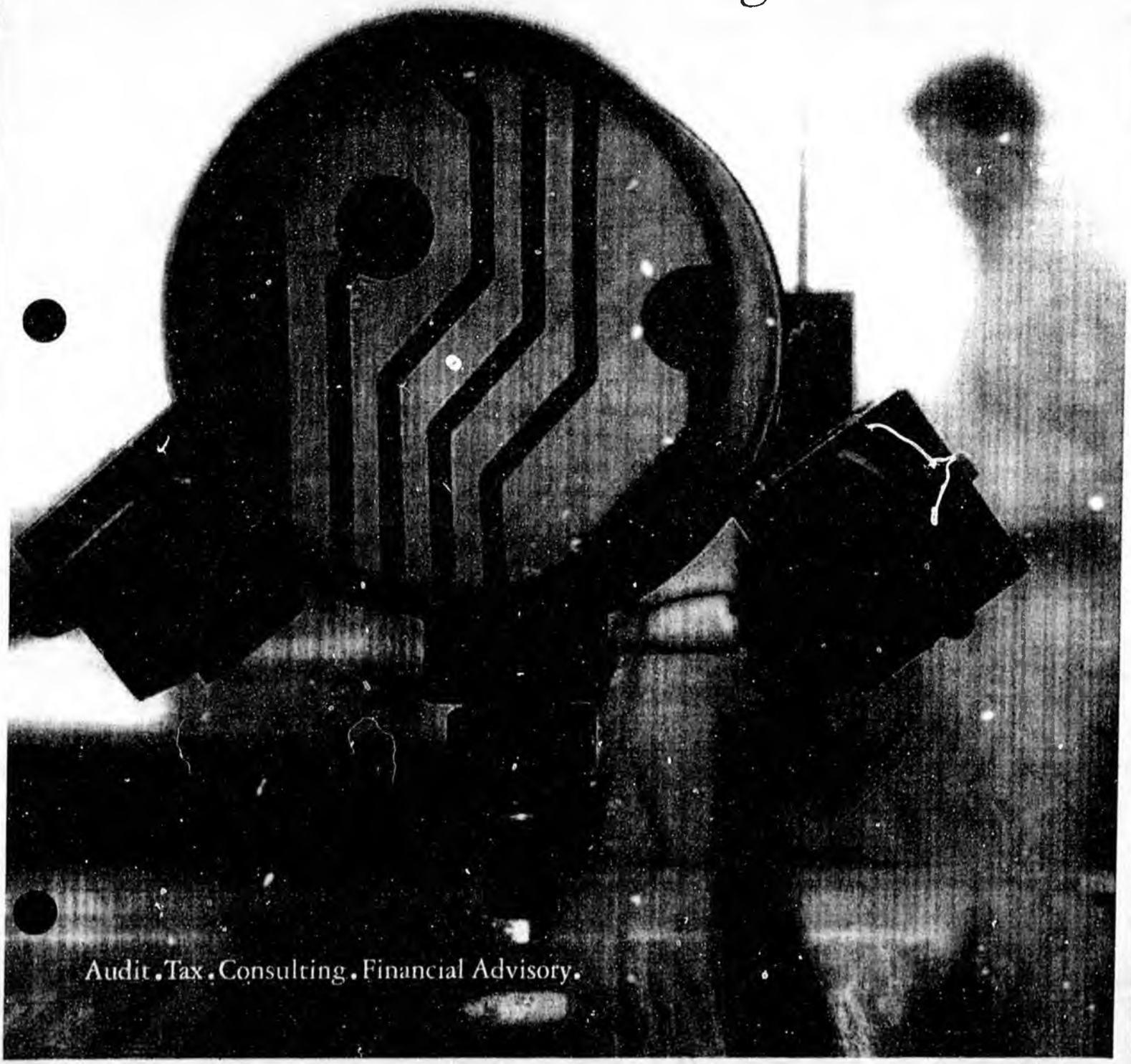
Manufacturing

2005 Skills Gap Report – A Survey of the American Manufacturing Workforce



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Introduction

By Phyllis Eisen, Jerry J. Jasinowski and Richard Kleinert

In spring 2005, the National Association of Manufacturers' Manufacturing Institute/Center for Workforce Success and Deloitte Consulting LLP (Deloitte Consulting) developed the fourth iteration in a series of surveys designed to learn more about how manufacturers plan their human capital strategies and the barriers they encounter in the process.

The results of this survey confirm the skill shortages found in earlier reports. However, the 2005 report goes much beyond earlier findings in detailing the breadth and depth of the skill shortage, the negative impact of the shortages on business operations, and the extraordinary increase in employee performance requirements.

The picture that emerges is both more complex and more disturbing than in the past, because it exposes a broadening gap between the availability of skilled workers and the employee performance requirements of modern manufacturing. Specifically, the research finds:

- Today's skill shortages are extremely broad and deep, cutting across industry sectors and impacting more than 80 percent of companies surveyed.
- Skills shortages are having a widespread impact on manufacturers' abilities to achieve production levels, increase productivity, and meet customer demands.
- High-performance workforce requirements have significantly increased as a result of the skills gap shortage and the challenge of competing in a global economy, according to nearly 75 percent of survey respondents.

In sum, the confluence of the above trends and the increasingly competitive global environment has created an extraordinary gap between the supply of skills available and the performance requirements of the workforce needed for modern global manufacturing. This human capital performance gap threatens our nation's ability to compete in today's fast-moving and increasingly demanding global economy. It is emerging as our nation's most critical business issue.

Clearly, this situation calls for urgent action by both public and private stakeholders. If our country is to remain competitive, the issues of education and training reform now must be given at least as much focus as top business concerns of trade, tax, energy, and regulatory reform. As you read through this report, we hope to stimulate your thinking and leave you with an unmistakable sense that your urgent involvement is needed today.

Acknowledgements

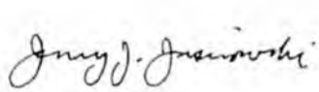
The National Association of Manufacturers (NAM), the Manufacturing Institute's Center for Workforce Success, and Deloitte Consulting LLP (Deloitte Consulting) thank the many individuals who contributed to the conceptualization, implementation, analysis, and publication of this report.

Thanks go to the Center for Workforce Success's Stacey Jarrett Wagner for helping to design the survey, analyze the responses, and manage the project, to Bill Canis, vice president of the Manufacturing Institute and David Heuther, NAM's chief economist, for providing their expert advice, and to Laura Narvaiz, vice president of communications for the Manufacturing Institute for helping us get out our message.

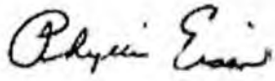
We deeply appreciate all the help and thoughtful analyses and writing provided by the Deloitte Consulting team, without whom this report could not have been developed. While many members of its team participated at various stages, the lion's share of the work was done by Juliet Glassroth, Lauren Mistretta, Leah Reynolds, Burt Rea, and David Rizzo. It was our great pleasure to work with such a talented team. In addition, we would like to thank Linda Segervall for her invaluable contributions.

We would also like to thank NAM members for their participation and thoughtful answers – they were very forthcoming in their responses and we are grateful for their honest insights.

Finally, we would especially like to thank Jerry Jasinowski, president of the Manufacturing Institute, John Engler, CEO of the National Association of Manufacturers, and Doug Engel, National Manufacturing Industry Leader, Deloitte & Touche USA LLP, for their support and encouragement as we try to tell the manufacturing story.



Jerry Jasinowski
President
The Manufacturing Institute



Phyllis Eisen
Vice President, The Manufacturing Institute
Executive Director, Center for Workforce Success

Richard A Kleinert
Principal
Deloitte Consulting LLP

Executive Summary

The vast majority of American manufacturers are experiencing a serious shortage of qualified employees, which in turn is causing significant impact to business and the ability of the country as a whole to compete in a global economy. This is the key finding of the *2005 Skills Gap Survey*.

The problem for U.S. manufacturers is that this challenge is not universal. Countries with rich educational heritages, e.g., India, China and Russia, are graduating millions more students each year from college than the United States.[1] These highly educated individuals are actively participating in the development of innovative new products without regard for historical barriers, such as geography – thanks to technologies such as broadband, inexpensive Internet-ready laptops, and collaborative tools.[2]

With such international talent readily available and significant shortages existing at home, it is clear that the future of American manufacturing may now be at stake.

A Serious, Persistent Shortage

The details behind the talent shortage reveal a stark reality. **More than 80 percent of respondents indicated that they are experiencing a shortage of qualified workers overall** – with 13 percent reporting severe shortages and 68 percent indicating moderate shortages. Also worrisome is the finding that **90 percent of respondents indicated a moderate to severe shortage of qualified skilled production employees,** including front-line workers, such as machinists, operators, craft workers, distributors, and technicians. As expected, the research showed that engineers and scientists are in short supply, with 65 percent of manufacturers reporting deficiencies – 18 percent severe and 47 percent moderate.

In addition to shortages of various types of employees, manufacturers surveyed reported they are also dissatisfied with the skills of their current employees. Among respondents to this national survey, nearly half indicated their current employees have inadequate basic employability skills, such as attendance, timeliness and work ethic; while 46 percent reported inadequate problem-solving skills, and 36 percent indicated insufficient reading, writing, and communication skills.

Significant Business and Economic Impact

The talent shortage being reported is not a theoretical or distant problem. In fact, **83 percent of respondents indicated that these shortages are currently impacting their ability to serve customers.** Specifically, the survey found that skill deficiencies are causing difficulties for manufacturers in terms of their ability to maintain production levels consistent with customer demand (56 percent), to achieve productivity targets (43 percent), and to achieve or maintain target levels of customer service and satisfaction (33 percent).

Clearly, this situation is untenable for America. Although our manufacturing sector has been able to remain vibrant and to compete successfully in a global economy, its ability to do so in the future is predicated on the availability of a highly skilled, innovative, "high-performance workforce." Without a sufficient supply of these types of employees, the manufacturing sector will suffer – which in turn will have a detrimental impact to the nation's overall economic health.

The Key to Business Success

Notwithstanding the bleak picture of the workforce situation today, manufacturers surveyed believe that having a high-performance workforce is the most important driver of future business success. Nearly three out of every four respondents selected this as a key to future success.

The second most commonly selected driver of success was "new product innovation" – which is also inextricably linked to employee quality and performance. Surprisingly, "low-cost producer status" ranked only third on the list of most important drivers of future business success, but not far behind in terms of percentages. In past studies, manufacturers have consistently ranked this as their number one response – but perhaps they have come to accept as a given that ongoing pursuit of lean operations and efficiency is essential to success in an incessantly competitive global manufacturing industry. To stay ahead of the pack, successful companies must constantly push the innovation envelope, which requires innovative and high-performing employees. As a result, the new manufacturing mantra may be "high-performing and innovative, but lean."

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Getting There From Here

While the situation is already posing significant challenges, the basic laws of supply and demand as they operate in the labor market suggest an even more difficult future. On the demand side, employers want more highly skilled employees that are exceptionally engaged and innovative. But basic demographic, social, and educational trends indicate a gloomy supply outlook:

- The exodus of Baby Boomers from the workforce with substantial accumulated skills will reduce the available talent pool
- Changing attitudes about careers and job satisfaction among Generation Yers
- Changing job requirements, necessitating some level of technical skill in almost all jobs and making truly unskilled jobs a thing of the past
- Significant dissatisfaction among manufacturers with the quality of K-12 education and the dearth of adequate career counseling
- Declining percentage of students in U.S. universities studying science and engineering

In addition, **research has shown a direct relationship between manufacturing's negative image – which is tied to the old stereotype of the assembly line – and the decreasing number of young people pursuing careers in the industry.** The good news is that manufacturers are beginning to realize they need to improve this image. A growing number of companies are providing support for NAM's *Dream It. Do It.* campaign that actively seeks to help young adults find careers they can be passionate about in one of manufacturing's many exciting sectors.

Manufacturers also seem to understand what they need to do to remain competitive, with so many clearly viewing a high-performance workforce as the foundation of future competitive ability. The challenge for manufacturers is how to attract, retain, and motivate this high-performance workforce.

Thus, there is a focus on both **reducing turnover among current employees and attracting new workers.** Most manufacturers reported **spending more on training programs** today (as a percentage of payroll) than in 2001 – which is critical because training opportunities are an important component of a strategy to attract, retain, and develop employees.

On the other hand, it is unclear that manufacturers are engaging in the right type of activities and employing the right tactics to attract, develop and retain a high-performance workforce given the realities of the current environment. Much has been written about the changing nature of the employer/employee relationship and the changing picture of what employees want and value, especially among Generation Y employees. While many manufacturers are seeking to provide the right programs and trying out new strategies, often they rely on a rather traditional mix of compensation and benefit plan offerings for recruitment and retention purposes, which may not prove as effective with this new breed of employee.

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A Public-Private Collaboration

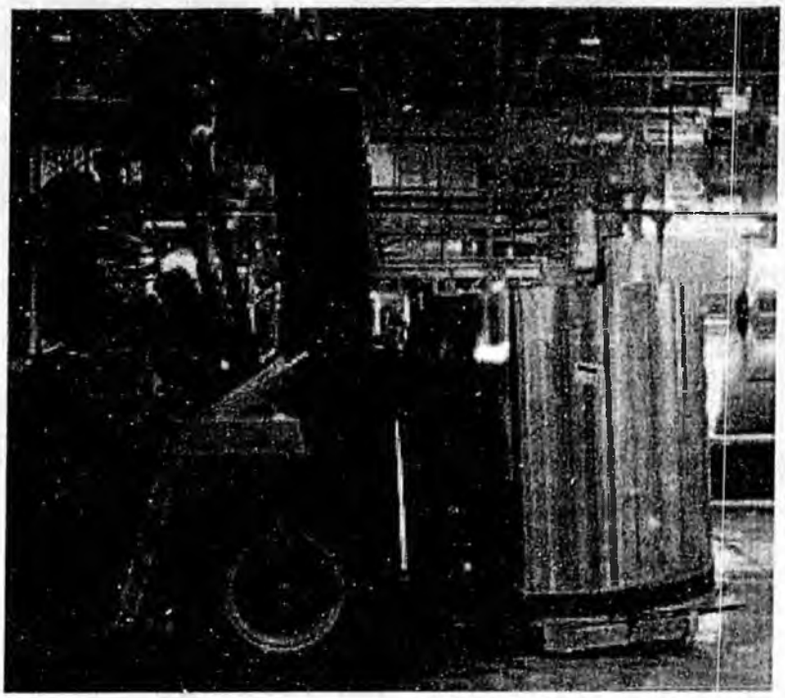
Clearly, the ability of manufacturers to attract, retain, and develop a high-performance workforce is of major importance to our nation as a whole. This challenge presents a significant opportunity for collaboration between the public and private sectors. Manufacturers are not expecting government to solve the problem for them, but would like encouragement and support for investments in training programs.

Our survey indicates that a very large percentage of respondents either has never heard of the government workforce programs or has never been contacted by Workforce Investment boards. Undoubtedly, increased communication and collaboration are required to better utilize these programs and to improve the effectiveness of the public education system in preparing students for the workplace and future careers.

Recommendations for Individual and Shared Responsibility

The issues associated with the skills gap are numerous and complex. Yet with increased competition from countries around the world, the future success and vibrancy of the American manufacturing industry is now at stake. To hold back further competitive encroachments, all the parties must assume responsibility – including manufacturing companies, the government, educators, and individuals. We believe the urgency of this situation also requires the follow actions:

- Educators must emphasize science, math and technology-related programs in K-16 curricula, invest more in effective teacher education focused on science and math, and ensure that programs regarding career opportunities and requirements for graduation are geared for 21st century employment.
- Employers should invest at least three percent of payroll whenever possible to provide training opportunities for their current employees, particularly in areas that will enable them to become a high-performance workforce, learn new methods to attract, retain, develop and motivate employees,
- State and federal government should invest in the capacity of community and technical colleges to prepare individuals for careers in high growth industries such as manufacturing
- State education standards should include career education as measurable criteria for K-12 success
- The Higher Education Act and its funding mechanisms should provide increased access for adult learners
- Individuals must take responsibility for their own careers and employability by earning industry relevant certifications and formal education credentials such as community college and bachelor degrees.



- The public workforce system, companies and their business associations must strengthen their engagement in order to better advise Workforce Investment Boards on rising and declining economic conditions, business investments, skill needs and employment requirements.
- Public/private partnerships should be encouraged to support career awareness campaigns that help individuals understand all the career options available to them. A model for this is The Manufacturing Institute's Dream It Do It manufacturing careers campaign.

The Business and Economic Reality Behind Today's Talent Shortages

In an effort to gain a clearer understanding of the processes and challenges associated with human capital management in the manufacturing sector, the NAM Manufacturing Institute/Center for Workforce Success and Deloitte Consulting LLP (Deloitte Consulting) conducted the fourth in a series of surveys in the spring of 2005. Specifically, the survey was designed to learn more about today's talent shortage and the resulting business impacts, what companies believe they need to provide for future business success, and how companies are seeking to attract, retain, and develop a high-performance workforce.

With media coverage persistently reporting an overall decline in manufacturing employment and layoffs among well known employers many may be surprised with the key finding from this research. ***The Skills Gap 2005 Survey*** **found that the vast majority of American manufacturers surveyed continue to experience a serious shortage of qualified employees that is causing significant impact to business and the ability of the country as a whole to compete in a global economy.**

In fact, **81 percent of respondents answered that they are currently facing a moderate to severe shortage of qualified workers** – nearly unchanged from the 80 percent who reported a moderate to severe shortage with *The Skills Gap 2001 Survey.* More specifically, 53 percent of those responding indicated at least 10 percent of their total positions currently remain unfilled due to a lack of qualified candidates. This clearly supports the view that the shortage of qualified workers is becoming a persistent challenge and raises important questions, such as "Where is the pain most acute?" and "What are the business and broader economic implications?"

In answer to these questions, survey respondents suggested that the shortage of qualified workers is truly widespread, impacting companies regardless of size, industry, or geographic location. Large employers, defined as those with more than 500 employees, are only slightly more likely to report a moderate to severe shortage of qualified workers than small employers with fewer than 500 employees (85 to 80 percent respectively).

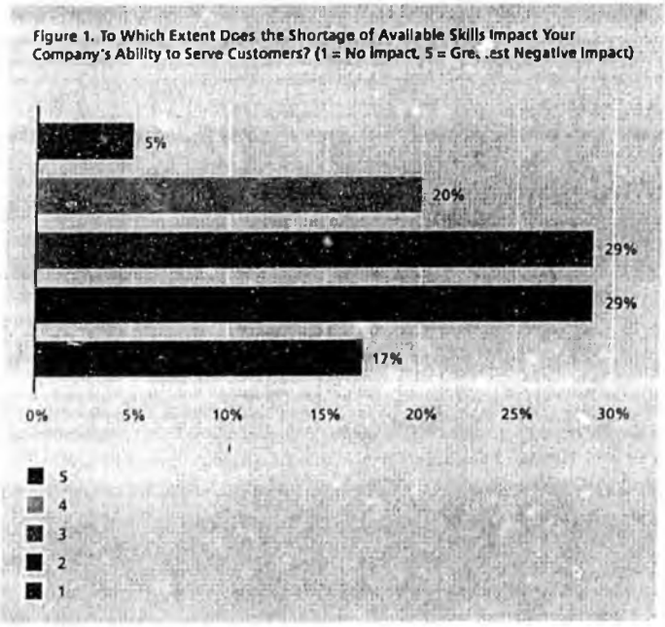
However, while all respondents appear to be impacted, not all segments of the workforce are affected equally. The largest shortages occur for technical skilled employees and engineers, but more than one-third of respondents also claimed shortages of ***unskilled production employees.***

- 90 percent of respondents indicated a moderate to severe shortage of qualified ***skilled production employees.*** This result does not vary significantly when controlling for size, industry segment or region.
- 65 percent of all respondents and 74 percent of respondents with more than 500 employees reported a moderate to severe shortage of ***scientists and engineers.*** This shortage is even more acute for certain industry segments, such as Aerospace and Defense, with 80 percent of respondents indicating a moderate to severe shortage.
- 39 percent of respondents also indicated a moderate to severe shortage of qualified ***unskilled production employees.***

While it is clear that employees with "hard skills" (such as skilled production, scientists, and engineers) are in short supply, the results are less severe for employees with "softer skills." Thirty-one percent of respondents indicated a shortage of qualified customer service employees; 36 percent of respondents indicated a shortage of qualified human resources, information technology (IT), finance, and executive employees; 44 percent of respondents report a shortage of qualified sales and marketing employees. Again, these results vary little when controlling for size, industry, or geography.

Taken together, these findings add more weight to the frequently voiced concern that the United States is not graduating enough students with technical, engineering and scientific degrees to meet the current demand for employees with these skills.

Figure 1. To Which Extent Does the Shortage of Available Skills Impact Your Company's Ability to Serve Customers? (1 = No Impact, 5 = Greatest Negative Impact)



However, the critical issue is the impact that these shortages are having on business performance. **When asked, "To what extent does the shortage of available skills impact your ability to serve customers?" 54 percent of all respondents indicated a moderate to high degree of negative impact.**

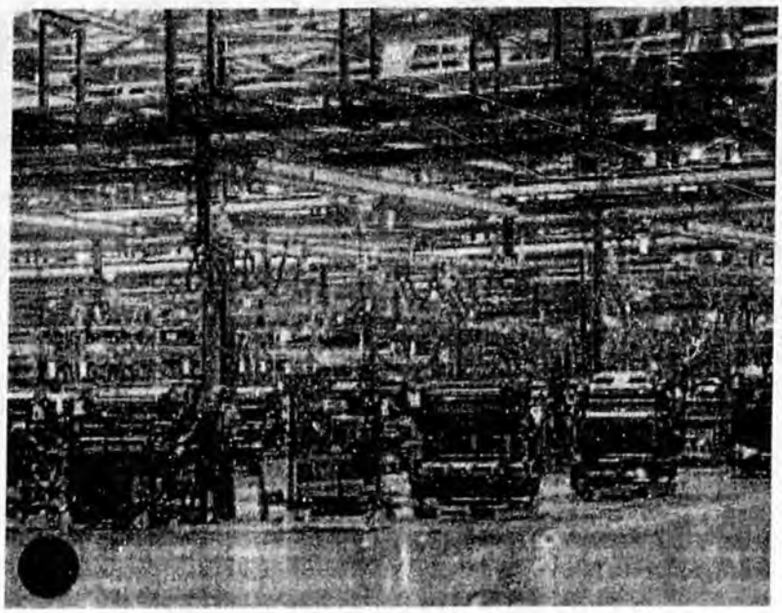
When asked to select the three most significant negative impacts of the shortage of qualified workers on business performance, respondents indicated:

- Maintaining production consistent with customer demand
- Achieving productivity targets
- Achieving or maintaining target levels of customer service and satisfaction

To better understand which skill deficiencies among current employees significantly contribute to negative business performance, the most frequently cited concern is inadequate basic employability skills, including attendance, timeliness and work ethic. Again, this response is consistent with a similarly constructed question in the 2001 survey, and poses an interesting challenge to employers and to the public education system that is expected to prepare most individuals for the workplace.

Among Aerospace and Defense companies, it was noteworthy that the most frequently mentioned response by a significant margin was inadequate problem solving skills – potentially reflecting the more complex nature of working with highly engineered products.

Tomorrow's Outlook: Business Success in a Changing Environment



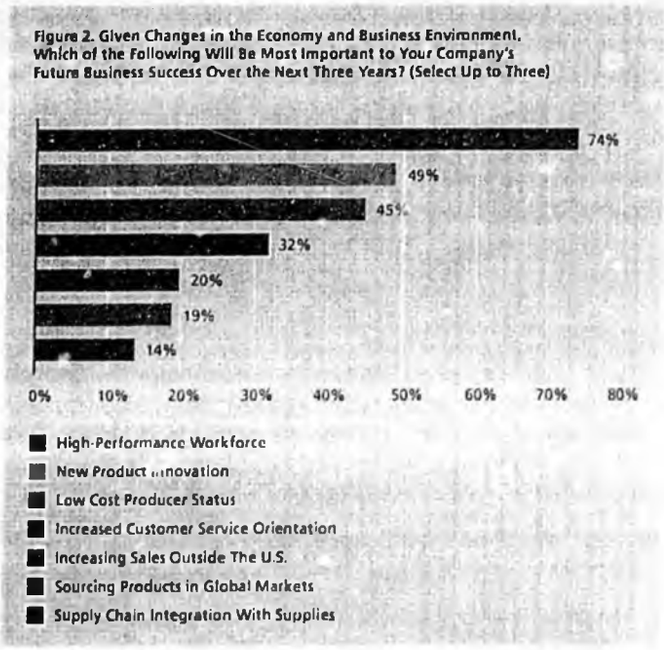
Given the painful realities of the current talent shortage, changes in the economy and business environment, increasing international competitive pressures, and other complex challenges that manufacturers face, respondents were asked to indicate what would be most important to their success over the next three years (Figure 2).

Although many expect that overall employment levels in manufacturing will not rise appreciably, an overwhelming majority of respondents stated that their workforce is the most important factor for future business success – **74 percent of respondents indicated that having a "high-performance workforce" will be key to their business success.**

The second most frequently chosen attribute, selected by 49 percent of respondents, is "new product innovation." This, too, is directly linked to having a high-performance workforce that can generate the innovative ideas for new products, as well as process innovation.

At the same time, cost pressures remain top of mind for respondents, with 45 percent specifying that "low-cost producer status" will be important to business success over the next three years. When taken together, these findings suggest that "high-performing, innovative, but lean" may become the new manufacturing mantra.

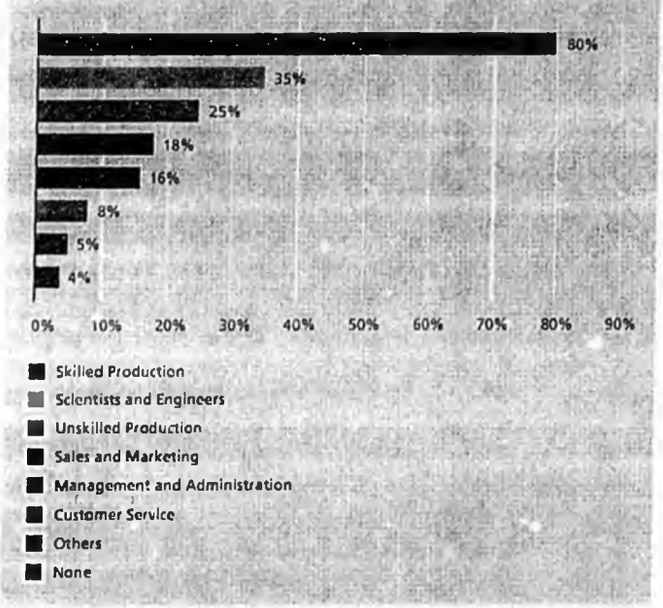
Figure 2. Given Changes in the Economy and Business Environment, Which of the Following Will Be Most Important to Your Company's Future Business Success Over the Next Three Years? (Select Up to Three)



With the many changes to the overall business environment, including the economy and competitive landscape, manufacturers were asked to identify the employee types among whom they anticipate shortages over the next three years. The real pressure point again appears to be the skilled production workers, **with a full 80 percent of respondents anticipating shortages of skilled production workers over the next three years – this is over *twice* the severity of the next skill shortage category.**

Thirty-five percent of all respondents anticipate shortages for scientists and engineers, with this rising to 46 percent for respondents with 500 employees or more. Following that is the unskilled production worker – a quarter of our respondents said these workers will be in short supply over the next three years. At the other end of the spectrum, it does not appear that employees engaged in management and administration, sales and marketing, or customer service will be in tight supply.

Figure 3. What Types of Employees are Expected to Be in Short Supply Over the Next Three Years? (Select All that Apply)



We next asked respondents to tell us which types of skills their employees will need more of over the next three years. Not surprisingly, technical skills was the area most commonly selected (53 percent). Beyond this, there are a number of related skills that will be needed over the next several years that are characteristic of high-performance workforces, such as the ability to work in teams (47 percent), strong computer skills (40 percent), the ability to read and translate diagrams and flow charts (39 percent), and strong supervisory and managerial skills (37 percent).

Basic employability skills (attendance, timeliness, work ethic, etc.) essentially tied with technical skills, which is consistent with the area of greatest deficiency seen in today's workforce – and consistent with the *The Skills Gap 2001* report. Following that are reading/writing/communication skills, where 51 percent of the respondents said they will need more of these types of skills over the next three years. This paradoxical mismatch – between the need for the highest skill levels ever and the current need to address basic employability issues and basic skills in general – is particularly vexing given the emphasis companies place on having a high-performance workforce. It also suggests the need for significant change in approaches within the education and public workforce systems.

Throughout this report, we have provided brief vignettes of NAM-member companies to illustrate the key points and examples of innovation in workforce initiatives.

Bollinger
Shipyards, Inc.

Literacy and Training Programs at Bollinger

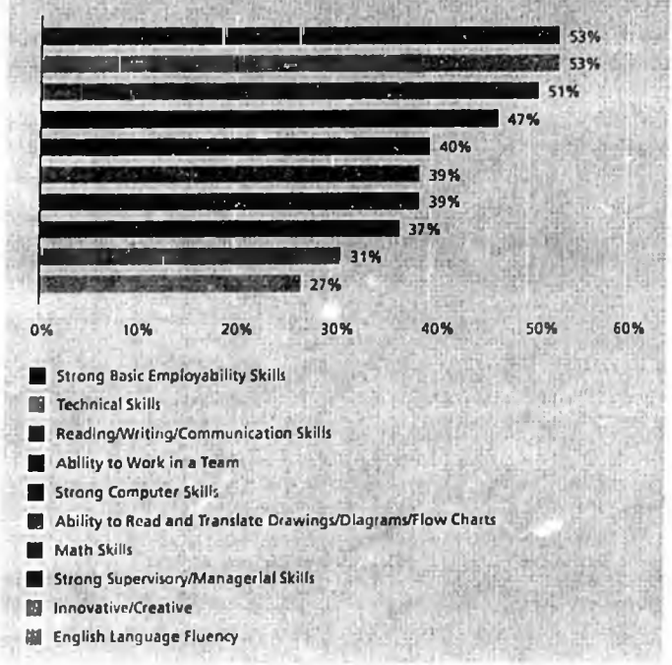
At Bollinger Shipyards just outside of New Orleans, people who are eager to work can earn more than just a decent paycheck. "We take people who have a desire to learn and teach them to be a welder or a fitter," explains Chuck Fontenot, corporate director of training. "We hire them from landscaping companies and fast food restaurants. We go to churches and into the community and find good people who never had a chance."

Bollinger provides a paid, five-week training program for each new hire that includes on-the-job and classroom skilled trades instruction, as well as training in "soft skills." "We teach them the life skills they need to sustain a job. Taking care of their money and coming to work each day."

Bollinger recently collaborated with the Literacy Alliance of New Orleans and invited the Alliance to conduct a six-week literacy program with its employees. The results were outstanding, according to Fontenot. "By using the materials the students use every day, she taught a group of our employees how to read in a practical, non-threatening way," Fontenot says.

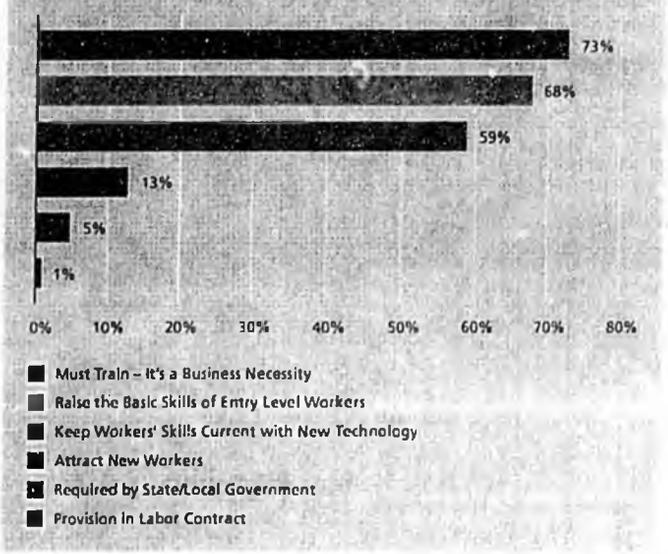
Bollinger also works with a regional economic development agency to register high-school-age applicants for its apprenticeship program. "We've had this program for several years," says Fontenot. "It starts when they're a junior or senior. They gain school credit for working, but they can't quit school. To date we have ten people who've completed the program. We've never had anyone quit the program. One guy became a supervisor, one became a welder. One guy started out at $5.00 an hour and now he's making $55,000 a year supervising other people. This program isn't a cost, it's an investment."

Figure 4. What Types of Skills Will Employees Need More of Over the Next Three Years? (Check All that Apply)



In an environment of extreme global competition, and given the workforce shortages and skill deficiencies that companies face today, it is not surprising why companies provide training to employees. Seventy-three percent report that they provide training to employees today because it is a "business necessity." To have a high-performance *workforce*, companies must create a culture of high-performance *workplaces* and training is integral to meeting this objective. Characteristics of a high-performance workplace include employee autonomy and involvement in decision-making, the sharing of information and knowledge, rewards for performance and support for employee performance – including training. A very small percentage of respondents that provide training do so because they are required by labor contract or by state or local government.

Figure 5. Why Do Companies Provide Training to Employees Today? (Select Up to Three)



It may not be surprising that a high percentage (73 percent) of respondents report that they have done formal workforce planning to forecast their needs for different workforce segments, considering anticipated shortages of key employee types and the need for increased levels of certain skills into the future. This does, however, raise the question of whether manufacturers have effectively and rigorously forecasted their future workforce needs – to reflect not only upcoming retirements, but also changes in business strategy/emphasis, types of employees needed, skills needed, and the availability of various employee types in the labor market today.

Finally, looking into the future it appears that high-performance workforce companies may consist of several different categories of employees. Roughly one-third of respondents indicated they may increase their utilization of temporary contract workers to attract and retain employees with the skills needed for the company over the next three years. These temporary or contract workers could be highly skilled employees who work on a project basis, but who cannot be justified on a full-time regular basis. Alternatively, it may be that companies intend to focus more on certain types of regular employees who represent their critical workforce segments and to utilize less highly skilled or non-business critical employees under contract or temporary arrangements. This is an area that warrants additional analysis to better understand how manufacturers intend to secure the various types of talent needed to achieve their goals.

New Aspirations, Old Tactics – What's Working and What's Not

With manufacturers clearly understanding that change is needed to achieve their goals, respondents provided important insights into several key leverage points – ranging from **recruitment, retention, and benefits strategies to how schools are preparing students for the workplace** – that can positively impact the talent shortage.

The Employer/Employee Disconnect

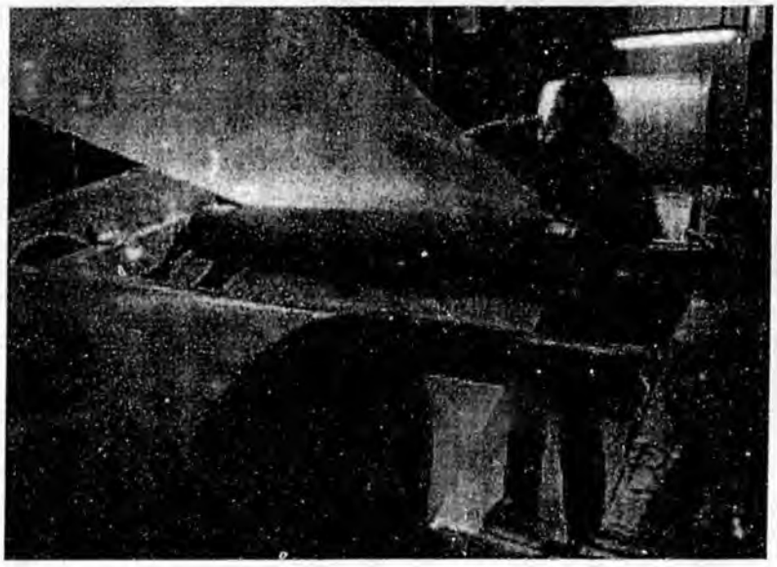
There is a growing disconnect between what today's workforce wants and what employers traditionally offer. The phrases used to describe this disconnect are familiar – lack of employee engagement, loss of company loyalty, and the need for a new employer/employee "deal."

The dramatic changes in the employer/employee relationship became acute in the past decade. Trends such as downsizing, merger mania, and globalization created an ever-shifting work environment that has resulted in negative and cynical views about the workplace. In recent years, organizations that regularly survey the U.S. workforce, such as The Conference Board and The Gallup Organization, have warned that employee opinions about the workplace are at an all-time low. The latest Conference Board research on worker attitudes was conducted in late 2004 and reflects a decline in job satisfaction that is widespread among workers of all ages and income brackets.

Adding to this low worker satisfaction is the huge demographic shift currently taking place – older Baby Boomers retiring, Gen Xers and Gen Yers moving in. Today's younger generations (Xers are in their mid-20s to late 30s; Yers are 25 and younger) bring a different and more challenging set of expectations to the work world.

Attracting members of the younger generations, while retaining the valuable knowledge and experience of older workers, will be increasingly important to manufacturers over the next five years. Young people bring technology-savvy skills, a global and diverse orientation, and an ability to think in innovative ways that are critical to competitive advantage.

Much has been written about changing employee attitudes and expectations, the erosion of job security, and the new "employee covenant." Instead of promising lifetime employment, employers offer meaningful jobs and development and growth opportunities through a combination of formal training, career options, and on-the-job experience. Against this backdrop, it is somewhat surprising to note that only 13 percent of respondents indicated that one of the reasons they provide training to employees today is a way to attract new workers.



Recruitment Strategies

Despite an emerging desire for building a high-performance workforce and attracting highly engaged employees, the majority of respondents to the survey continue to use mostly traditional recruiting strategies. Manufacturers cited competitive wages, and health care and retirement benefits as their top methods for attracting employees – which for most employees are considered a given rather than differentiators.

Indicating a growing awareness of more effective approaches for attracting employees, the following scored moderately on the survey: flexible work arrangements, tuition reimbursement, employee referrals, and professional development.

Respondents ranked other recruitment techniques, including signing bonuses, on-site services, and stock options or equity, much less favorably – perhaps because they were perceived as ineffective in attracting and recruiting new employees or as impractical given the investments required for implementation.

Figure 6. Have Placement Services From the Following Organizations Been Used to Recruit and Hire Employees? (Check the Two Most Used)

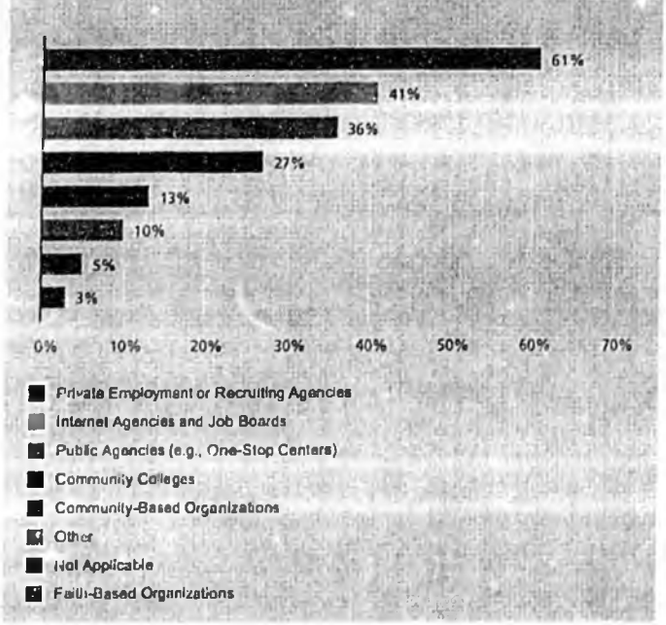
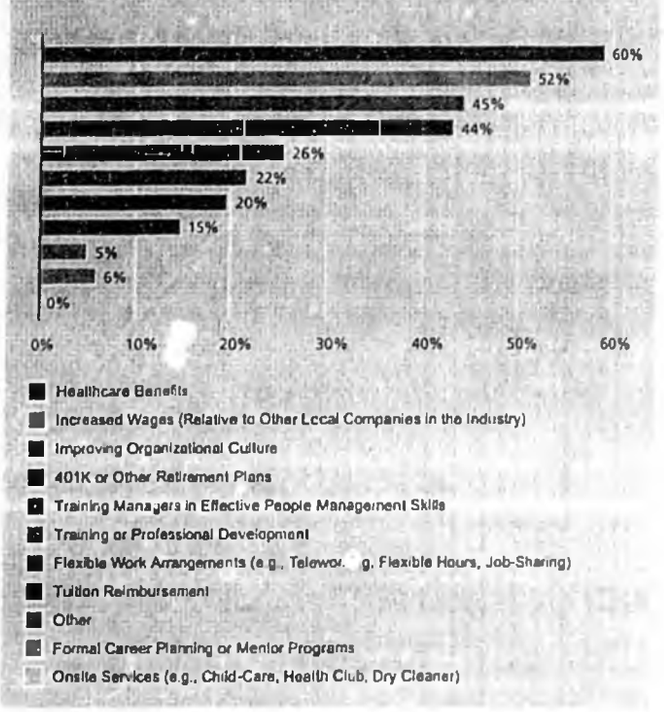


Figure 7. Which of the Following Have Been Used Most Successfully to Retain Current Employees? (Select Up to Three)



U.S. manufacturers have an opportunity to increase the impact of their recruitment strategies by moving beyond the tradit onal means of attracting employees and including additional dimensions to differentiate their approaches. Of course compensation and benefits must be competitive, but based on what we know employees are looking for – development and training, challenging work assignments, and connection in the workplace – U.S. manufacturers need to improve their recruitment strategies by including and promoting these aspects of the workplace. These efforts will also pay dividends in increased employee retention rates.

In response to how employers are using placement services to recruit and hire employees, traditional private employment/recruitment agencies scored highest by a clear margin. But there are some signs of creativity in recruitment techniques, such as the use of Internet agencies and job boards (41 percent), followed by the use of public agencies and community colleges (36 and 27 percent, respectively). Low responses were received for community-based and faith-based organizations.

Retention Strategies

Survey respondents noted the importance of organizational culture, effective managers, flexible work arrangements, training and development, and tuition reimbursement in retaining employees – indicating a growing awareness of what drives employee satisfaction and retention. In particular, the importance of organizational culture for retaining employees shows a dramatic shift in thinking about employer responsibility and the need to create an environment that breaks down barriers to productivity and employee engagement. It also underscores an opportunity to improve recruitment results by better promoting what companies are already doing to retain and engage current employees.

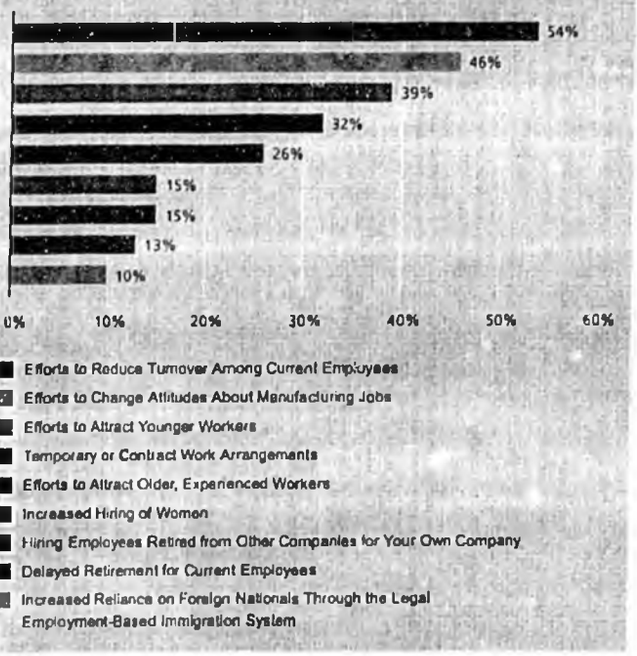
Like the responses for recruitment strategies, survey participants scored compensation and benefits highly as drivers of retention. This traditional view of employee motivators is consistent with the responses for recruitment strategies above. But clearly, there is a movement toward more progressive thinking around how to retain talent and the program elements that need to be implemented.

Low response rates were seen for formal career planning, mentoring, and on-site services as drivers of employee retention.

Looking ahead over the next three years, respondents felt they would address skills-retention challenges by working to reduce turnover, participating in efforts to change attitudes about manufacturing jobs, attracting younger as well as older, experienced employees, and using contract or temporary workers. Low to moderate responses were seen for the following tactics: hiring retired employees, employing more women, delaying retirement, and increasing reliance on legal foreign nationals.

This reaction indicated a willingness to try multiple and non-traditional approaches to dealing with skills retention in the years ahead. Considering the traditional approaches for current recruiting and retention strategies reported above, it is likely that manufacturing employers will need to use new and additional ways to source and retain the skills they require to be competitive.

Figure 8. Considering the Challenge of Attracting and Retaining Employees with the Right Skills for Your Business, Which of the Following Tactics Might You Utilize Over the Next Three Years? (Select Up to Three)



"Battlebots" and Developing Young Talent at E.J. Ajax

To prepare for the future, E.J. Ajax and Sons, a metal stamping company in Minneapolis, is promoting a program called "Battlebots," designed to attract young people to a career in tool and die. Currently in a dozen high schools in the Midwest, the Battlebots program introduces students to electronics, computer control, fluid motion, welding, working with sheet metal, and other manufacturing skills, all in the pursuit of building competitive robots.

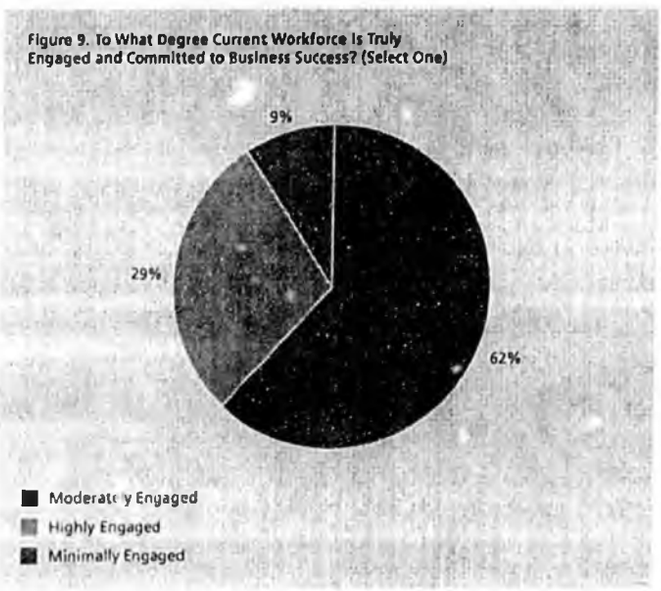
E.J. Ajax realizes that the manufacturing sector is not as popular a career choice for young people as it once was in the United States. But, the company's leadership has been encouraged recently by growing interest in high schools and on college campuses as a result of the Battlebots program.

E. J. Ajax is also forming an alliance with the University of Minnesota at Crookston (UMC). The university recently introduced a four-year degree program in manufacturing that recognizes the value of previous college coursework and specialized training, as well as work experience. The company currently employs an intern who is attending a two-year program at a Minneapolis technical college and plans to complete his studies through the UMC program, while continuing to work for Ajax.

"One of my biggest challenges in the next three to ten years will be the retirement of my incumbent workforce," said Erick Ajax, vice president of E.J. Ajax. "A quarter of my workforce is over 50 years old. Our four-year apprenticeship program is a good way to provide a career path for young people and interest them in this highly challenging field. There are some wonderful opportunities for someone who wants to pursue a degree in engineering, robotics, or automation, and help the United States compete in the world."

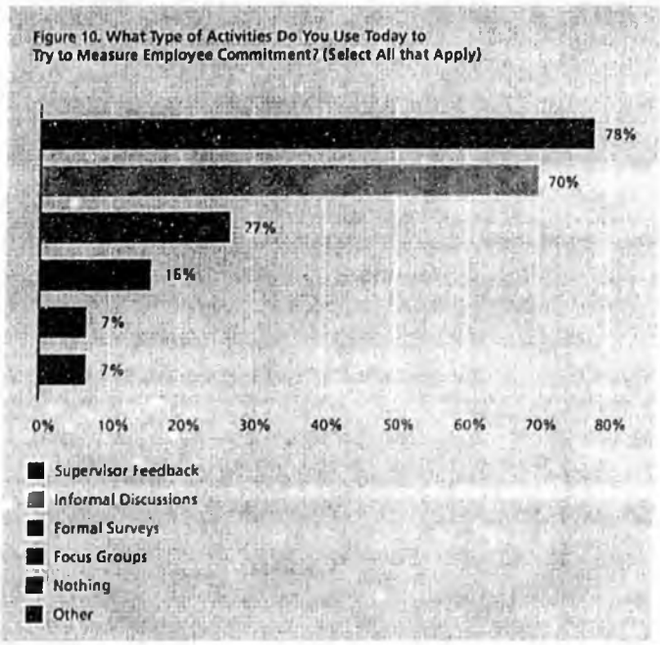
Employee Engagement

In spite of the challenges employers are facing as reported in other parts of the survey, it was disappointing that only 29 percent of employers surveyed perceived their workforce to be highly engaged. If employers expect to have high-performance workplaces, they must do better at motivating all of their employees to be highly engaged. Sixty-three percent of respondents said their employees were moderately engaged and 9 percent said they were minimally engaged. These percentages demonstrate that employers should be concerned about their ability to achieve high performance without a more fully committed workforce.



These results may be mitigated by how survey respondents reported that they measured employee engagement. Most methods reported were informal, including supervisor feedback and informal discussions. More impartial measures, including formal surveys and focus groups, received significantly lower scores, indicating an opportunity for employers to connect more objectively with and hear feedback from their employees.

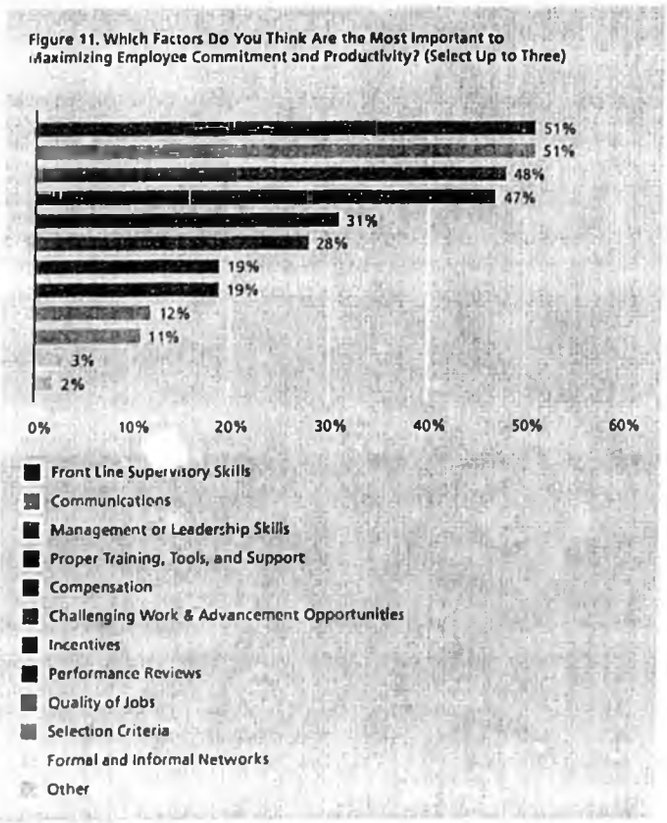
Just as successful manufacturing companies pay close attention to and study what their customers want, these same companies must apply similar rigor to understanding what their employees want and how to motivate them. In short, manufacturers would greatly benefit from learning how to maximize the return on their human capital investments.



Further, the large percentage of respondents who reported their workforce was moderately engaged indicates a significant opportunity to raise the level of involvement among employees. This will help many of the respondents achieve their stated objective to develop a high-performance workforce.

The methods employers reported for maximizing employee commitment showed a strong awareness of what employees value, including high response rates for front-line supervisory skills, management/leadership skills, proper training, tools, support, communications, and other skills that are required for lean manufacturing environments. Compensation was identified as a moderate driver, which indicates a healthy perspective that employee commitment is not just about money. Low responses to several areas offer further opportunities for improving employee commitment, including providing challenging work, advancement opportunities, quality of jobs, incentives, performance reviews, selection criteria, and formal and informal networks. As employers seek to increase engagement and commitment toward developing a high-performance workforce, these opportunities will be critical.

Figure 11. Which Factors Do You Think Are the Most Important to Maximizing Employee Commitment and Productivity? (Select Up to Three)



Competitive Wages and Benefits

As noted above, respondents do not see compensation and benefits as their best way to maximize employee commitment. Certainly, these dollars are important in the employee/employer equation, but the reality is that employees quickly take compensation and benefits as a given and look to other aspects of a company's value proposition in making decisions about joining or staying and how much effort to put forth.

The key message for U.S. manufacturers is that competitive wages and benefits are important in attracting and retaining employees, but these are just the starting points for developing a differentiated value proposition for employees. People want more from their work experience than a paycheck. They want transferable skills and experiences that make them valuable to their current employer as well as to the broader market. This comes in the form of challenging work assignments, training and development, advancement and promotion, and rotational assignments. Employees also want respect, recognition, and connection in the workplace, specifically relevant performance management processes and incentives (monetary and non-monetary), formal and informal networks, formal and informal mentoring, and a general sense of community within the workplace.

Training

Manufacturing employers surveyed see training as a business necessity to be delivered just-in-time, and not as a way to attract employees, as noted above in the section on recruiting strategies. Respondents noted moderate value for training as a retention tool. At the same time respondents reported that their spending on training is increasing – and not just for executives, but across all employee groups. Employers are placing emphasis on specific job skills in offering training to their employees.

Whirlpool CORPORATION

Running a Lean Enterprise at Whirlpool Corporation

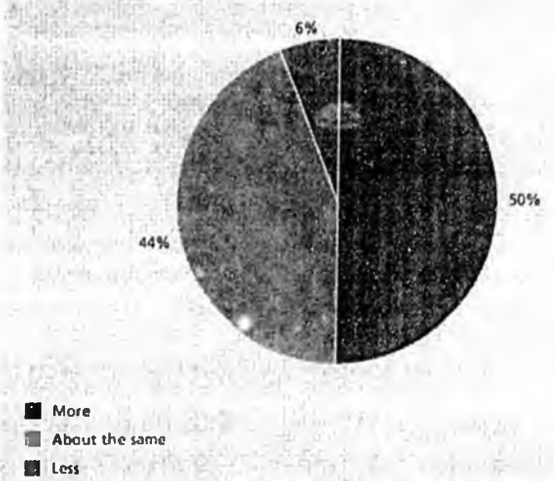
At Whirlpool Corporation, every plant around the world conducts what is called a Lean Focused Event, or LFE. The LFE involves representatives from all areas of the plant – operators, hourly workers, process engineers, industrial engineers, quality controllers, and product designers – to form a work team that examines an existing process and develops a better, more "value-added" way to do it.

"Lean means eliminating waste and non-value-added labor or activity," explains J.C. Anderson, senior vice president for North American Operations at Whirlpool. "Lean isn't just about increasing labor productivity. It includes quality enhancement, more strategic inventory control, better use of space, and ergonomic benefits."

An LFE team focuses on a particular area that needs improvement. The team's first step is to examine the current state and map out the current process. Then the team envisions the future state by asking, "What would be the ideal way to do this?" The most important step is creating a "migration path" for making the change. All the necessary actions and resources for successfully making the change are documented. The LFE team then makes a presentation to the plant manager, for review and approval to proceed with the team's recommendations.

"We practice CI [continuous improvement] on our LFE processes as well," says Anderson. "An LFE tomorrow will be better than the one we did yesterday."

Figure 12. Does Your Company Spend More, Less, or About the Same Amount on Training Employees As It Did 3 Years Ago (Select One)?



The types of training that respondents reported they are most focused on delivering to employees are technical and basic skills training. Specifically, the most important training programs were reported as those supporting specific skills for a particular job.

The next tier of responses was training for problem solving, teamwork, leadership, computer skills, basic or advanced mathematics, basic reading and writing, and interpersonal skills – all standard skills for high-performance workforces. However, only moderate to low responses were seen for supervisory skills, leadership skills and sales training. Still lower responses were reported for customer service training, certification training, tuition reimbursement, formal apprenticeship programs, English as a second language, and GED assistance.

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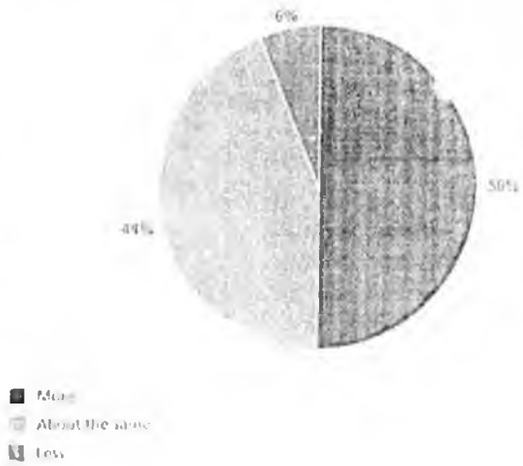

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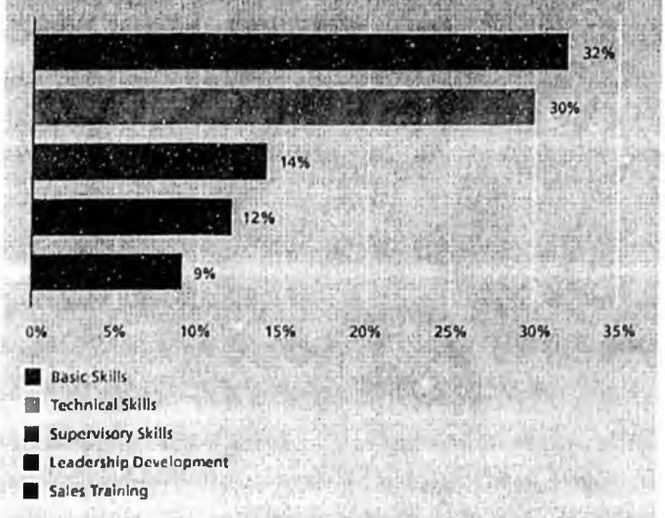
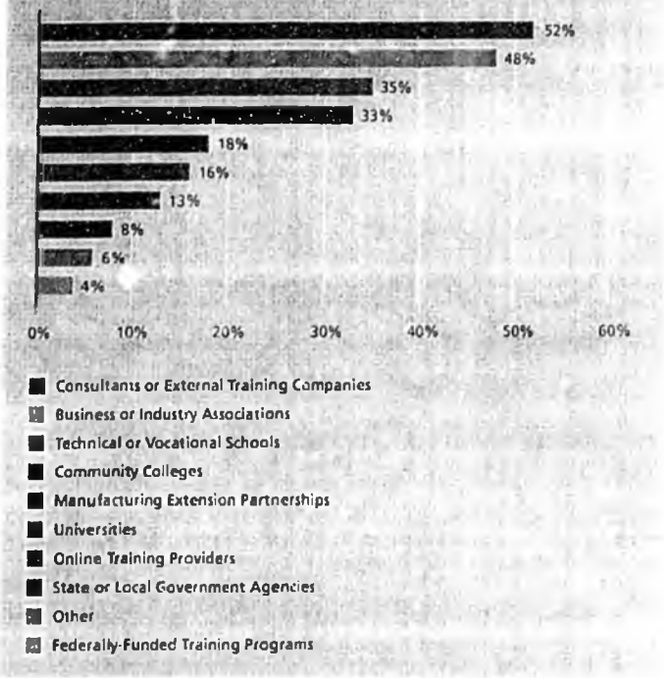
Figure 13. How Do You Allocate Training Budget? (Average of Responses)

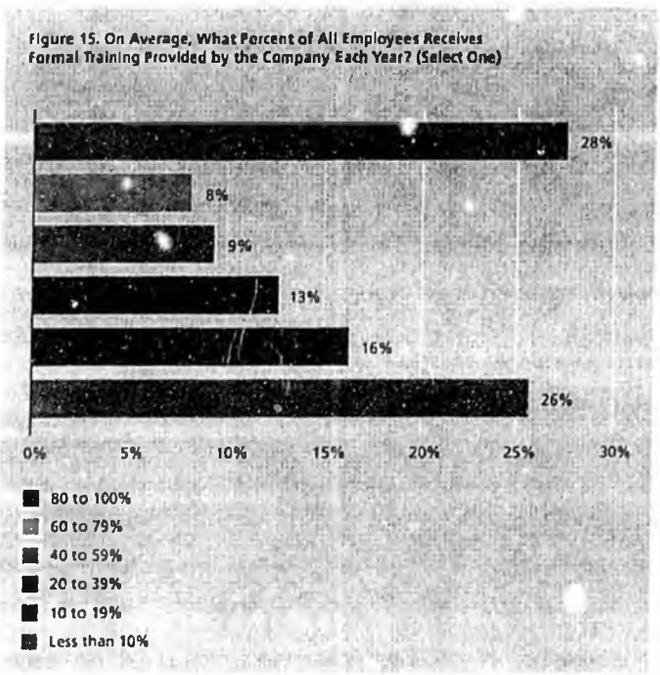


Survey respondents reported that the leading external training providers were training companies, consultants, business or industry associations, technical or vocational schools, and community colleges. Moderate to low responses were received for manufacturing extension partnerships, universities, online providers, state or local government agencies, federally funded programs, unions, and community or faith-based organizations. Based on the relatively low response reported for online training providers, this may be an opportunity for manufacturers to further leverage this flexible and cost-effective channel.

Figure 14. Where Does Your Company Most Often Turn for External Education/training Resources for Current Employees? (Select Up to Three)



Although the surveyed companies are spending more for training, on average, than companies responding to previous Skills Gap surveys, the majority of companies (64 percent) surveyed formally train less than 60 percent of their workforces. The decision whether or not to provide training to all employees may be driven by short-term cost pressures that companies are facing or by a lack of recognition by some regarding the beneficial performance, retention and attraction impacts of training and development investments. Given the gap between employee desires and current programs, it is believed that U.S. manufacturing companies will advance toward their goal of building a high-performance workforce by taking a longer-term investment view of the value of training and development



Culture as a Driver of Market Competitiveness

Almost half of the survey respondents (46 percent) reported that improving their organizational culture is a priority, while three-quarters of respondents (74 percent) reported their need to build high-performance workforces over the next three years. The challenge for most of the survey respondents in achieving these goals seems to be finding ways to overcome the traditional views of what drives employee attraction, engagement, and retention beyond pay and benefits.

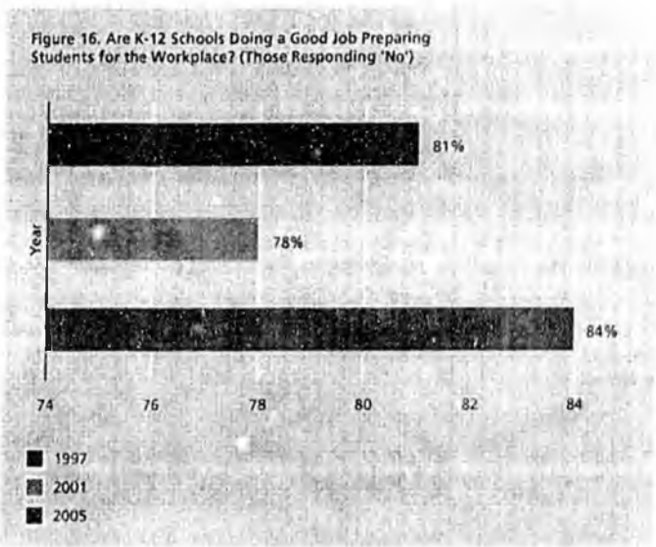
As discussed above, the perspective that respondents reported in the survey is traditional regarding recruitment, engagement, and retention. There is an emerging sense that leadership, management effectiveness, and the overall employee experience are critical to employee satisfaction and commitment, but for the most part respondents see dollars and benefits as their main tools. Competitive wages and benefits have always been a cornerstone of attracting top employees in the United States since the 1950s. Half a century later, a number of manufacturers are still maintaining the status quo of compensation, seeing it as the primary driver of employee attraction and retention.

So,how can U.S. manufacturers build high-performance cultures within their companies? Moving beyond traditional ways of motivating employees by implementing some of the engagement approaches discussed above is a start. But, culture is pervasive and often slow to change. Change can happen based on **leadership's ability to guide people toward new behaviors and actions, reinforce and reward those new behaviors until they are embedded in the culture, and measure progress toward those goals** – both individually and as an organization. "What gets measured, gets done" and so it is for culture and behavior as well.

Public Education's Role in the Solution

Manufacturers are seeking help in closing the skills gap and they view the public education system as having the potential to be a significant part of the solution. The results of this survey indicated, however, that many opportunities exist to improve the public education system and to increase the level of collaboration with employers.

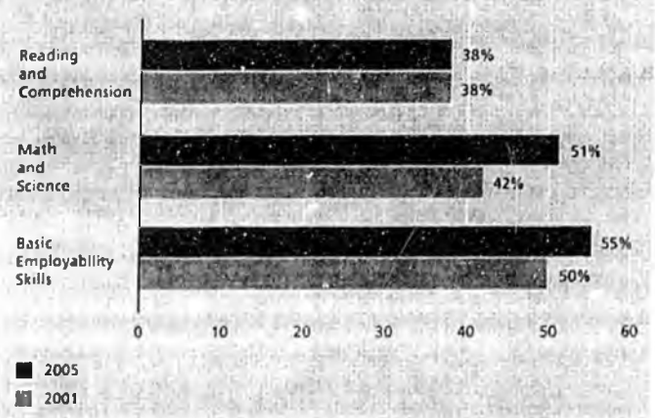
When asked whether K-12 schools are doing a good job preparing students for the workplace, 84 percent of respondents indicated "no." This compares with 78 percent indicating "no" in 2001, and 81 percent in 1997.



Over the past eight years, which have included noteworthy educational reforms, employers of all sizes have yet to see an improvement in the ability of public education institutions to prepare students for the workplace. When controlling for industry segment, it is noteworthy that Aerospace and Defense reported "no" 93 percent of time – eight percentage points higher than the next highest segment, Process Manufacturing. Again, given the skill requirements of working with highly engineered products, it may not be surprising that the response was so high in Aerospace and Defense.

When asked to elaborate on the specific deficiencies of the public education system in preparing students for the workplace, the top three most frequently cited responses were: basic employability skills (attendance, timeliness, work ethic, etc.) at 55 percent, math and science at 51 percent, and reading and comprehension at 38 percent. As Figure 17 illustrates, these same top three responses appeared in the 2001 report.

Figure 17. What Are the Specific Deficiencies of the Public Education System in Preparing Students for the Workplace? (Top Three Responses)

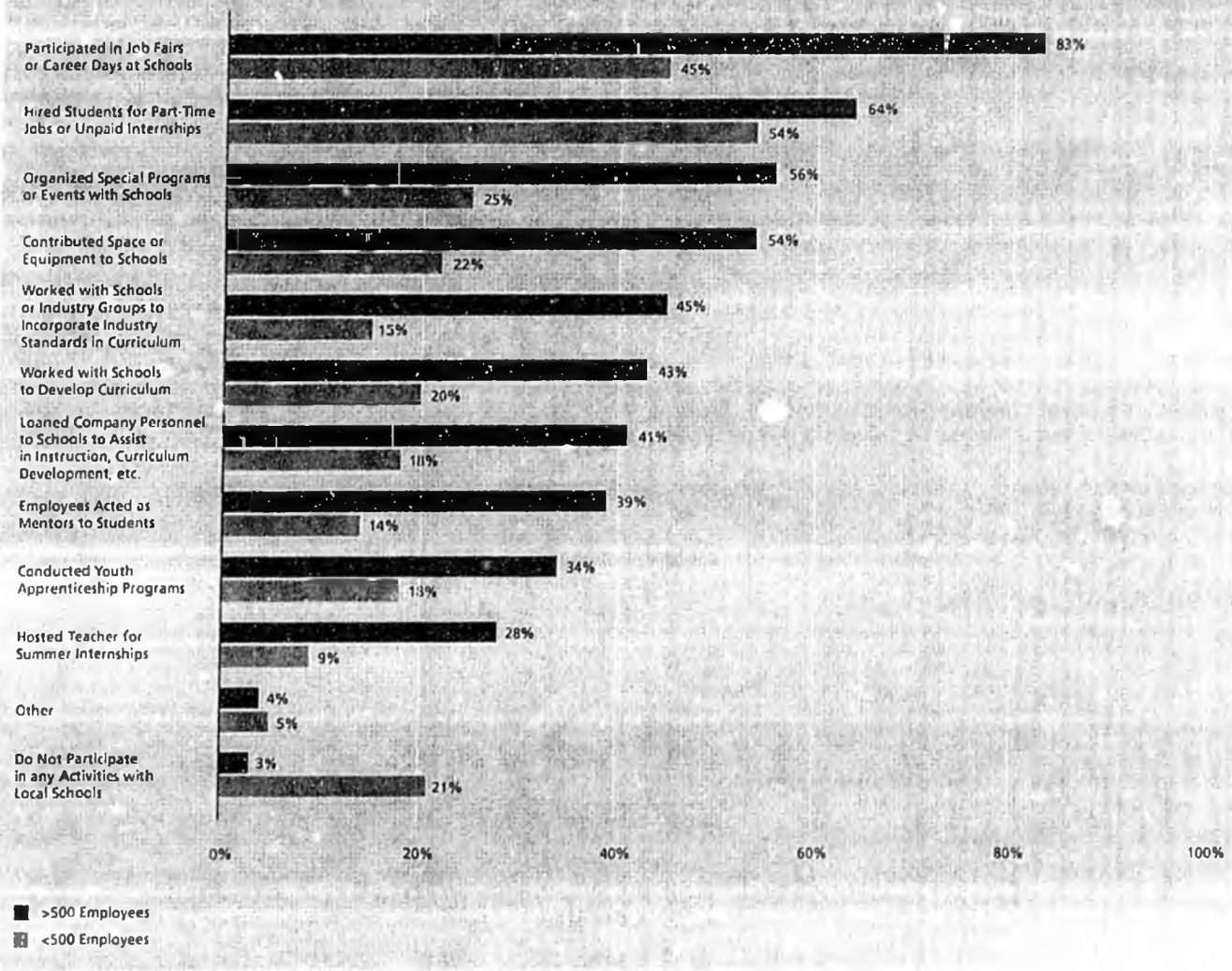


As with the 2001 survey, employers continue to cite basic employability skills as the single most frequent deficiency among employees. This, of course, presents an interesting challenge to the public education system and society overall. Even if schools perform well in their traditional role of increasing math, science and reading comprehension skills, this would not address the top, pressing concern of employers – the need for attendance, timeliness, and work ethic.

Given that traditional approaches are inadequately addressing these urgent issues, additional dialogue between manufacturers and the public education system is required regarding standards and expectations and the role that schools are playing in the preparation of students for the workplace. This effort should focus on better understanding the policies and practices that may have hindered schools in turning out students ready to work – from the types of teachers and career counselors that are hired, to disincentives that are in place holding students back even when they are qualified for advancement, limited parental interest in education, and a lack of school board awareness in changing workplace skill requirements.

When asked what they themselves are doing to address the skills gap via the public education system, 32 percent of respondents indicated that they are participating in state or local business organizations that promise educational reform. However, companies are not attempting to achieve reform only from the "outside." They also are working directly with schools on a number fronts, such as participating in career days, hiring students for internships, and having employees act as mentors to students. The frequency of respondents' participation in these activities is shown in Figure 18.

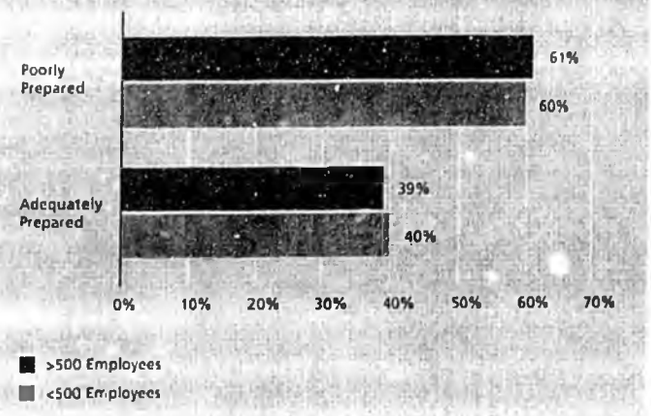
Figure 18. Has Your Company Participated with Local Schools in Any of the Following Activities? – Difference in Frequency Between Large and Small Employers (Select All That Apply)



Possibly the most important finding from the response to this question is that large employers, those with more than 500 employees, participate in these activities at a rate of two to three times than that of the smaller employers, those with less than 500 employees. Given the impact small companies now have in maintaining overall levels of manufacturing employment, and the extent to which small companies draw their candidates from their local communities, it appears important to increase the level of direct interaction between small companies and their local schools.

Part of the reason that companies are not achieving their potential in directly collaborating with public education may be an incomplete understanding of the potential benefits. When asked why companies are participating in activities directly with the schools, the most frequent response is as part of their community outreach/citizenship activities. However, in a broader sense, most of the top responses, by both large and small companies, can be viewed as contributing to an increased pipeline of qualified and interested new talent into the workplace.

Figure 19. How Prepared for a Typical Entry Level Job in Your Company Are Applicants with High School/GED Qualifications?



BEHLEN

Reducing Turnover and Training New Talent at Behlen

Ten years ago the turnover among welders at Behlen Manufacturing was more than 100 percent per year. "We've introduced gain sharing and profit sharing programs as well as a safety bonus. We also cross-train our welders to give them flexibility," explained Duane Matson, training coordinator for Behlen. " This gives employees a wider range of responsibilities."

Behlen is also making an effort to attract new hires that have exposure to welding and the skilled trades. "This is harder to do today than in the past," explains Matson, "since many high schools have eliminated their industrial training programs."

The "2 + 2 Machine Tool" program, offered in conjunction with the local community college, gives Behlen the opportunity to bring high school age students into after school internship programs in the tool and die area. "We teach the students various welding processes, like wire welding. Wire welding is a process that's used all over the country and the world. It's a very marketable skill," says Matson.

Behlen produces fencing, gates, horse and cattle pens, and steel frames for industrial buildings. They also make smaller items, such as park benches, bike racks, and grain bins.

"Our turnover in the welding area is 45 percent right now," says Matson. "Some of that is because people come into welding and then transfer to other positions. Still, we are in considerably better shape than we were several years ago. Our turnover rate company-wide is 30 percent. We attribute a lot of that success to employee training, as well as the gain sharing and other productivity enhancing programs we've implemented."

Leaders and Employees Develop a Lean Focus at Wainwright

At Wainwright Industries in St. Peters, Missouri, having the last name "Wainwright" does not keep you from rolling up your sleeves and joining the team, especially if the topic is lean manufacturing.

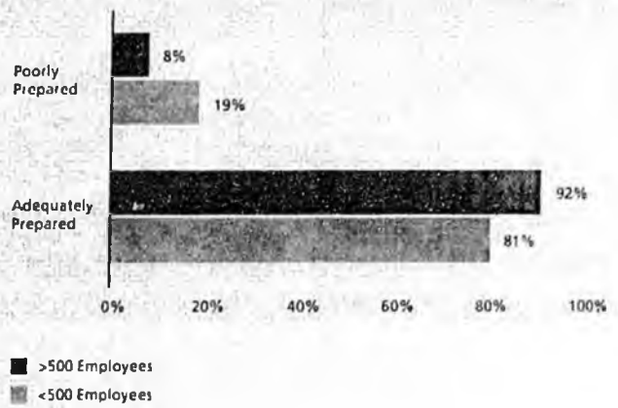
A recent lean manufacturing goal at Wainwright involved dramatically increasing the number of parts welded each week. A cross-functional team was assembled, including a floor operator, plant operations people, a team facilitator, and the president of Wainwright. The objective was to increase production to 3,000 parts each week. "At first, the group didn't think we could do it, even with three shifts," says Fay Aubuchon, training coordinator at Wainwright. "Then, we started asking, 'What's keeping us from making this goal?'"

The group decided to invite specialists from the plant to examine the situation. A maintenance specialist found a machinery problem that was causing a delay. Repairing that issue raised output by 200 parts per week. Another specialist recommended preventative maintenance that resulted in fewer production delays. The press room specialists worked with the team to revise how the part was being made. An engineer helped the team revise the manufacturing process to increase speed. "We achieved our goal because we kept asking, 'What can we do better?'" says Aubuchon.

"A high-performance team is only as good as everybody on the team. You have to have respect for each other and all be focused on the same objective – from Nelson Wainwright to the people who keep the floors clean," says Aubuchon. "Our leadership is just as committed as the workforce. To have leaders who will come out on the floor and work with you, that's pretty amazing."

One significant reason that only about a third of respondents (27 percent) see local schools as a potential pool of new talent may be because they do not believe local schools are graduating students who are prepared to accept even their entry level positions. When asked, "How prepared for a typical entry-level job in your company are applicants with the following qualifications?" only 40 percent responded that graduates with a high school degree are prepared (Figure 19). This does not appear to be the case, however, for local community colleges, with 81 percent of the respondents indicating that a two-year degree or a job-related, industry certification is adequate for their entry-level positions (Figure 20).

Figure 20. How Prepared for a Typical-Entry Level Job in Your Company Are Applicants With a Certificate From a Two-Year College?

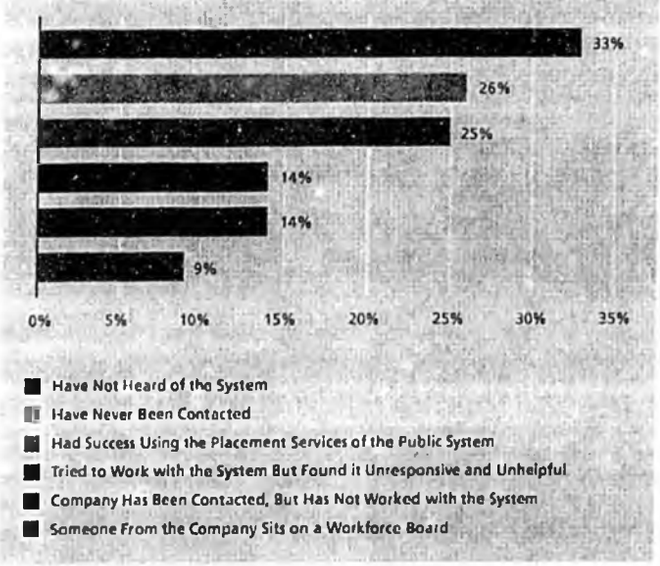


Government Involvement

The Workforce Investment Act of 1998 gives state and local officials new authority and flexibility for using federal job-training aid. Under this initiative, public systems provide training, job-search and placement assistance, adult literacy and other labor-market services through one-stop centers. The governor of each state appoints a State Workforce Investment Board, which must have a majority of business members and be chaired by a businessperson.

Relatively few of our respondents have had substantial interaction with the state or local government workforce system. When asked about their involvement, 33 percent report they have not heard of the government workforce system, and 26 percent indicated they have never been contacted.

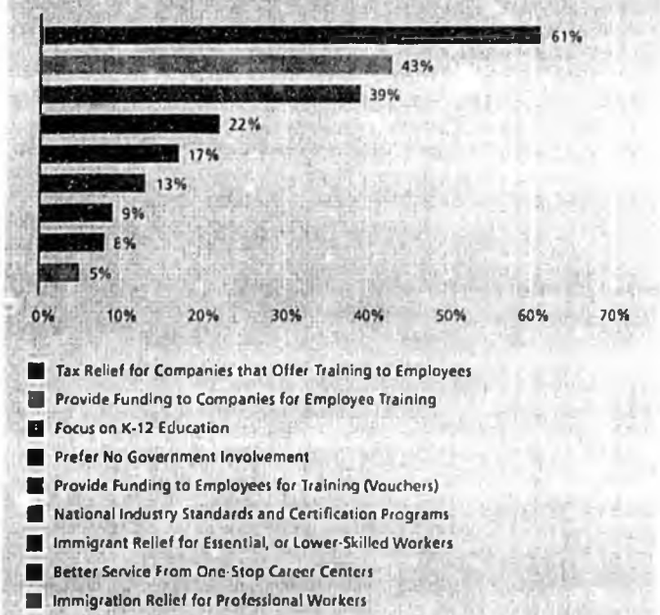
Figure 21. Describe Your Company's Level of Involvement with Your State or Local Workforce System: (Select All that Apply)



In large part, it appears the limited involvement with the Workforce Investment Board stems from a lack of knowledge with the system – 53 percent have never been asked to serve on a local Board and 40 percent do not know about any Workforce Boards in their area.

U.S. manufacturers believe the federal government can be most helpful in supporting their efforts to attract and retain a highly effective workforce by providing incentives for these companies to offer training programs. Tax relief for companies that provide training to their workers is the most valued support (61 percent), followed by direct reimbursement to companies for employee training (43 percent). Finally, 39 percent of respondents believe the federal government should focus on K-12 education.

Figure 22. How Should the Federal Government Provide Assistance to U.S. Based Manufacturers in Support of Their Efforts to Attract and Retain a Highly Effective Workforce? (Select Up to Three)



The Path Ahead – Recommendations for an Individual and Shared Responsibility

Over the last decade the *Skills Gap Surveys* have recorded an alarming trend: **the largest manufacturing country in the world can barely find the skilled employees it needs to remain competitive in a global economy.** The 1990s and the recession of 2000-2003 were a proving ground for manufacturers – they were forced to adopt lean manufacturing processes, utilize new technologies, develop new products and new niches, and adapt to an extremely competitive global business environment. In the process of making these changes, manufacturers came to understand the true requirements of the new manufacturing workforce. They also came to see that their employees would need more sophisticated skills than those needed in the past and that workers did not necessarily have the right kinds of skills needed for manufacturing's current and future challenges.

This year's report continues to peel back the layers of aspiration versus reality regarding the talent shortage and underscores its very real business and economic impacts. What this report hopefully makes abundantly clear is that the talent shortages and skills gaps outlined in this report are neither theoretical nor distant problems. **Today, these issues are having a negative impact on the business operations of 83 percent of companies surveyed.**

The inescapable conclusion is that the ability of manufacturers to attract, retain, and develop a high-performance workforce is of major importance to our nation as a whole. This challenge presents a significant opportunity for collaboration between the public and private sectors. Manufacturers are not expecting government to solve the problem for them, but would like encouragement and support for investments in training programs.

It is also obvious that the issues associated with the skills gap are numerous and complex. To provide for the future viability and vibrancy of the American manufacturing industry, each stakeholder must assume responsibility – including manufacturing companies, the government, educators, and individuals. Specifically, we believe the urgency of this situation requires the follow actions:

Employers must understand the importance of human capital as a business investment. Similar to the other aspects of their business, employers need to look at their human capital as an investment rather than as expenditure. If employees are engaged through a strategy of career ladders, incentives, competitive wages and benefits, and supportive working conditions, they will stay – research bears this out. *As a result, we recommend that employers invest at least 3 percent of payroll whenever possible in training supports for their current employees.* The key is to be proactive in understanding the types of workers needed now, the types needed going forward, what they value as incentives, and how to motivate them to reach their workplace potential.

Employers must implement new and non-traditional approaches to dealing with skills retention challenges. This includes efforts to reduce turnover, participate in efforts to change attitudes about manufacturing jobs, utilize contract or temporary employees, and tap under-utilized talent pools among older, female, immigrant, and non-traditional workers.

Employers must help the general public and public sector to understand what companies need. Companies need to become more engaged in public education, working with educators on curricula, holding field trips and career fairs for students, providing internships and apprenticeships and generally giving community schools opportunities to learn about manufacturing. Companies also need to work with their local public workforce system, advising Workforce Investment Boards on rising or declining economic conditions, business investments, skill needs, and employment requirements. In addition, public/private partnerships should be encouraged to support career awareness campaigns that help individuals understand all the career options available to them. A model for this is The Manufacturing Institute's Dream It Do It manufacturing careers campaign.

Educators must produce graduates familiar with the world of work and the skills needed to be effective in it. Business/education collaborations are critical to help familiarize the teaching and counseling professions with the needs of business. Teachers and career counselors should engage in business externships, and certificate and associate degree programs in community colleges, and technical schools should be updated to the new 21st century skill requirements. And because K-12 education is where it all begins, *math and science should be emphasized in K-12 curricula with a focus on technology and innovation. State education standards should include career education as measurable criteria for K-12 results under the No Child Left Behind Act.*

Education and workforce policies must reflect the need for lifelong learning. Community colleges and technical schools should receive targeted public funding for workforce development because they are often the training provider of choice for employers. *In addition, the Higher Education Act and its funding mechanisms should include a focus on the adult learner and lifelong learning.* And, current legislation should be reauthorized to support lifelong learning.

Individuals must take responsibility for their employability. This is the millennium of the free-agent worker – a person who can go anywhere and do anything with the right kind of education and training. Individuals must accept their role in keeping their skills current and should understand that the value they bring to the workplace is contingent upon their commitment to lifelong learning – to keep their skills and their knowledge current.

Clearly, good jobs require a high level of skill and reap good wages that support families, communities, and the nation. The nation's competitiveness depends upon the manufacturing sector and the upwardly mobile jobs it provides. If manufacturers cannot find the skilled people they need here in the United States, jobs and industries will move to where they can find the skills.

The fact is that the rules of the competitive race have been changed forever. With inexpensive access to Internet, broadband, and collaboration technology, historical barriers like geography no longer prevent small companies and skilled individuals from around the world from participating in local markets. As Craig Barrett, CEO of Intel said, "You don't bring three billion people into the world economy overnight without huge consequences, especially from three societies (like India, China, and Russia) with rich educational heritages."2

This means that we are now facing an entirely new level of competition with no guarantees that the U.S. manufacturing base will remain strong. Plainly said, unless solutions to the skills gap issues are acted upon with great focus and determination, this country will likely be left behind in the global competitive race.

Glossary

Critical Workforce Segments

Specific groups of employees, based on skill type and role in the company, who are most central to the company's business strategy. They are responsible for a large portion of the company's value proposition. Typically, special efforts should be made to develop, retain, and engage these critical workforce segments.

Employee Commitment

Employee commitment is a somewhat subjective term that refers to the degree to which employees are willing to expend "discretionary effort" on behalf of the company. This is contrasted by employee behavior that seeks to deliver the minimum to "get by" and collect a paycheck. High employee commitment exists when workers think about and take action to improve the business processes they support, putting the customer first. These employees are engaged and actively contribute to the company's performance improvements because they understand the overall business and their role within it. Committed and empowered employees act like owners of the business.

High-performance Workplace

A work environment that uses such practices as teamwork, extensive training, regular appraisals and performance feedback, flexible job descriptions, and extensive communication to improve workforce performance. There is disagreement among organizational development specialists as to exactly what constitutes a "high-performance workplace." However, there is widespread agreement that there are four primary dimensions: employee autonomy and involvement in decision-making, support for employee performance, rewards for performance, and the sharing of information and knowledge.

Skilled Production Worker

A skilled production worker is the highest level production technician within the manufacturing environment. A skilled production worker is able to operate manufacturing equipment in more than one process and is capable of recognizing process improvement opportunities. His/her knowledge of manufacturing equipment and processes is sufficient to understand and resolve moderately complex production issues, provide preventive maintenance, and make routine repairs. The skilled production worker applies advanced problem solving and analytical thinking skills to troubleshoot non-routine production issues.

Training

Training can take several forms. Traditional instructor-led training often takes the form of classroom-style presentation, either on-site or as part of an off-site seminar or community college/vocational school. This is typically the most expensive type of training delivery, but offers high levels in interaction with the course instructor and the other participants.

Online or computer-based training is another form of instructional delivery. Whether Web- or CD-ROM-based, this training can be highly cost-effective and flexible. Students can start, stop, and work at their own pace through the training as their comprehension and schedule permits and can easily refer to materials. In addition, they do not have to travel to a particular location to attend training and results can be tracked centrally.

Methodology

The survey was designed to capture qualitative and quantitative answers regarding the U.S. manufacturing workforce, current skills and skill deficits, types of skills training offered, where it is delivered and by whom, as well as special needs and solutions.

Surveys were sent to 8,000 NAM members and Deloitte[3] clients who were identified as CEOs, COOs, presidents, or senior executives of human resources. The survey was intended to gather employers' information about their workforces; we did not survey their workers.

More than 800 responded with input regarding the availability of qualified employees, recruitment, retention and training practices, drivers for future business success, and the business impact of labor and skills shortages. The data were entered into an SPSS database, and edited and reviewed to confirm validity. The respondents were parsed into industry groups according to NAIC codes and, in some cases, the groups were combined to provide for more robust cross-tabulations. We also ran cross-tabulations using groupings such as size, regions, and top ten manufacturing states. The majority of the companies participating in the survey were defined as small to mid-size companies with fewer than 500 employees.

This report includes the results of the survey, analysis of the responses and our recommendations. In addition, we have provided several brief vignettes of NAM-member companies to illustrate key points of the report.

Assumptions and Inferences

To gather data for the survey, we used the membership database of the National Association of Manufacturers, but had no way to fully ensure that we would receive a representative sample of all manufacturing across all industries. Thus, while our data are valid, we cannot make inferences about all manufacturing industries, but rather across manufacturing broadly. We believe that these data are suggestive of developments and trends in the manufacturing workplace.

If you have comments or questions about this survey, please feel free to contact the National Association of Manufacturers' Manufacturing Institute/ Center for Workforce Success at manufacturinginstitute@nam.org. To order additional copies of the report, please visit www.nam.org/bookstore.

Endnotes

[1] Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-First Century*, Copyright 2005

[2] Ibid.

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About The National Association of Manufacturers

The Manufacturing Institute is the research and education arm of the National Association of Manufacturers, building intellectual support and raising understanding among policymakers, the media, educators and potential workers about manufacturing's contributions to the quality of American life, the challenges facing the sector and its excellent career opportunities. Visit the web site at www.nam.org/institute for more information about manufacturing and the economy.

The National Association of Manufacturers is the nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states. Headquartered in Washington, D.C., the NAM has 10 additional offices across the country. The NAM's mission is to enhance the competitiveness of manufacturers by shaping a legislative and regulatory environment conducive to U.S. economic growth and to increase understanding among policymakers, the media and the general public about the vital role of manufacturing to America's economic future and standard of living.

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Member of
Deloitte Touche Tohmatsu

MEMORANDUM

State of Alaska
Department of Administration
Division of Personnel & Labor Relations

To: Scott Nordstrand
Commissioner

Date: November 17, 2006

From: Dianne Kiesel
Director

Phone: 465-4430
Fax: 465-3415
Email: dianne_kiesel@admin.state.ak.us

Subject: Market Based Pay Implementation;
PK03B, Engineering, Unlicensed

Recently the Department of Administration, through the Division of Personnel and Labor Relations, implemented several strategies to increase the State of Alaska's ability to attract and retain a qualified workforce. One such strategy has been more aggressive recruitment, which has been used by different departments with varying degrees of success.

However, it became obvious that even with such recruiting techniques as utilizing an internal professional recruiter, increased presences at career and job fairs, opening vacancies to out of state applicants, and a greater use of print and other advertising media, there were occasions when all efforts still did not produce the desired or necessary responses. In an effort to address the times when aggressive recruiting did not yield the necessary result, the Department of Administration developed a market based pay initiative. The intent of the initiative is to assist hiring managers who have exhausted all conventional recruiting means and still have unfilled vacancies in critical positions. The Market Based Pay (MBP) initiative allows the State to implement a revised classification and pay plan which provides the employer more flexibility in responding to market conditions.

The State of Alaska maintains a classification plan based on the concept of like pay for like work. The classification plan is an organized arrangement of all positions in the classified and partially exempt service. Positions bearing sufficient similarities are grouped together on the basis of duties and responsibilities.

The pay policy guidelines for adjusting for Market Based Pay (MBP) are considered when there is a demonstrated history of recruitment difficulty for a job class family subgroup and where it can be shown that such recruitment difficulty is perpetuated by the State's inability to pay competitive market wages.

To determine which job class family subgroups were eligible for Market Based Pay considerations, the Department of Administration, Division of Personnel and Labor Relations, researched and analyzed recruitment data for each. The recruitment data for the job class family PK03B, Engineering, Unlicensed is summarized below.

Summary of Recruitment Data

Market Based Pay Summary
PK03B, Engineering, Unlicensed

	Total recruitments conducted in 2005	68	
a	25% of recruitments posted were open to all applicants	35	51.47%
b	75% of recruitments posted were open to at minimum, Alaska residents	62	91.17%
c	Majority of Recruitments resulted in fewer than 5 qualified, eligible, and interested applicants	34	50%
d	Demonstrated recruitment failure of at least 15%	13	19.1%

With nearly 50% of all recruiting efforts resulting in fewer than five qualified, interested, and eligible applicants and a demonstrated recruitment failure rate of 19%, it is apparent that marketing strategies alone are not going to result in an adequate applicant pool. For all job families that met the first four criteria which demonstrate recruitment difficulties, a market survey was conducted. The market survey results also had to meet specific criteria before a job family received a recommendation for a salary increase.

For job class family PK03B, Engineering, Unlicensed, one job class, Engineer Associate, was surveyed. Five different sources, as available, were used to compare State of Alaska salaries to the prevailing market rate.

- Economic Research Institute is a world leader in salary survey information and their national database of salary and wages was accessed.
- Members of NASPE (National Association of State Personnel Executives) were surveyed, with a response rate of 46%.
- Milliman - The 2005 Alaska Cross-Industry Survey covers 156 benchmark positions, with data complied from 38 major employers with operations located in Anchorage, Fairbanks, Southeast, and/or Kenai Peninsula areas. *Please note that this survey includes State of Alaska salary information.
- AASHTO (The American Association of State Highway and Transportation Officials) completes a survey every two years. The 2004 data, while too stale-dated to be considered usable for calculation purposes, is provided as an additional source of clarification. 2006 data is not yet available. *Please note that this survey contains State of Alaska salary information.

- A survey was sent to 352 Alaska businesses and industries, with an overall response rate of 22%, and a response rate from 62 engineering firms and other prime competitors for this benchmark position of 11%.

A compilation of the information from each source is summarized below.

Summary of Survey Results

Engineering Associate

State of Alaska			Years of Service	50th Percentile				
Current Range 20	Range 21	Range 22		ERI	AK Survey	NASPE Survey	AASHTO*	Milliman*
64,740.00	69,192.00	74,100.00	5.00	64,177.57	72,953.23	67,756.89	87,621.00	82,795.74

5 years=F step

Average: 71,920.86

The survey of this benchmark position in this job class family shows that State of Alaska salaries are below market for this level of experience. The survey revealed the fact that the state's prime competitors, engineering and architectural firms within the state, pay significantly more for this type of work.

For this job class family, it is imperative to recognize that 15% of the current incumbents are eligible to retire within one year and 32% within the next five years. Additionally, it has been projected that there will be a need for up to 17% more professionals in this occupational group nationally and 8.1% statewide over the next six years. Recruitment nationwide and statewide will be fierce for qualified individuals to fill the anticipated needs.

Increased wages have the potential to help improve the state's ability to attract and retain unlicensed engineering staff. Based on the available recruitment and market data, the job class family PK03B, Engineering, Unlicensed meets the intent of the market based pay initiative. A one-range increase would bring the state's salaries substantially closer to the current market rate. Therefore a one-range increase will be granted.

Nonresidents Working in Alaska 2005

State of Alaska

Sarah Palin, Governor
Commissioner Click Bishop

Published January 2007

ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT

Jobs are Alaska's Future

Highlights

- The number and percentage of nonresidents* working in Alaska in 2005 increased due to strong growth in the construction, accommodations and food services, and mining (oil and gas) industries. The nonresident hire rate rose from 18.4% in 2004 to 19.1% in 2005. The number of resident wage and salary workers grew by 2,317, while 3,899 nonresident workers were added in 2005.
- Nonresident hire grew faster in 2005. The number of nonresident wage and salary workers employed in Alaska increased by 5.5% (3,899). The resident wage and salary workforce increased by just 0.7% (2,317) from 2004 to 2005.
- Total wage and salary earnings in private sector, state and local government* jobs totaled $11.1 billion in 2005. Nonresidents earned about 12.2% of the total (or $1.4 billion), an increase from the 11.8% of total wages paid to nonresidents in 2004.
- Resident earnings increased 4.2%, or $388.4 million, from 2004 to 2005. Nonresident earnings increased 8.7%, or $108.8 million, from 2004. Despite the higher growth, average earnings for residents grew by $1,014 in 2005, while average earnings for nonresidents grew by just $535.
- Nonresidents accounted for 29.6% of the oil industry's (major oil companies and oilfield services) workforce in 2005. This was more than 1.5% higher than 2004. The industry added 275 nonresident workers and 60 resident workers. Many of the new nonresident workers were short-term hires who worked two quarters or less.
- Earnings paid to nonresidents working in the oil industry increased from $226.6 million in 2004 to $242.9 million in 2005. The nonresident share of earnings in the oil industry rose from 26.7% in 2004 to 27.2% in 2005, a figure higher than the statewide private sector average of 14.7%.
- The number of nonresident workers employed in the construction industry increased by 13.1%, or 729 workers; resident hire increased by just 5.0%. As a result, the percentage of nonresidents working in construction increased from 19.0% in 2004, to 20.2% in 2005.
- Alaska's construction industry paid $924.2 million to residents in 2005, an increase of $108.8 million from 2004. Nonresidents were paid $148.0 million, up about $29.9 million from the 2004 nonresident earnings of $118.1 million. Nonresidents' share of the construction earnings increased from 12 7% in 2004 to 13.8% in 2004. Construction accounted for a third of all private sector wage growth in 2005.
- Alaska's seafood processing industry employed the highest percentage of nonresident workers of any industry sector in 2005. More than 73 percent of workers in that industry were nonresidents. Nonresident seafood processing workers earned $184.3 of the $276.6 million paid to all seafood processing workers in 2005.
- Alaska industries affected by visitor expenditures have relatively high nonresident hire rates. The accommodations (Hotels/Lodging) industry showed an increase in its percentage of nonresident workers, climbing to 37.8% in 2005 from 36.9% in 2004. This marks the sixth year in a row that the nonresident hire rate has increased in this industry. The scenic and sightseeing transportation sector had a nonresident hire rate of 45.1%, more than twice the private sector average.
- The Southwest Region's Aleutians East Borough, Aleutians West Census Area, and the Bristol Bay Borough had the highest borough/census area nonresident hire rates due to significant seafood processing employment. North Slope's oil and gas and Skagway-Angoon-Hoonah Census Area's tourism-related nonresident employment contribute to their high nonresident employment rates.
- Relatively high paying occupations with the largest number of nonresident workers include: general construction workers, carpenters, nurses, operating engineers, pilots, and electricians.

* See Page A-22 Methodology for the definition of residency and workers included in this report

Nonresidents Working in Alaska - 2005

Introduction

Alaska has a unique set of databases that allow for quick and accurate monitoring of resident hire in the state. Utilizing Alaska unemployment insurance (UI) wage records that contain worker occupation and place of work data, the Alaska Permanent Fund Dividend (PFD) database, and other data series, Alaska can monitor the resident hire status of particular employers, industries, occupations, and regions in a way not available to any other state. This information is used to identify occupations eligible for preference on public funded construction projects as required by AS 36.10.150, to report on the status of resident hire in the state as required by AS 36.20.130[1], and report on resident hire by employer as allowed under AS 23.20.110.

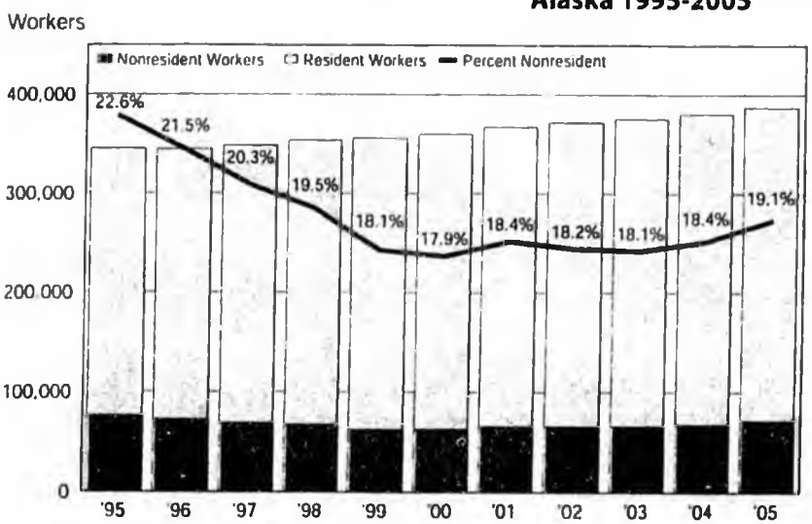
This Alaska resident hire preference legislation was initiated by the Alaska legislature in 1986 in response to the large influx of nonresident workers associated by the oil fueled construction boom of the early 1980's. As the economy slowed with a decline in oil prices, there was heightened interest in insuring that Alaskans be given preference for as many public funded jobs as possible and that information be collected to identify those private employers and industries that hired a large percentage of their workers from outside the state.

With Alaska's seasonal economy, relatively small total labor force and small pool of local workers with special construction or oil-related skills, there has often been a strong tendency for employers to recruit workers from outside the state. Although resident hire preference requirements and information spotlighting problem areas can help to discourage nonresident hire, recent efforts have focused on improving existing training programs and creating new training programs to meet unmet needs.

A number of high paying jobs are taken by nonresidents for which Alaskans are available or can be quickly trained. Many of these jobs are year-round, rather than one-time, short-term, or seasonal. Alaska also has many workers that commute from outside the state on a regular basis to their jobs in Alaska. In the fourth quarter (October – December) of 2005, approximately 49,000 workers were newly hired in Alaska wage and salary employment. New hires are workers that had not been employed by the hiring firm at any time in the previous four calendar quarters. More than 11,000 of these new hires were nonresidents of Alaska.

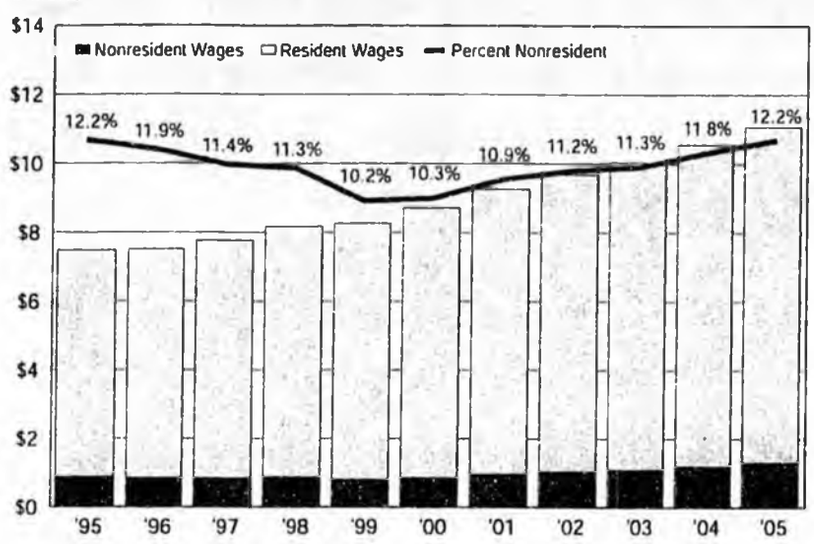
Industries and occupations with a high percentage of nonresident workers have been given high priority for new training dollars. The Alaska Workforce Investment Board and the University of Alaska include resident hire data in identifying unmet training needs. The Alaska Department of Labor & Workforce Development also identifies particular craft occupations that are eligible for a 90 percent

Resident and Nonresident Workers and Percent Nonresident **1**
Alaska 1995-2005



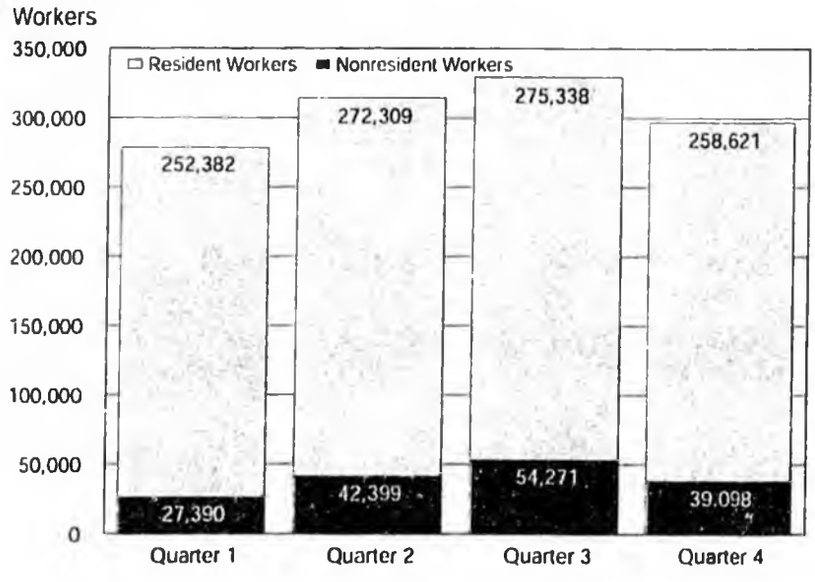
Note: Includes private sector, state and local government workers.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

2 Resident and Nonresident Wages and Percent Nonresident
Alaska 1995-2005



Note: Includes private sector, state and local government workers.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

3 Alaska Workers by Quarter Resident and Nonresident
2005



Note: Includes private sector, state and local government workers.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

resident employment preference based upon provisions and procedures outlined in Alaska statutes and regulations. Maximizing resident hire requires a variety of tools, including improved training, industry education, and regulatory enforcement, depending upon the industry or occupation group.

Encouraging resident hire requires constant effort. The fast paced growth in Alaska's construction and oil service industry resulted in a small increase in the percentage of nonresident workers in 2005, despite heavy investment in training programs. This result raises concern for the resident hire impact that may result from construction of an Alaska gas pipeline.

Measuring Residency

To calculate residency, quarterly Alaska unemployment insurance wage records (which contain industry, occupation, earnings, and place of work) for each worker are matched with Alaska PFD data to identify resident and nonresident workers. The two most recent years' PFD data are used to determine residency. Workers who received a PFD in one of the two most recent years are considered residents for purposes of this report. Historical analysis of the PFD file shows that this information is an excellent indicator of residency. Although some workers not eligible for a PFD at the time residency reports are generated become residents in the following year, the most recent data show that these workers represent only about 15 percent of total nonresident workers. Workers' industry and occupation are determined based upon the industry and occupation in which they earned the most money in 2005.

Nonresident Workforce Grows Faster than Resident Workforce

The total number of private sector, state and local government wage and salary[2] workers employed in Alaska in 2005 was 389,269. This was an increase of 6,216 from 2004. In 2005, nonresident workers comprised 19.1% of private sector, state and local government workers employed during the year, an increase from the 18.4% nonresident

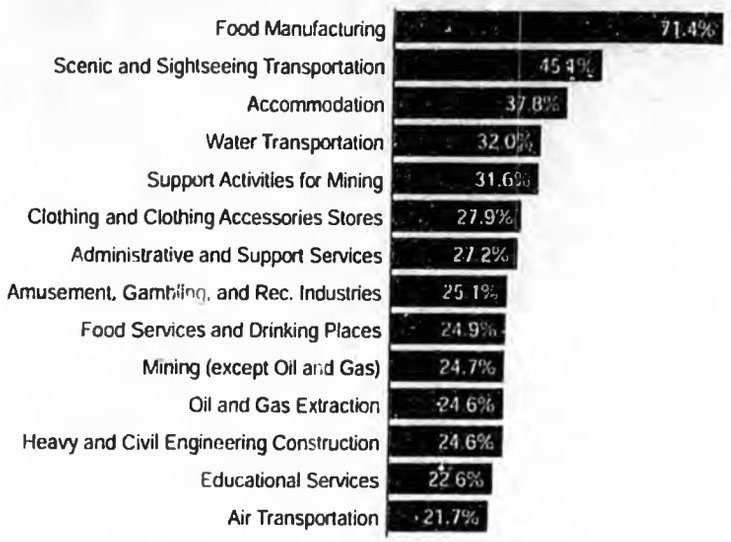
hire rate reported in 2004. (See Exhibit 1.) The number of nonresident[3] workers increased 5.5%, or 3,899, to 74,266, while the number of resident workers increased 0.7%, or 2,317, to a total of 315,003 resident workers. This is the first time since 1992 that the increase in the number of nonresident workers from the prior year exceeded the increase in resident workers.

Total wage and salary earnings grew 4.7% to $11.1 billion in 2005. Nonresidents earned 12.2% of the $11.1 billion, up from the 11.8% share they received in 2004. Total resident earnings, or wages, increased by $388.4 million to $9.7 billion in 2005 while total nonresident earnings increased by $108.8 million to $1.4 billion. Despite the relatively large increase in the number of nonresident workers, their earnings did not keep pace with resident workers.

With some significant exceptions, nonresidents typically do not work all four quarters of the year, often working only one or two calendar quarters. Many nonresident workers are employed only during the summer months or in short-term or seasonal jobs, including those in the seafood processing and visitor-related industry sectors. In 2005, residents earned an annual average of $30,821 while nonresidents earned 59.2 percent as much at $18,242. Average annual earnings grew by $1,014 for residents and $535 for nonresidents. The average earnings per quarter worked for nonresidents were $8,303 in 2005, which is 90.5 percent as much as resident workers earned, $9,171.

Private Sector Industries with Highest Percent Nonresident Workers 4

Alaska 2005



Note: Industries with 1,000 or more workers.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

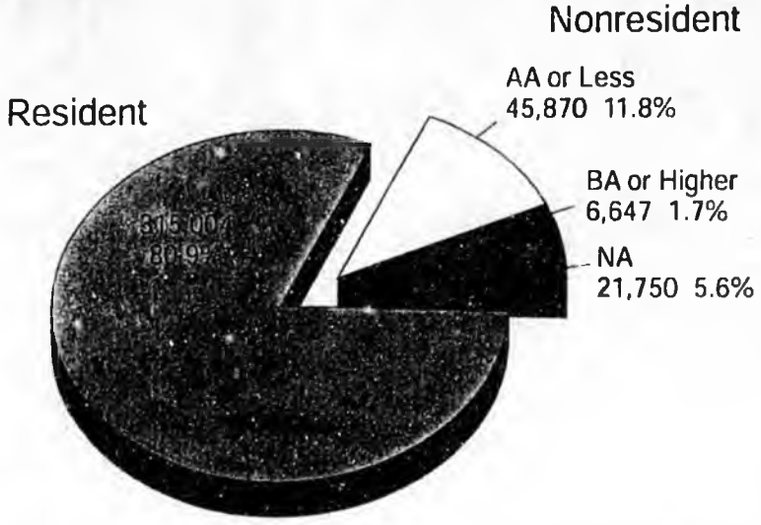
Workers and Wages 5

Major and Selected Industry Categories
Alaska 2005

Industry	Total Workers	Total Wages (in millions)	Nonresident Workers	Nonresident Percent	Nonresident Wages (in millions)	Nonresident Percent
Agriculture, Forestry, Fishing, and Hunting[1]	2,165	$40.6	850	39.3	$13.3	32.9
Mining	14,085	1,020.3	4,078	29.0	270.6	26.5
Oil and Gas	3,183	404.3	784	24.6	100.4	24.8
Oilfield Services[2]	8,445	489.8	2,658	31.5	142.5	29.1
Utilities	2,240	120.2	142	6.3	3.7	3.1
Construction	31,096	1,072.1	6,288	20.2	148.0	13.8
Manufacturing	25,173	451.1	15,417	61.2	196.5	43.6
Seafood Processing	19,848	276.6	14,564	73.4	184.3	66.6
Wholesale Trade	7,767	264.8	1,003	12.9	16.2	6.1
Retail Trade	48,466	927.7	7,262	15.0	63.3	6.8
Transportation and Warehousing	25,066	901.0	5,540	22.1	184.1	20.4
Air Transportation	7,757	315.3	1,683	21.7	90.4	28.7
Information	5,047	340.1	688	8.5	14.0	4.1
Finance and Insurance	9,909	403.9	747	7.5	14.0	3.5
Real Estate and Rental and Leasing	7,272	163.9	871	12.0	9.5	5.8
Professional, Scientific and Technical Services	14,322	561.6	2,543	17.8	77.3	13.8
Management of Companies and Enterprises	593	32.5	56	9.4	2.2	6.9
Admin. Support/Waste Management and Remediation	16,707	353.5	4,351	26.0	69.1	19.6
Educational Services	2,655	58.9	599	22.6	6.9	11.7
Health Care and Social Assistance	39,890	1,210.9	3,984	10.0	76.8	6.3
Arts, Entertainment, and Recreation	5,856	61.8	1,489	25.4	9.8	15.9
Accommodation and Food Services	40,161	452.0	11,559	28.8	85.1	18.8
Accommodation	12,256	153.3	4,628	37.8	36.9	24.1
Food Services and Drinking Places	27,843	298.4	6,918	24.8	48.1	16.1
Other Services	11,799	257.8	1,658	14.1	19.7	7.6
Public Administration	503	8.2	31	6.2	0.2	2.7
Unclassifiable[3]	195	2.5	87	44.6	0.8	33.1
State Government	26,429	961.7	1,885	7.1	30.0	3.1
Local Government	48,873	1,396.3	3,138	6.4	43.4	3.1
Total	389,269	11,063.5	74,266	19.1	1,354.8	12.2

[1] Does not include fish harvesting employment numbers.
[2] This industry category includes support activities for oil and gas drilling and related operations.
[3] No industry data is available.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

20 Nonresident Workers By Education Required for Occupation



Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

education or work experience requirement were employed in jobs requiring education less than or equal to an associate degree (approximately two years of postsecondary education). (See Exhibits 20 and 23.) The median quarterly wage for resident workers increased 4.0% in 2005 to $6,573. Roughly a third of nonresident workers earned a higher quarterly wage than the median quarterly wage for residents.

In 2005, nonresident workers were employed throughout the state, many in jobs with relatively high average earnings requiring less than a four-year degree. The North Slope Borough, which includes the Prudhoe Bay oilfields, in particular, had a large number of nonresident workers earning a significant amount of money (approximately $140 million) in occupations that required less than a four-year degree. (See Exhibit 23.)

21 Alaska Resident and Nonresident Workers and Wages
2004 and 2005

	Resident Workers			Nonresident Workers		
Industry	2004	2005	Percent Change	2004	2005	Percent Change
Agriculture, Forestry, Fishing, and Hunting[1]	1,368	1,315	-3.9	844	850	0.7
Mining	9,794	10,007	2.2	3,560	4,078	14.6
Oil and Gas	2,342	2,399	2.4	730	784	7.4
Oilfield Services[2]	5,784	5,787	0.1	2,437	2,658	9.1
Utilities	2,051	2,098	2.3	119	142	19.3
Construction	23,628	24,808	5.0	5,559	6,288	13.1
Manufacturing	9,841	9,756	-0.9	15,077	15,417	2.3
Wholesale Trade	6,657	6,764	1.6	950	1,003	5.6
Retail Trade	41,171	41,204	0.1	6,851	7,262	6.0
Transportation and Warehousing	19,606	19,526	-0.4	5,569	5,540	-0.5
Information	7,487	7,359	-1.7	674	688	2.1
Finance and Insurance	9,049	9,162	1.2	734	747	1.8
Real Estate and Rental and Leasing	6,276	6,401	2.0	833	871	4.6
Professional, Scientific, and Technical Services	11,396	11,779	3.4	2,234	2,543	13.8
Management of Companies and Enterprises	523	537	2.7	78	56	-28.2
Administrative Support/Waste Management and Remediation	12,155	12,356	1.7	4,096	4,351	6.2
Educational Services	1,999	2,056	2.9	521	599	15.0
Health Care and Social Assistance	35,531	35,906	1.1	3,994	3,984	-0.3
Arts, Entertainment, and Recreation	4,247	4,367	2.8	1,341	1,489	11.0
Accommodation and Food Services	28,996	28,602	-1.4	10,968	11,559	5.4
Other Services	10,276	10,141	-1.3	1,688	1,658	-1.8
Public Administration	482	472	-2.1	33	31	-6.1
Unclassifiable[3]	80	108	35.0	32	87	171.9
Total Private Sector	242,613	244,724	0.9	65,755	69,243	5.3
State Government	24,188	24,544	1.5	1,637	1,805	15.1
Local Government	45,885	45,735	-0.3	2,975	3,138	5.5
Total	312,686	315,003	0.7	70,367	74,266	5.5

[1] Does not include fish harvesting employment numbers.
[2] This industry category includes support activities for oil and gas drilling and related operations.
[3] No industry data is available.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

Area saw the largest declines in nonresident hire rates from 2004.

The areas with the lowest percentage of nonresident workers include northern and western rural areas of Alaska (excluding the North Slope Borough). These areas generally offer little in the way of seafood, oil, or visitor-related industries that would lead to the employment that has historically attracted nonresident workers. The areas that are mostly urban, economically diverse, and offer the most year-round jobs have a moderate or "average" number of nonresident workers. Anchorage/Mat-Su, Fairbanks, and Juneau fall into this category.

22 Employed and Unemployed Residents and Nonresidents
Alaska 2005

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Total Resident Workers*	252,382	272,309	275,338	258,621
Total Nonresident Workers*	27,390	42,399	54,271	39,098
Estimated Avg. Number of Unemployed**	26,618	22,858	20,442	22,145

*Includes all workers employed in the quarter in private sector, state and local government.
**Derived from monthly Alaska labor force estimates.
Note: Data is derived from series that are not directly comparable due to differing definitions.
Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

23 Nonresidents in Occupations With Known Educational Requirement
By Place of Work - Alaska 2005

Borough/Census Area	Education Required	Nonresident Workers	Nonresident Wages (In Millions)	Average Nonresident Wages
Anchorage/Mat-Su Region				
Anchorage	AA or Less	16,845	$269.0	$15,972
Anchorage	BA or Higher	2,635	145.2	55,098
Mat-Su	AA or Less	2,312	20.5	8,884
Mat-Su	BA or Higher	272	4.2	15,372
Gulf Coast Region				
Kenai	AA or Less	3,849	36.2	9,408
Kenai	BA or Higher	193	4.2	21,537
Kodiak	AA or Less	1,455	16.5	11,354
Kodiak	BA or Higher	51	1.1	21,706
Valdez-Cordova	AA or Less	1,660	20.2	12,195
Valdez-Cordova	BA or Higher	55	2.0	35,831
Interior Region				
Denali Borough	AA or Less	992	9.8	9,873
Denali Borough	BA or Higher	22	0.3	14,408
Fairbanks	AA or Less	5,866	94.4	16,092
Fairbanks	BA or Higher	450	14.0	31,074
Southeast Fairbanks	AA or Less	806	22.2	27,514
Southeast Fairbanks	BA or Higher	72	3.2	43,956
Yukon-Koyukuk	AA or Less	220	3.6	16,277
Yukon-Koyukuk	BA or Higher	23	0.4	19,336
Northern Region				
Nome	AA or Less	317	6.6	20,758
Nome	BA or Higher	58	2.5	43,656
North Slope Borough	AA or Less	2,595	138.9	53,534
North Slope Borough	BA or Higher	342	30.9	90,244
Northwest Arctic Borough	AA or Less	278	10.9	39,250
Northwest Arctic Borough	BA or Higher	76	4.0	53,028

(continued on next page)

Geographic Distribution of Local and Non-Local Residents and Nonresidents

For many areas, filling jobs with local residents is a high priority. Worker employment records showing place of work information are matched with PFD applicant address information to determine the number of local residents, non-local Alaska residents, and nonresidents working in each Alaska borough or census area[9]. Overall, 69.2% of workers were local residents of the area where they worked in 2005, while 11.7% were residents of Alaska, but did not live in the borough or census area in which they worked. (See Exhibits 27 and 29.)

The Aleutians East Borough, with its large number of nonresident seafood processing workers, had the lowest percentage of local resident private sector workers in 2005. The North Slope Borough had a very significant amount of nonresident wages paid due to the presence of many oil workers who are generally stationed there on a rotating basis. The Denali Borough is a major summer tourist destination and many of that area's seasonal workers are nonresidents or residents from other parts of Alaska.

Economic and Social Impact of Nonresident Workers

Nonresidents take direct job opportunities away from Alaskans. In addition, they keep the overall economy, including retail sales, services, and housing construction, at a level lower than would otherwise be the case because they take the bulk of their earnings outside the state. Nonresident workers typically work only a quarter or two of the year in Alaska.

The loss of income, or leakage[10], outside the state and the reduced multiplier effect[11] have

A2 Resident and Nonresident Workers and Earnings Private, State, and Local Government Workers - Alaska 2005

Industry	Resident Workers	Nonres. Workers	Percent Nonres.	Resident Wages	Nonres. Wages	Percent Nonres.	Resident Earnings/Qtr.	Nonres. Earnings/Qtr.
Agriculture, Forestry, Fishing and Hunting								
Crop Production	298	74	19.9	$2,509,756	$459,207	15.5	$3,351	$3,145
Animal Production	329	201	37.9	7,893,234	1,924,427	19.6	7,575	4,277
Forestry and Logging	492	391	44.3	13,457,783	7,400,913	35.5	8,583	8,478
Fishing, Hunting and Trapping[1]	107	135	55.8	1,831,060	3,035,143	62.4	8,211	12,861
Support Activities for Agriculture and Forestry	89	49	35.5	1,568,058	528,105	25.2	7,032	6,520
Mining								
Oil and Gas Extraction	2,399	784	24.6	303,882,538	100,383,040	24.8	32,934	40,250
Mining (except Oil and Gas)	1,685	553	24.7	92,977,459	25,106,131	21.3	15,442	17,532
Support Activities for Mining	5,918	2,737	31.6	352,855,339	145,004,806	29.1	16,581	18,171
Utilities								
Utilities	2,098	142	6.3	116,535,059	3,706,260	3.1	15,101	10,712
Construction								
Construction of Buildings	7,988	1,873	19.0	275,131,738	37,623,379	12.0	10,875	9,630
Heavy and Civil Engineering Construction	5,264	1,719	24.6	247,003,383	64,331,200	20.7	14,241	15,725
Specialty Trade Contractors	11,528	2,678	18.9	401,762,261	45,910,062	10.3	10,656	8,323
Manufacturing								
Food Manuf.	5,901	14,744	71.4	104,300,476	186,038,266	64.1	5,785	6,003
Beverage and Tobacco Product Manuf.	137	14	9.3	3,996,332	91,838	2.2	8,576	3,401
Textile Mills	4	0	0.0	ND	0	0.0	ND	0
Textile Product Mills	97	19	16.4	2,211,113	208,022	8.6	6,620	5,074
Apparel Manuf.	11	2	15.4	298,543	ND	ND	10,295	ND
Leather and Allied Product Manuf.	3	0	0.0	ND	0	0.0	ND	0
Wood Product Manuf.	399	127	24.1	8,756,252	1,322,457	13.1	7,027	4,935
Paper Manuf.	9	0	0.0	ND	0	0.0	ND	0
Printing and Related Support Activities	415	48	10.4	10,848,325	688,246	6.0	7,507	6,145
Petroleum and Coal Products Manuf.	675	38	5.3	43,865,908	1,041,772	2.3	17,449	11,838
Chemical Manuf.	251	13	4.9	ND	ND	ND	ND	ND
Plastics and Rubber Products Manuf.	115	29	20.1	3,623,070	420,713	10.4	9,058	6,897
Nonmetallic Mineral Product Manuf.	413	86	17.2	12,692,840	1,515,791	10.7	9,682	7,773
Primary Metal Manuf.	13	3	18.8	ND	ND	ND	ND	ND
Fabricated Metal Product Manuf.	466	70	13.1	16,773,615	1,000,017	5.6	10,303	6,494
Machinery Manuf.	54	5	8.5	2,119,205	128,145	5.7	12,250	9,857
Computer and Electronic Product Manuf.	78	9	10.3	4,388,957	300,299	6.4	15,400	14,300
Elec. Equip., Appliance, / Component Manuf.	21	2	8.7	967,623	ND	ND	11,658	ND
Transportation Equipment Manuf.	298	143	32.4	8,233,822	2,375,122	22.4	8,334	7,787
Furniture and Related Product Manuf.	166	32	16.2	3,910,909	356,556	8.4	7,111	5,243
Miscellaneous Manuf.	227	32	12.4	6,208,277	335,134	5.1	7,970	5,236
Wholesale Trade								
Merchant Wholesalers, Durable Goods	2,937	350	10.6	114,669,522	7,933,403	6.5	10,939	9,378
Merchant Wholesalers, Nondurable Goods	3,235	553	14.6	108,156,195	6,695,591	5.8	9,756	6,444
Wholesale Elec. Markets / Agents / Brokers	581	99	14.6	25,241,343	1,568,228	5.8	12,124	7,650
Retail Trade								
Motor Vehicle and Parts Dealers	5,216	695	11.8	170,489,088	8,790,437	4.9	9,348	5,795
Furniture and Home Furnishings Stores	1,083	191	15.0	25,078,966	2,244,597	8.2	7,078	5,244
Electronics and Appliance Stores	854	170	16.6	19,923,082	1,548,466	7.2	7,190	4,514
Bldg. Material / Garden Equip. / Sup. Dealers	4,303	625	12.7	111,974,586	6,725,310	5.7	7,659	5,008
Food and Beverage Stores	7,561	1,178	13.5	145,326,184	8,448,256	5.5	5,836	3,526
Health and Personal Care Stores	903	158	14.9	23,896,863	2,019,807	7.8	7,696	6,139
Gasoline Stations	1,630	271	14.3	23,670,206	2,090,625	8.1	4,589	3,598
Clothing and Clothing Accessories Stores	2,166	837	27.9	26,015,859	6,439,733	19.8	4,134	3,863
Sporting Goods, Hobby, Book, / Music Stores	2,166	521	19.4	26,420,024	3,116,869	10.6	4,013	2,991
General Merchandise Stores	11,135	1,723	13.4	208,224,506	15,038,751	6.8	5,634	4,188
Miscellaneous Store Retailers	3,062	768	20.1	48,919,802	5,190,854	9.6	5,179	3,431
Nonstore Retailers	1,114	111	9.1	36,318,765	1,509,767	4.0	9,488	6,397
Transportation and Warehousing								
Air Transportation	6,074	1,683	21.7	224,924,704	90,400,533	28.7	10,387	20,009
Rail Transportation	8	0	0.0	ND	0	0.0	ND	0
Water Transportation	811	382	32.0	36,790,247	14,260,778	27.9	13,461	13,647
Truck Transportation	3,158	506	13.8	124,728,813	9,237,695	6.9	11,225	7,869
Transit and Ground Passenger Transportation	1,466	145	9.0	24,429,330	1,461,943	5.6	4,884	4,526
Pipeline Transportation	861	65	7.0	ND	ND	ND	ND	ND
Scenic and Sightseeing Transportation	2,077	1,708	45.1	31,188,428	18,427,419	37.1	5,121	4,592
Support Activities for Transportation	2,991	695	18.9	95,544,773	17,228,032	15.3	9,479	11,260
Postal Service	78	10	11.4	1,048,601	26,405	2.5	4,424	2,200
Courier.s and Messengers	1,792	307	14.6	78,686,488	25,749,743	24.7	12,098	30,912
Warehousing and Storage	198	37	15.7	ND	ND	ND	ND	ND

Industry	Resident Workers	Nonres. Workers	Percent Nonres.	Resident Wages	Nonres. Wages	Percent Nonres.	Resident Earnings/Qtr.	Nonres. Earnings/Qtr.
Information								
Publishing Industries (except Internet)	1,392	164	10.5	$41,489,332	$2,256,351	5.2	$8,387	$6,098
Motion Picture and Sound Recording Industries	486	92	15.9	3,795,571	368,287	8.8	2,750	2,002
Broadcasting (except Internet)	824	117	12.4	26,182,625	1,641,127	5.9	8,991	6,288
Internet Publishing and Broadcasting	9	5	35.7	403,477	113,970	22.0	13,449	8,141
Telecommunications	4,400	253	5.4	245,705,527	8,922,948	3.5	14,701	13,161
ISP's / Web Search Portals / Data Processing Svcs.	182	46	20.2	6,283,289	558,667	8.2	9,667	8,216
Other Information Services	63	11	14.9	2,198,712	174,094	7.3	9,772	6,003
Finance and Insurance								
Credit Intermediation and Related Activities	5,119	434	7.8	202,918,523	6,216,807	3.0	10,630	6,042
Securities, Commodity Contracts, Other Financial	480	37	7.2	35,753,106	1,443,965	3.9	20,326	17,397
Insurance Carriers and Related Activities	2,068	156	7.0	89,443,613	3,327,739	3.6	11,998	9,218
Funds, Trusts, and Other Financial Vehicles	1,494	119	7.4	61,759,694	3,036,813	4.7	12,555	11,909
Real Estate and Rental and Leasing								
Real Estate	4,383	469	9.7	110,141,941	5,209,734	4.5	7,703	5,179
Rental and Leasing Services	1,954	397	16.9	41,602,106	4,204,425	9.2	6,621	4,855
Lessors of Nonfinancial Intangible Assets	52	3	5.5	ND	ND	ND	ND	ND
Professional, Scientific and Technical Services								
Professional, Scientific, and Technical Services	11,762	2,530	17.7	483,854,247	76,905,856	13.7	11,922	12,818
Management of Companies and Enterprises	537	56	9.4	30,227,093	2,237,634	6.9	16,036	15,758
Management of Companies and Enterprises								
Administrative and Support Services	10,839	4,039	27.1	227,614,583	60,683,278	21.0	6,737	6,785
Waste Management and Remediation Services	1,470	300	16.9	56,117,167	8,397,475	13.0	11,587	12,188
Educational Services								
Educational Services	2,056	599	22.6	51,957,027	6,912,847	11.7	7,746	5,898
Admin. Support / Waste Mgmt. and Remediation								
Ambulatory Health Care Services	14,589	1,665	10.2	469,474,160	38,212,304	7.5	9,382	10,316
Hospitals	9,940	969	8.9	430,875,941	26,622,201	5.8	11,560	11,615
Nursing and Residential Care Facilities	2,683	413	13.3	62,048,226	4,017,031	6.1	6,669	4,666
Social Assistance	8,691	932	9.7	171,638,745	7,964,017	4.4	5,876	4,002
Health Care and Social Assistance								
Performing Arts / Spectator Sports / Related	593	271	31.4	6,538,344	1,934,235	22.8	4,687	3,996
Museums, Historical Sites, and Similar Institutions	497	122	19.7	10,680,673	1,378,591	11.4	6,696	4,837
Amusement, Gambling, and Recreation Industries	3,277	1,095	25.0	34,754,707	6,467,827	15.7	3,668	3,029
Accomodation and Food Services								
Accommodation	7,628	4,628	37.8	116,382,856	36,926,068	24.1	4,939	3,936
Food Services and Drinking Places	20,925	6,918	24.8	250,321,817	48,119,802	16.1	4,001	3,313
Other Services								
Repair and Maintenance	2,590	476	15.5	70,409,539	7,619,513	9.8	8,159	7,243
Personal and Laundry Services	2,094	379	15.3	32,295,069	2,661,079	7.6	4,851	3,381
Religious / Grantmkg. / Civic / Prof. / Similar	5,209	744	12.5	132,011,130	8,938,570	6.3	7,783	5,789
Private Households	243	56	18.7	3,347,912	478,447	12.5	4,592	4,645
Public Administration								
Executive / Legislative / Other Gen. Gov. Support	427	28	6.2	6,350,813	198,676	3.0	5,816	4,139
Justice, Public Order, and Safety Activities	18	3	14.3	266,220	ND	ND	4,512	ND
Administration of Human Resource Programs	21	0	0.0	ND	0	0.0	ND	0
Administration of Economic Programs	6	0	0.0	ND	0	0.0	ND	0
Unclassified[2]	315	177	36.0	4,527,524	1,742,739	27.8	5,812	6,030
Total Private Sector	244,724	69,243	22.1	7,424,056,565	1,281,341,089	14.7	9,129	8,419
Local Government	45,735	3,138	6.4	1,352,911,599	43,430,529	3.1	8,714	6,640
State Government	24,544	1,885	7.1	931,724,192	30,002,084	3.1	10,428	7,270
Total Private and Government	**315,003**	**74,266**	**19.1**	**9,708,692,356**	**1,354,773,702**	**12.2**	**9,171**	**8,303**

ND: Not disclosable

[1] Does not include fish harvesting employment numbers

[2] No industry data is available

Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

A3 Oil Industry Workers, North Slope and Statewide Residency Status and Place of Alaska Residence, Selected Employers

Employer	Work Location	Total Workers	Resident Workers	Nonres. Workers	Resident Workers by Region of Residence					
					Anch./ Mat-Su	Gulf Coast	Interior	Northern	Southeast	Southwest
Alaska Clean Seas	All Alaska	68	52	16	42	6	3	1	0	0
Alaska Clean Seas	North Slope	62	46	16	36	6	3	1	0	0
Alaska Interstate Const. LLC	All Alaska	590	512	78	214	52	168	32	43	1
Alaska Interstate Const. LLC	North Slope	425	368	57	164	35	121	32	15	1
Alyeska Pipeline Service Co., Inc.	All Alaska	933	869	64	380	297	188	1	1	1
Alyeska Pipeline Service Co., Inc.	North Slope	83	60	23	43	9	7	0	0	0
Amoco Corporation	All Alaska	434	260	174	210	42	6	0	2	0
Amoco Corporation	North Slope	13	6	7	4	0	2	0	0	0
Amoco Production Company	All Alaska	129	35	94	23	4	0	0	0	0
Arctic Catering, Inc.	All Alaska	327	262	65	147	53	30	8	22	0
Arctic Catering, Inc.	North Slope	143	128	15	82	32	9	5	0	0
Arctic Pipe Inspection, Inc.	All Alaska	32	21	11	10	10	0	0	0	1
Arctic Pipe Inspection, Inc.	North Slope	30	20	10	9	10	0	0	0	1
Arctic Structures LLC	All Alaska	112	100	12	51	40	8	0	0	1
ASRC Energy Services O&M	All Alaska	2,137	1,517	620	777	583	64	73	9	7
ASRC Energy Services O&M	North Slope	1,681	1,110	571	602	362	61	69	8	4
ASRC Energy Pipeline Power & Comms	All Alaska	1,131	864	267	216	108	509	15	11	4
ASRC Energy Pipeline Power & Comms	North Slope	130	109	21	37	14	51	4	3	0
Baker Hughes Oilfield Operations, Inc.	All Alaska	168	81	87	62	15	1	0	0	0
Baker Hughes Oilfield Operations, Inc.	North Slope	87	23	64	17	6	0	0	0	0
BJ Services Company USA	All Alaska	34	30	4	1	29	0	0	0	0
BP Exploration Alaska, Inc.	All Alaska	1,691	1,203	488	890	253	46	1	4	2
BP Exploration Alaska, Inc.	North Slope	55	30	25	17	13	0	0	0	0
CCI, Inc.	All Alaska	290	227	63	133	40	6	1	5	41
CCI, Inc.	North Slope	107	96	11	63	20	3	1	3	5
Colville Environmental Services	All Alaska	92	74	18	50	12	8	3	0	0
Colville Environmental Services	North Slope	92	74	18	50	12	8	3	0	0
ConocoPhillips Company	All Alaska	1,087	889	198	704	171	3	0	2	1
ConocoPhillips Company	North Slope	491	365	126	238	115	7	0	2	0
Doyon Drilling, Inc.	All Alaska	429	321	108	166	45	99	5	1	5
Doyon Drilling, Inc	North Slope	410	302	108	148	44	99	5	1	5
Doyon/Universal Services JV	All Alaska	1,007	919	88	540	111	257	1	0	2
Doyon/Universal Services JV	North Slope	484	432	52	244	43	142	1	0	1
Exxon Mobil Corporation	All Alaska	26	24	2	24	0	0	0	0	0
Fairweather E&P Services, Inc.	All Alaska	98	55	43	46	9	0	0	0	0
Fairweather E&P Services, Inc	North Slope	68	28	40	21	7	0	0	0	0
Flowline Alaska, Inc	All Alaska	130	117	13	4	3	109	0	0	1
Forest Oil Corporation	All Alaska	33	31	2	19	12	0	0	0	0
GBR Equipment, Inc	All Alaska	43	28	15	23	3	1	1	0	0
GBR Equipment, Inc.	North Slope	38	23	15	18	3	1	1	0	0
GLM, Inc.	All Alaska	43	39	4	1	38	0	0	0	0
HC Price Co.	All Alaska	448	320	128	89	21	201	1	5	3
HC Price Co.	North Slope	207	163	44	36	11	109	1	4	2
Halliburton Energy Services, Inc	All Alaska	295	222	73	182	34	6	0	0	0
Halliburton Energy Services, Inc.	North Slope	226	162	64	123	33	6	0	0	0
Inlet Drilling AK, Inc.	All Alaska	92	79	13	12	67	0	0	0	0
Kakivik Asset Management LLC	All Alaska	202	135	67	93	16	20	1	0	4
Kakivik Asset Management LLC	North Slope	95	60	35	52	4	1	0	0	3
Little Red Services, Inc.	All Alaska	109	69	40	39	25	3	0	1	0
Little Red Services, Inc	North Slope	106	66	40	36	25	3	0	1	0
M-I LLC	All Alaska	189	142	47	113	26	2	0	0	0
M-I LLC	North Slope	64	51	13	41	9	1	0	0	0
Marathon Oil Co.	All Alaska	55	50	5	15	34	0	0	0	0
Nabors AK Drilling, Inc	All Alaska	551	383	168	272	100	8	0	0	1
Nabors AK Drilling, Inc.	North Slope	428	279	149	203	67	7	0	0	1
Norcon, Inc	All Alaska	553	416	137	197	22	188	6	2	0
Norcon, Inc.	North Slope	314	215	99	62	14	132	5	2	0
Nordic-Calista Services No. 1	All Alaska	106	89	17	48	36	2	0	0	3
Nordic-Calista Services No. 1	North Slope	103	86	17	45	36	2	0	0	3

Employer	Work Location	Total Workers	Resident Workers	Nonres. Workers	Resident Workers by Region of Residence					
					Anch./ Mat-Su	Gulf Coast	Interior	Northern	Southeast	Southwest
Nordic Well Servicing, Inc.	All Alaska	4	4	0	4	0	0	0	0	0
Peak Oilfield Services Co.	All Alaska	837	649	188	184	440	18	1	2	1
Peak Oilfield Services Co.	North Slope	340	208	132	132	57	14	1	1	1
Pollard Wireline, Inc.	All Alaska	39	38	1	0	38	0	0	0	0
Quadco, Inc. - AK Division	All Alaska	39	30	9	24	5	1	0	0	0
Quadco, Inc. - AK Division	North Slope	25	20	5	14	5	1	0	0	0
Qwick Construction Co., Inc.	All Alaska	14	13	1	0	12	0	0	1	0
R&K Industrial, Inc.	All Alaska	70	67	3	0	67	0	0	0	0
Raven Contractors, Inc.	All Alaska	17	17	0	0	17	0	0	0	0
Schlumberger Technology Corp.	All Alaska	581	385	196	290	81	7	2	1	1
Schlumberger Technology Corp.	North Slope	282	226	56	185	34	4	1	0	1
Udelhoven Oilfield System Services	All Alaska	581	444	137	242	190	7	1	1	2
Udelhoven Oilfield System Services	North Slope	142	67	75	45	19	2	0	1	0
Union Oil Co. Of California	All Alaska	343	324	19	122	201	0	1	0	0
VECO Alaska, Inc.	All Alaska	2,088	1,457	631	1,055	330	49	4	9	8
VECO Alaska, Inc.	North Slope	1,182	710	472	484	175	36	3	5	6
VECO Corporation	All Alaska	32	28	4	28	0	0	0	0	0
VECO Corporation	North Slope	1	0	1	0	0	0	0	0	0
Veritas DGC Land, Inc.	All Alaska	208	166	42	141	12	5	5	1	1
Western Geco Resources, Inc.	All Alaska	4	2	2	2	0	0	0	0	0
Western Geco Resources, Inc.	North Slope	1	0	1	0	0	0	0	0	0
XTO Energy, Inc.	All Alaska	42	40	2	5	35	0	0	0	0

The employed worker location is based upon information provided by employers. Workers employed in more than one area during the year were counted in the North Slope if they worked there one or more quarters during the year. Alaska region of residence is based upon the most recent zip code provided on the 2005 or 2006 PFD application. Not all residents provided a zip code so regional totals will not equal the total resident worker count.

Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section

NEA-ALASKA

Affiliated with the National Education Association

Rep. Craig Johnson
State Capitol, Room 126
Juneau, AK 99801

Dear Representative Johnson:

On behalf of the 13,000 public school employee members of NEA-Alaska I would like to submit this letter of support for House Bill 234.

This legislation recognizes that Alaska faces severe shortages in several professional fields. The thought of using incentives to assist in helping applicants make the decision to work in Alaska is a positive step. I have witnessed firsthand at job fairs this spring a dearth of applicants for teaching positions in Alaska. At the latest job fair it was easy to look around and witness that recruiters outnumbered the applicants for teaching positions.

NEA-Alaska understands HB 234 is meant to address all Alaska professions that are deemed to be in shortage. We realize this concept is fresh and needs to be vetted through the committee process. That said, it is the concept that warrants debate and ultimately approval.

Thank you for your efforts on this legislation and please let me know if I can be of assistance in helping this legislation move forward.

Sincerely,

Bill Bjork

Bill Bjork
President

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