

## Insight into the shape of the future job market

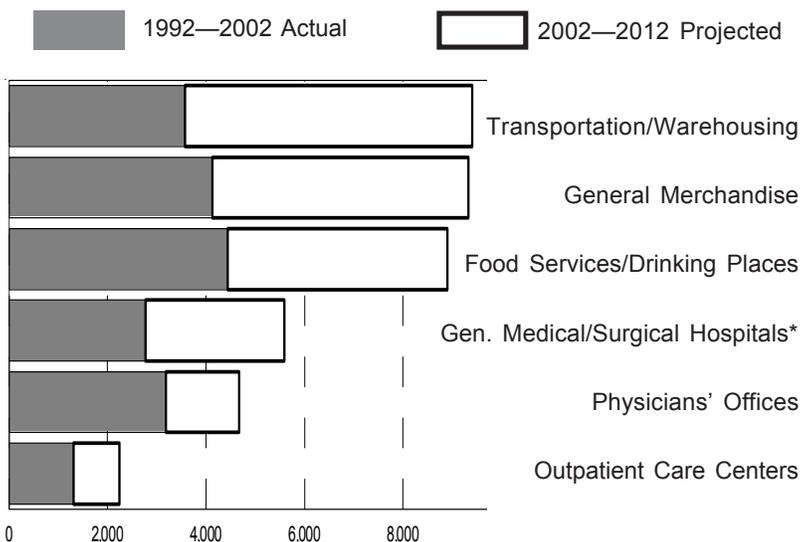
**W**hat will the occupational mix of Alaska's economy look like a decade from now? In which occupations will increases be necessary to meet the demands of an evolving job market over this period? These are important questions for the future of our state, with ramifications for educators, training providers, and policy makers on the one hand, and on the other, for the Alaska workers who will ultimately fill these positions.

To help answer these questions, the Department of Labor and Workforce Development (DOLWD) has just completed the 2002-2012 occupational

employment forecast covering nearly 700 distinct occupations for both wage and salary and self-employed workers. Projected growth of nearly 43,000 jobs will increase Alaska's workforce from an estimated 313,540 in 2002 to 356,491 by 2012<sup>1</sup>.

As with any set of projections, the assumptions and conclusions inherent in this forecast are fallible. Any number of events—including changes in the natural gas pipeline timeframe, Arctic National Wildlife Refuge policy, or migration and population trends—could significantly alter the actual outcomes. Therefore, users should consider these projections to be one of many sources for insight into future employment opportunities and trends. Job centers, career counselors, and industry insiders are among the many additional resources available.

### 1 Rapid Growth Industries Actual and projected increase



\*Includes local government hospitals.

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

### Industry growth to 2012

The process of projecting long-term growth by occupation begins by addressing the industrial makeup of Alaska's economy, and anticipating how employment in the various industries will change over this period. The September 2004 issue of *Alaska Economic Trends* presents the 2002-2012 statewide industry forecast that is the foundation for the occupational projections analyzed here.

Broadly speaking, the economy can be divided into two sectors—the goods producing sector and the services providing sector. The goods producing sector, which comprises mining, construction, manufacturing, and logging, saw its

## Occupational Groups

These occupational projections utilize the Standard Occupational Classification (SOC) taxonomy to analyze Alaska's employment data. For the 2002–2012 forecast, 691 distinct occupations have been identified. These are further organized into the following occupational groups, presented here along with examples of specific occupations:

### Management, Business, Financial

Executives and managers  
Accountants  
Cost estimators

### Professional and Related

Computer systems analysts  
Civil engineers  
Wildlife biologists  
Lawyers  
Teachers  
Public relations specialists  
Registered nurses

### Service

Medical assistants  
Security guards  
Cooks  
Janitors  
Child care workers

### Sales and Related

Real estate agents and brokers  
Cashiers

### Office and Admin. Support

Office clerks  
Secretaries

### Construction and Extraction

Carpenters  
Operating engineers

### Installation, Maintenance, and Repair

Aircraft mechanics and service technicians  
Automotive service mechanics

### Production

Meat, poultry, and fish cutters  
Petroleum pump system operators

### Transportation and Material Moving

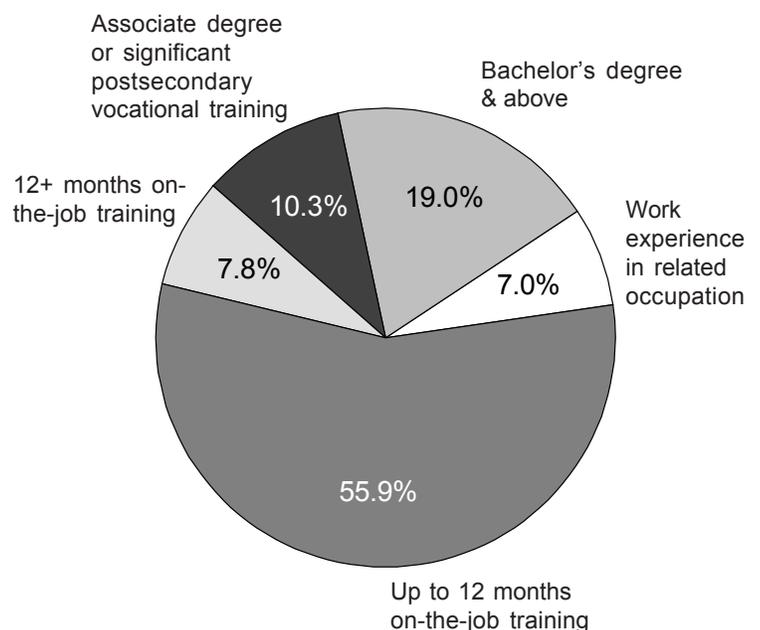
Heavy and light truck drivers  
Freight, stock, and material movers

share of employment decline over the last decade, primarily due to losses in seafood processing and shutdown of pulp mills coupled with meager growth in mining. At the same time, industries in the services sector—including healthcare, food services, transportation, and trade—were experiencing rapid growth, pushing the service sector's share of employment by 2002 to 87 percent.

The services sector is projected to continue its dominance to 2012, and the goods producing sector should hold its own over the forecast period. Buoyed by a resurgence in metal mining and projected natural gas pipeline construction, the goods producing sector, with the steep declines in manufacturing largely in the past, will be likely to contribute positive growth nearly apace with the economy overall. In doing so it should maintain its 13 percent share of employment through 2012.

The turnaround in goods producing employment notwithstanding, the services providing sector will continue to provide the vast majority, about 90 percent, of new jobs to Alaska's economy. And while the rate of growth of every service sector industry, with the exception of federal government, is projected to decrease relative to 1992-2002 rates, many industries will continue to experience robust growth through 2012. (See Exhibit 1.)

## Alaska's New Jobs 2 By education level required 2002–2012



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

These rapid growth industries have been and will continue to be job creating machines. Continued growth in tourism, air cargo traffic, and the movement of materials and people for construction of the gas pipeline will mean significant employment gains in the transportation and warehousing industry. Both general merchandise stores and food services and drinking places will benefit from growth in tourism, as well as from increases in both population and disposable income. And while efforts to rein in costs may dampen the rate of growth of healthcare industries, demographic realities and an increasing array of treatments will assure that their expansion continues.

### From industry to occupation...

With the 2002-2012 industry forecast in place, projections of occupational growth come from an analysis of the variety of occupations that constitute the various industries. Forecasts for a specific occupation depend both on the rate of growth of industries that employ it, as well as on the degree to which those industries are likely to utilize that job function in the future.

Evaluating job growth and declines requires consideration of both the rate at which change occurs and the volume of jobs created or lost. The number of workers in a given occupation impacts both of these measures, though often in competing ways. Office clerks, for example, are projected to grow by 581 positions by 2012, putting the occupation on Alaska's top twenty list for numeric growth. (See Exhibit 5.) Because this occupation employs so many people, however, its projected growth rate of eight percent is well under the average for the whole economy.

### Training and education

Other important factors for assessing projected job opportunities are training and education requirements. This analysis includes training and education assignments, provided by the Bureau of Labor Statistics (BLS), that identify "the most significant postsecondary education or training pathway to employment" in an occupation. These assignments by no means represent the only pathway to an occupation, nor are they intended to summarize the educational attainment of all persons employed in a particular job.

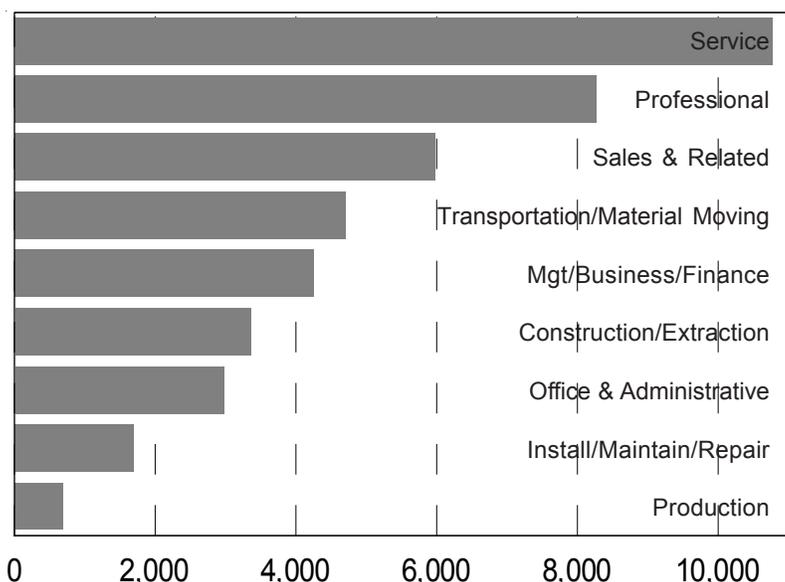
Rather, these education and training guidelines reflect the qualifications preferred by employers, according to BLS research, for persons entering the occupation. By this standard, less than half of the job growth from 2002-2012 will require education or training beyond that acquired on the job, and just under one-in-five projected new jobs will require at least a bachelor's degree. (See Exhibit 2.)

### Service occupations lead job growth

Just as the services-providing industry sector will dominate job growth, so will the service occupations cluster provide more new job opportunities, fully one-in-four, than any other occupational group. (See Exhibit 3.) These same service occupations pay the lowest collective median wage, at \$12.20 per hour, of any occupational group.

The relatively low wages of service occupations

## 3 Alaska's New Jobs Projected growth 2002-2012



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

derive in large part from the food preparation and serving related occupations that accounted for one-in-four of this group's workers in 2002. These occupations are largely entry level, generally requiring no postsecondary education and only short-term on-the-job training. They play an important role for low-skilled persons just entering the labor force.

Healthcare support occupations are projected to be the fastest growing of the service jobs, with a growth rate more than twice that of the economy as a whole. Efforts at cost containment by private insurers and stricter Medicare and Medicaid reimbursement rules, along with increases in residential care facilities, will necessitate the use of the relatively low paid health care labor—medical and dental assistants, nursing and home health aides—that make up this group of occupations.

While not contributing as many new opportunities to overall job growth as the service occupations, the professional and related occupations cluster will continue to account for the largest share of Alaska's employment in 2012. Nearly half of the projected job growth in these occupations will generally require a bachelor's or more advanced degree for entry. The collective median wage of professional jobs, at \$24.88 per hour, is more than double that of the service occupations and about 25 percent greater than that of the economy overall.

Contributing both the fastest growth rate and largest job increase, healthcare practitioner and technical occupations are projected to contribute more than four-in-ten new jobs to the professional and related cluster through 2012. Demand for nurses and other healthcare support staff, medical record personnel, and social services workers will continue to outpace the economy, in spite of increasing efforts at cost control.

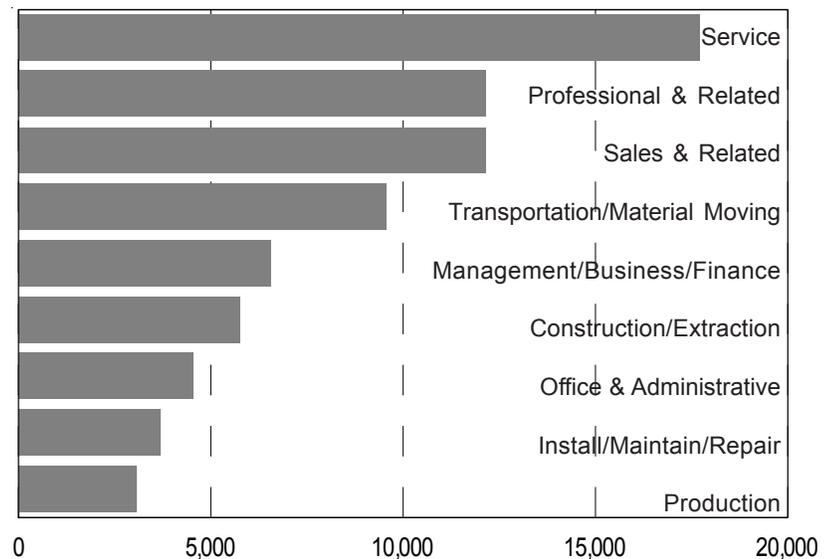
The balance of the occupational groups in the professional and related cluster, aside from community and social services, will experience much slower growth. A leveling off of projected school enrollments over the decade will keep growth low in education related occupations.

The general lack of growth in the government sectors, a major employer for many professional occupations, will keep employment growth in these occupations subdued.

With growth rates around 20 percent, both the sales and related and the transportation and material moving occupational groups share the distinction of being the fastest growing over the projection period. The former is driven by the demand across industries for cashiers and retail salespersons, which together account for nearly three-quarters of the job growth in sales occupations. Cashiers and salespersons earn mean hourly pay of \$10 and \$12.17 respectively, and wages in the sales and related group overall are the second lowest in Alaska's economy.

The transportation and material moving occupations describe a collection of jobs that are diverse in setting, duties, and pay. Charged with moving people, goods, and resources by land, air, and water, these occupations include relatively high paid airline pilots and flight engineers making on average \$47.43 per hour, as well as much lower paid taxi drivers and service station attendants. Tractor-trailer, heavy, and light truck

## Replacement Opportunities 4 Alaska 2002–2012 projected



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

drivers will provide nearly one-in-three new jobs to this group, with growth coming from the expanding transportation and warehousing industry as well as natural gas pipeline related hauling.

Of the remaining occupational groups, only the construction and extraction occupations are projected to grow faster than average. With a likely slowing in residential building offset by gas pipeline related opportunities, the more than 3,000 projected new jobs in this group will offer excellent wages while generally requiring skills that can be acquired on the job, often via apprenticeships that include classroom instruction. Construction and extraction occupations pay an average hourly wage of \$24.16.

## Replacement opportunities

While this analysis focuses primarily on job opportunities that arise from expansion of the economy, an even greater source of job openings comes from the need to replace workers who permanently leave an occupation. This movement out of occupations happens for a variety of reasons, most notable of which are career change and retirement. From 2002-2012, an estimated 75,000 job opportunities will arise in Alaska due to the need to replace exiting workers. (See Exhibit 4.) Nationally, some 35 million jobs will need to be filled for this same reason.

By far the greatest number of replacement openings, close to 18,000, will occur in the service occupations. The sheer number of workers in this group is behind much of this total, though the nature of these jobs creates disproportionate numbers of replacement needs. Service occupations are often low paying, require little formal education and training, and in many cases

## 5 Fastest Growing Occupations and Occupations with the largest increase 2002–2012

Fastest Growing Occupations*	Percent Change	Occupations with the Largest Increase	Numeric Change
Pharmacy Technicians	59.1	Retail Salespersons	2,577
Respiratory Therapists	56.0	Cashiers	1,853
Medical Records/Health Info. Technicians	53.8	Registered Nurses	1,666
Pharmacists	48.6	Combined Food Prep/Serving Wkrs, incl. Fast Food	1,487
Medical Assistants	47.8	General and Operations Managers	1,286
Hazardous Materials Removal Workers	46.7	Waiters and Waitresses	1,163
Surgical Technologists	43.3	Truck Drivers, Heavy and Tractor-Trailer	910
Personal and Home Care Aides	41.7	First-Line Supervisors/Mgrs of Retail Sales Workers	686
Dental Hygienists	41.3	Carpenters	661
Home Health Aides	40.3	Laborers and Freight/Stock/Material Movers, Hand	633
Dental Assistants	39.4	Personal and Home Care Aides	621
Mental Health/Substance Abuse Social Wkrs	38.2	Receptionists and Information Clerks	609
Physical Therapists	35.9	Office Clerks, General	581
Physician Assistants	35.7	Truck Drivers, Light or Delivery Services	556
Aircraft Cargo Handling Supervisors	34.7	Food Preparation Workers	537
Medical and Public Health Social Workers	34.4	Maids and Housekeeping Cleaners	537
Opticians, Dispensing	34.1	Janitors/Cleaners, exc. Maids/Housekeeping Cleaners	484
Social and Human Service Assistants	33.7	Home Health Aides	473
Registered Nurses	33.3	Operating Engineers/Other Construction Equip. Opr.	471
Rehabilitation Counselors	33.0	Cooks, Restaurant	446
Average Growth All Alaska Occupations	13.7	Total	18,237

\* Estimated employment greater than 74

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

serve as gateways to the labor force. Thus workers tend to have less attachment to these positions and are likely to move on to better opportunities as they gain education and experience in the workforce.

The replacement needs of service occupations contrast with those of the professional and related occupational group. Despite having the largest share of employment in both the base and projected year, replacement needs in professional occupations are projected to be just two-thirds as many as in the service occupations group. The facts that more than six in ten professional and related jobs generally required at least a bachelor's degree in 2002, and that these occupations pay well, mean workers are less apt to leave these professions except to retire.

### A more detailed occupational look<sup>2</sup>

This section focuses on the distinct occupations that have the largest numeric increases and declines and are the fastest growing. The complete results of the 2002-2012 occupational forecast, including numeric and percent growth data for 562 occupations, are available on the Department of Labor and Workforce Development's website at <http://almis.labor.state.ak.us>.

Employment will be very concentrated during the 2002-2012 decade. The 20 occupations with the largest numeric increase are projected to account for more than 42 percent of the jobs created over the decade and 28 percent of total jobs in 2012. (See Exhibit 5.) In general, these occupations are entry-level positions that do not require significant postsecondary education or training.

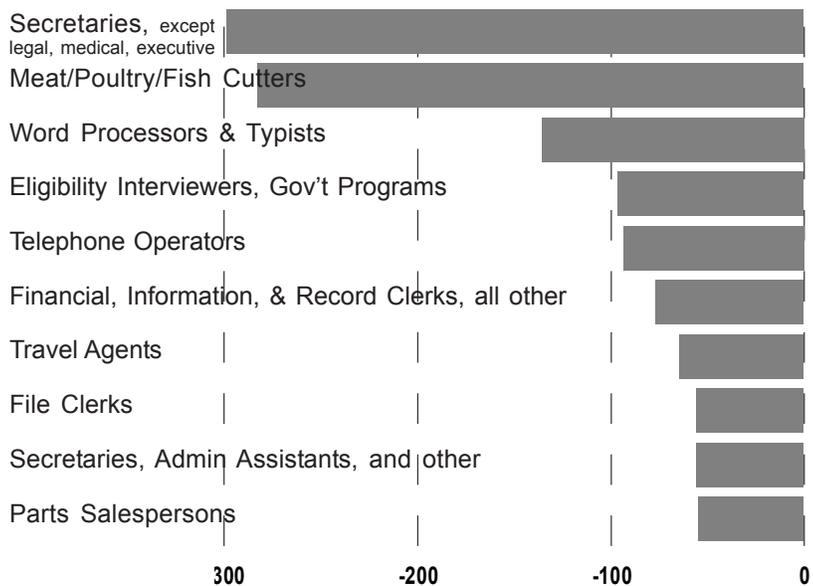
The occupation of retail salespersons is not only expected to add the most jobs over the forecast period, it will retain its position as Alaska's single largest occupation. By 2012 there will be 11,053 workers employed in this occupational category, including 2,577 in positions created over the decade. Employment of cashiers, the occupation ranked second in projected numeric growth, will rise by 1,853, bringing its 2012 employment to 8,574. Registered nurses, combined food preparation and serving workers, and general

and operations managers, occupy the third, fourth and fifth slots adding 1,666, 1,487, and 1,286 jobs, respectively. In 2012, one of every ten workers will be employed in one of these five occupations.

Of Alaska's 20 fastest growing occupations, 13 are associated with health services, reflecting that industry's strong outlook. Three primary forces will drive future demand for health service workers — an aging population, the increased use of innovative medical technology for intensive diagnosis and treatment, and cost cutting measures in medical service delivery. Combined, these three forces will determine the future demand for health occupations.

Pharmacy technicians occupy the number one position on the list of fastest growing occupations with a nearly 60 percent rate of growth over the forecast period. Cost cutting measures will play a significant role in the demand for pharmacy technicians as duties formerly performed by pharmacists are shifted to pharmacy technicians. This trend is also seen in forecast growth rates for dental hygienists, dental assistants and physician assistants that are higher than for the highly paid professionals they support.

## Occupations with Largest Decline 6 Projected numbers 2002–2012



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

Also on the fastest growing list, personal and home care aides and home health aides will be in great demand to provide care for an increasing number of elderly and people recovering from surgery and other serious health conditions. This is occurring as hospitals and insurance companies require shorter stays for recovery to reduce costs.

Four social services occupations also make the fastest growing list—mental health and substance abuse social workers, medical and public health social workers, social and human service assistants, and rehabilitation counselors. As with the healthcare occupations discussed above, the future demand for these occupations will be affected by demographics, advances in medical technology and the need to curtail costs.

Employment numbers in forty-five occupations are expected to drop over the forecast period. Many declining occupations are affected by structural changes as a result of factors including technological advances and organizational changes. For example, the need for secretaries and word processors/typists will decline significantly because of productivity improvements in office automation and the

increased use of word processing equipment by professional and managerial employees. (See Exhibit 6.)

Declining occupations will account for 8.3 percent of total employment in 2012, illustrating that even occupations with declining employment offer future job opportunities. Although declining employment may lead to less favorable job prospects, the need to replace workers who leave an occupation often creates some job openings.

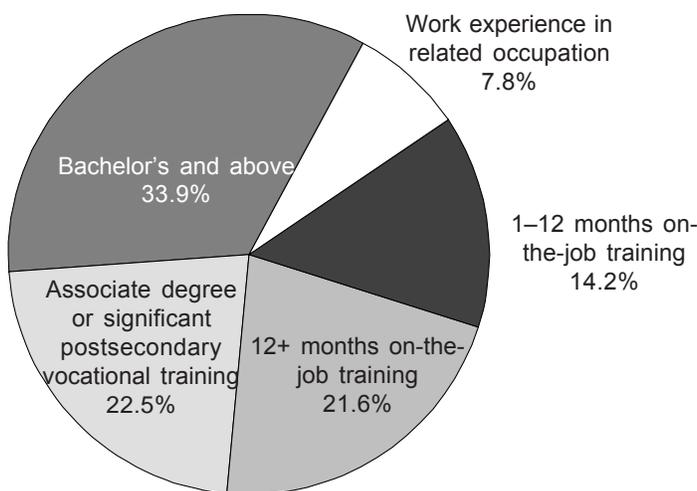
### Alaska's Top Jobs

Individuals planning their careers, jobseekers, and policy makers are among those interested in knowing which occupations will provide the best jobs in the future. Identifying these jobs, however, is not a simple task.

Many criteria are used for determining job quality. Occupational characteristics generally accepted as a measure of future job quality include numeric change in employment, percent change in employment, and earnings. In addition, individuals have personal desires and values that bring other factors into play in determining job quality, such as opportunities for self-employment or a preference for working out-of-doors.

Of the nearly 700 distinct occupations included in the 2002-2012 projections, 40 have been identified as Alaska's "top jobs" – those with higher than average wages and good job prospects, based on projected employment growth and the number of positions. These occupations, with total projected employment of 57,535 in 2012, are concentrated in the higher education and training categories, underscoring the importance of career planning and educational attainment. More than 56 percent of employment in the top jobs requires education or training of an associate degree or higher. Five occupations on the list require work experience in a related occupation. Ten occupations generally requiring on-the-job training (OJT), such as operating engineers and electricians, made the top jobs list. (See Exhibits 7 and 8.)

## 7 Alaska's Top Jobs By training needed



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

(continued on page 12)

# Alaska's Top Jobs 2002–2012

## By training needed



### Hourly Earnings

Occupation	\$\$\$	\$17.49—\$24.62	Wage Quartile	Employment		Numeric Change	Percent Change
	\$\$\$\$	More than \$24.62		2002	2012		
<b>Bachelor's degree and above</b>							
General and Operations Managers			\$\$\$\$	7,391	8,677	1,286	17.4
Airline Pilots, Copilots, and Flight Engineers			\$\$\$\$	1,453	1,767	314	21.61
Financial Managers			\$\$\$\$	1,424	1,622	198	13.9
Mental Health and Substance Abuse Social Workers			\$\$\$	469	648	179	38.17
Pharmacists			\$\$\$\$	364	541	177	48.63
Medical and Health Services Managers			\$\$\$\$	581	748	167	28.74
Sales Managers			\$\$\$\$	605	748	143	23.64
Substance Abuse and Behavioral Disorder Counselors			\$\$\$	513	645	132	25.73
Child, Family, and School Social Workers			\$\$\$	764	894	130	17.02
Computer Systems Analysts			\$\$\$\$	786	910	124	15.78
Social and Community Service Managers			\$\$\$	626	738	112	17.89
Physical Therapists			\$\$\$\$	298	405	107	35.91
Environmental Engineers			\$\$\$\$	358	453	95	26.54
Mental Health Counselors			\$\$\$	302	396	94	31.13
Medical and Public Health Social Workers			\$\$\$	253	340	87	34.39
<b>Associate degree or significant postsecondary vocational training</b>							
Registered Nurses*			\$\$\$\$	5,004	6,670	1,666	33.29
Aircraft Mechanics and Service Technicians			\$\$\$	1,458	1,680	222	15.23
Dental Hygienists			\$\$\$\$	438	619	181	41.32
Commercial Pilots			\$\$\$\$	569	727	158	27.77
Bus and Truck Mechanics and Diesel Engine Specialists			\$\$\$	689	825	136	19.74
Emergency Medical Technicians and Paramedics			\$\$\$	346	451	105	30.35
Mobile Heavy Equipment Mechanics, except Engines			\$\$\$\$	665	760	95	14.29
Licensed Practical and Licensed Vocational Nurses			\$\$\$	521	609	88	16.89
Radiologic Technologists and Technicians			\$\$\$	297	383	86	28.96
Respiratory Therapists			\$\$\$	134	209	75	55.97
<b>Work experience in a related occupation</b>							
First-Line Supervisors/Mgrs of Construction Trades & Extraction Wkrs			\$\$\$\$	2,093	2,405	312	14.91
Captains, Mates, and Pilots of Water Vessels			\$\$\$\$	466	569	103	22.1
Transportation, Storage, and Distribution Managers			\$\$\$\$	420	515	95	22.62
Self-Enrichment Education Teachers			\$\$\$	500	586	86	17.2
First-Line Supervisors/Mgrs of Helpers, Laborers, Material Movers, Hand			\$\$\$	328	411	83	25.3
<b>Long-or medium-term on-the-job training<sup>3</sup></b>							
Truck Drivers, Heavy and Tractor-Trailer			\$\$\$	2,888	3,798	910	31.51
Carpenters			\$\$\$	4,759	5,420	661	13.89
Operating Engineers and Other Construction Equipment Operators			\$\$\$\$	2,456	2,927	471	19.18
Electricians			\$\$\$	2,033	2,396	363	17.86
Plumbers, Pipefitters, and Steamfitters			\$\$\$\$	1,527	1,788	261	17.09
Petroleum Pump System Operators, Refinery Operators, and Gaugers			\$\$\$\$	1,044	1,241	197	18.87
Correctional Officers and Jailers			\$\$\$	848	992	144	16.98
Hazardous Materials Removal Workers			\$\$\$\$	304	446	142	46.71
Welders, Cutters, Solderers, and Brazers			\$\$\$	782	905	123	15.73
Water and Liquid Waste Treatment Plant and System Operators			\$\$\$	587	671	84	14.31

\*Based on the BLS classification, all RNs are grouped under the Associate Degree category.

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

Health and social services occupations dominate the list of top jobs requiring a Bachelor's degree or higher. Seven of the ten occupations on the long- and medium-term OJT<sup>3</sup> list, such as truck drivers, heavy and tractor trailer, and operating engineers and other construction equipment operators, are large occupations with growth that will be spurred by the construction of Alaska's natural gas pipeline.

## Methodology

Occupational forecasts are the end product of a three-part system: employer surveys, construction of a matrix of industries and occupations, and industry employment forecasts.

Employer Surveys: The foundation of this forecast is the Occupational Employment Statistics (OES) program, operated jointly by DOLWD/R&A and the U.S. Bureau of Labor Statistics. The OES program surveys occupational employment through a random sample of employers who do business in Alaska. The results of the OES employer surveys produce profiles of the occupational makeup for surveyed industries and estimates of wage rates by occupation.

Industry/Occupation Matrix: The occupational profile of each industry is arranged into a matrix of occupations and industries. Base year employment estimates (2002) are made by multiplying the proportion of employment for each occupation in an industry by the current (2002) estimate of employment for that industry and then summing across industries.

Future occupational employment requires the use of "change factors" to indicate shifts in industry staffing patterns as employers respond to changes in both technology and the marketplace.

Estimates of self-employed workers are made by applying ratios of self-employed workers in each occupation to estimates of wage and salary workers in the same occupation. Self-reported occupational data from the Census Bureau are used to determine the self-employment ratios.

Industry Employment Forecast: See September 2004 *Alaska Economic Trends*.

Earnings: Wage data comes from the 2000 thru 2003 cycles of the OES survey, and covers 97 percent of total 2002 employment. All wages are mean wages. Earnings quartiles were determined by sorting the total number of Alaska employees by their wage from the lowest to highest. One fourth of total employment is placed in each quartile. A single \$ represents occupations with employee earnings of less than \$12.71 per hour. \$\$ represents earnings between \$12.71 and \$17.48 per hour, \$\$\$ between \$17.49 and \$24.62 per hour, and \$\$\$\$ greater than \$24.62.

### Footnotes

<sup>1</sup> Unlike the 2002-2012 industry projection, this analysis includes estimates of self-employed persons. Thus, the overall base and projected employment totals are greater.

<sup>2</sup> For the majority of this analysis, only occupations with year 2002 employment of 75 or greater are included. Catchall occupational categories, such as all other managers, are excluded.

<sup>3</sup> Medium-term OJT involves training of 1-12 months duration. Long-term OJT involves training over 12 months in length.