

## A look at industries and occupations, 2006 to 2016

**G**iven recent events in the global economy, the idea of producing long-term projections of industry and occupational employment might seem a foolish undertaking. Amidst the unfolding global financial crisis, markets are registering their largest one-day movements in history in an attempt to reach new equilibriums. So, is this the beginning of the end of our economy as we know it?

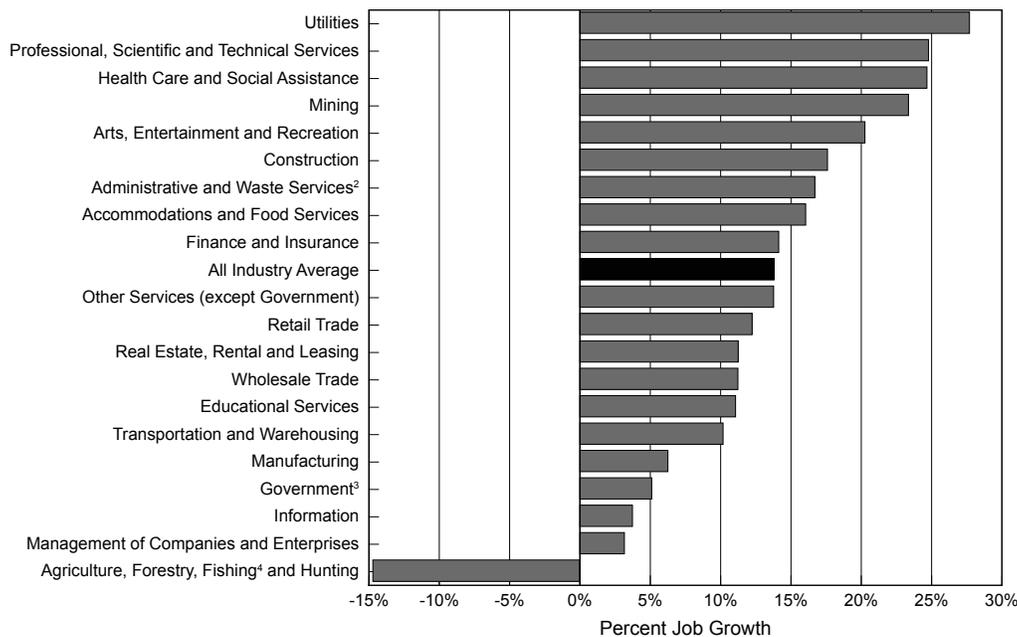
Probably not. In years to come, we'll look back at this period and compare it to other business cycles our economy has gone through. There may be some restructuring of the economy, particularly in some industries and occupations.

The demand for residential construction and hedge fund managers may remain low for years. However, at least in the near-term, our trading partners and the goods we consume and those we provide the rest of the world will remain largely unchanged.

These projections don't attempt to predict business cycles. If the current recession becomes a depression, these 2016 projections may prove overly optimistic. Conversely, if the economy quickly reverses and experiences rapid growth, these projections may be understated.

Over time, underlying economic trends are more important than short-term economic fluctuations and they provide the best measure of our economy's future. Our goal is to identify the general directions of movements and some measures of the magnitudes of changes in the labor market.

### 1 Alaska's Job Growth by Industry<sup>1</sup> Projected, 2006 to 2016



<sup>1</sup> Excludes self-employed workers, fishermen, domestic workers, unpaid family workers and nonprofit volunteers

<sup>2</sup> The full name is administrative, support, waste management and remediation services.

<sup>3</sup> Excludes public schools and the University of Alaska

<sup>4</sup> Most fishermen aren't counted in this category because they're self-employed.

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

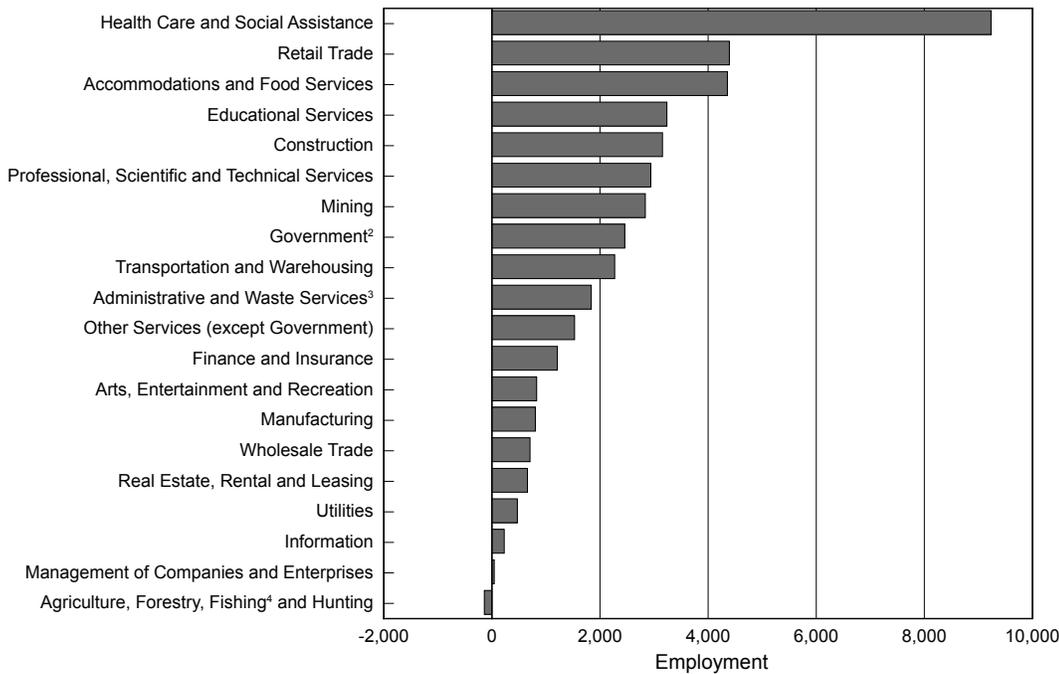
### The perils and pitfalls of assumptions

There's an oft-quoted and somewhat off-color line about the perils entailed when we assume. However, all projections rely on assumptions.

### Alaska's next pipeline

These projections don't include direct employment from the construction of a natural gas pipeline in Alaska. The pipeline construction will

# 2 Changes in Alaska's Industry Employment<sup>1</sup> Projected, 2006 to 2016



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

create many jobs, and if the pipeline is under construction in 2016, then many of these projections will be underestimated. The decision to exclude construction-related employment was based on two factors.

First, delays are typical in such large-scale projects. Any problems obtaining permits, negotiating leases and rights-of-way, obtaining financing and fighting anticipated court challenges by pipeline opponents in both the U.S. and Canada will delay the project. Industry experts note that all could push construction startup past 2016.

Second, pipeline construction will mimic a business cycle, affecting industries and occupations differently during the course of the project. Pre-construction activities will employ significantly different occupations than will the construction phase. The odds of accurately predicting at what stage the project might be in during 2016 are low. Potentially worse would be including very specific – and relatively short-lived – pipeline

employment in our projections, yielding unrealistic long-term trends.<sup>1</sup>

These projections, however, do include construction and maintenance of Alaska's infrastructure related to pipeline construction. Repairs and upgrades to roads and bridges, for example, are needed before transporting materials and equipment on Alaska highways. Those infrastructure projects can be accomplished without the potential delays associated with pipeline construction, and are forecasted to occur during the 2016 projection's time frame.

## Population and growth

Population and employment is often characterized as a "chicken or egg" relationship – does employment

drive population increases, or vice versa? In certain industries population is a driving force behind employment growth. The most obvious population-to-employment connection is in health care, though retail trade is another good example. These employment projections use demographic projections published in *Alaska Population Projections, 2007-2030*.<sup>2</sup>

## Additional assumptions

While gas pipeline construction was excluded in our assumptions, the important role of oil and gas in Alaska's economy was incorporated. Forecasts for oil production, and oil prices, taxes and royalty revenues were all factored into the employment projections. Seafood harvest and

<sup>1</sup> Once plans for development of a gas pipeline in Alaska solidify, the Alaska Department of Labor and Workforce Development will review the project's schedule, scope and related employment impacts, and will present that information in a future *Trends* issue.

<sup>2</sup> *Alaska Population Projections, 2007-2030*, like this article, is prepared by the Alaska Department of Labor's Research and Analysis Section. *Alaska Population Projections, 2007-2030* is available online only, at Research and Analysis' Web site, laborstats.alaska.gov.

tourism forecasts were also included.

Time has shown that Alaska's employment patterns parallel those of the U.S. in many industries, and are affected by similar forces. Therefore, many U.S. economic indicators and forecasts were considered in the creation of these Alaska projections as well.

### Employment by industry in 2016

While average growth is expected to be 14 percent for the economy as a whole, some industries will outperform that growth, and others won't. Continuing its recent trend, the health care and social assistance industry is projected to outperform the average growth with nearly 25 percent growth. (See Exhibit 1.)

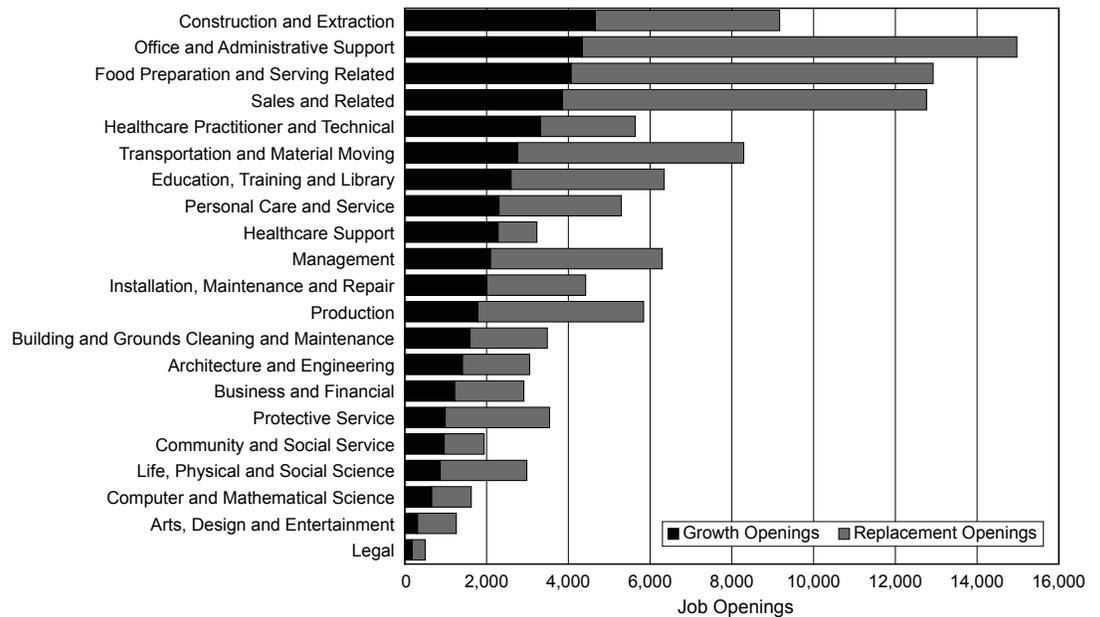
Two other industries are projected to grow slightly faster – utilities at nearly 28 percent and professional, scientific and technical services at 25 percent – but the size of the health care industry means employment gains in that industry will more than double the gains in any other industry. (See Exhibit 2.) Other industries posting well above average gains include mining, and arts, entertainment and recreation.

Underperforming industries include government, manufacturing and information services. The agriculture-related industries, historically dominated by the forestry and logging industry, will continue to see declines over the forecast period.

### Divining and dividing the jobs

The industry employment estimates and projections provide the base on which occupational employment projections are derived. For each

## Job Openings by Occupational Category Alaska, 2006 to 2016 **3**



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

industry, an estimate of the number of workers in each occupation employed in that industry is applied to the 2006 estimates.

Because the demand for workers with various skills changes, those demand forces must be factored into the projections.<sup>3</sup> Some occupations in high demand today didn't exist a generation ago, and some occupations today are experiencing significant employment declines. For example, many computer-related occupations are consistently near the top of the fastest-growing occupations, while occupations like filing clerks have had dramatic declines.

### Growing occupational categories

Construction and extraction, which includes many of the mining-related occupations, is projected to create the greatest number of newly created jobs. Office and administrative support, food preparation and serving, and sales occupations follow close behind. (See Exhibit 3.)

Further down the list come occupational cat-

<sup>3</sup> For more information on the methodology and data used for these projections, see the methodology sidebar at the end of the article.

# 4 Growing and Declining Occupations Alaska, 2006 to 2016

| Fastest-Growing Occupations                                   |         |                    |
|---|---------|--------------------|
|   | Percent | Number of Openings |
| Network systems and data communications analysts              | 46.1%   | 140                |
| Medical assistants  | 41.5%   | 430                |
| Environmental engineering technicians                         | 36.4%   | 170                |
| Nursing aides, orderlies and attendants                       | 35.5%   | 860                |
| Home health aides   | 35.3%   | 830                |
| Pharmacy technicians  | 35.2%   | 300                |
| Personal and home care aides                                  | 34.6%   | 1,210              |
| Pharmacists   | 33.7%   | 150                |
| Physical therapists   | 33.6%   | 140                |
| Interviewers, except eligibility and loan                     | 32.4%   | 50                 |
| Respiratory therapists  | 32.2%   | 70                 |
| Millwrights   | 31.5%   | 70                 |
| Registered nurses   | 31.4%   | 2,310              |
| Physician assistants  | 30.7%   | 160                |
| Recreational therapists                                       | 30.5%   | 60                 |
| Declining Occupations   |         |                    |
|   | Percent | Number of Openings |
| File clerks   | -39.7%  | 170                |
| Computer operators  | -26.4%  | 30                 |
| Mail clerks and mail machine operators, except postal service | -21.9%  | 40                 |
| Order clerks  | -13.1%  | 80                 |
| Floral designers  | -12.9%  | 30                 |
| Word processors and typists                                   | -12.8%  | 30                 |
| Radio and television announcers                               | -9.9%   | 70                 |
| Switchboard operators, including answering service            | -9.1%   | 40                 |
| Editors   | -6.2%   | 30                 |
| Title examiners, abstractors and searchers                    | -5.6%   | 20                 |
| Loan interviewers and clerks                                  | -4.5%   | 50                 |
| Crossing guards   | -3.6%   | 90                 |
| Data entry keyers   | -3.2%   | 110                |
| Ushers, lobby attendants and ticket takers                    | -2.9%   | 150                |
| Postmasters and mail superintendents                          | -2.4%   | 40                 |

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

egories reflecting the growth in the health care related industries – doctors, therapists and nurses in the healthcare practitioner and technical category, and various health aides and assistants in healthcare support. Given Alaska’s vast size and the need to move goods both into and out of the state, transportation and material moving openings are expected to remain high.

Job seekers are usually better served focusing on available openings for an occupation, which combines growth and worker replacement

openings.<sup>4</sup> Using that broader measure of worker demand, administrative support, food preparation and serving, and sales occupations are expected to provide the largest number of total job openings through 2016. Those three occupational categories, which represent many entry-level jobs, are growing rapidly, but the majority of their openings are created through job replacement.

## High growth and large employment create biggest opportunity

Small occupational categories with relatively low growth can provide good employment opportunities. For example, although the architecture and engineering, and computer and mathematical science categories will create few new job openings, the detailed occupations of network systems analysts and environmental engineering technicians hold two of the top three spots as Alaska’s fastest-growing occupations. (See Exhibit 4.)

Still, size matters. Rapidly growing occupations with small employment will provide only a limited number of openings. While it’s projected that there will be 140 openings for network systems analysts during the decade, the number of openings for registered nurses will be more than 16 times that amount.

Those occupations concentrated in industries with both large employment and rapid growth will provide many of the employment opportunities in the future. Of the 15 fastest-growing occupations, two-thirds are directly related to providing health care services, a large and rapidly growing industry.

If large employment and rapid growth in an industry are linked to better-than-average occupational growth, do declining occupations tend to fall into small, slowly growing industries? Not necessarily.

<sup>4</sup> Replacement shouldn’t be confused with turnover. A replacement opening is created when a worker leaves an occupation to pursue another occupation, or leaves the work force. If a worker leaves one job for another within the same occupation, that’s worker turnover, but no replacement opening has been created.

Declining occupations can be found across both large and small industries. Their declines often reflect changes in technology and the way the jobs are performed. Occupations required in a paper-based society are projected to continue to decline. Various clerical positions, such as workers who file, distribute mail or process orders, as well as word processors, typists and editors, are being pinched through job losses.

Workers operating older technology equipment, such as switchboard operators/answering service workers and computer operators – the people who previously operated large computer systems – are seeing employment opportunities vanish with the onslaught of cell phones, PDAs and personal-computer based networks. Job replacement openings will provide the only employment opportunities in those areas.

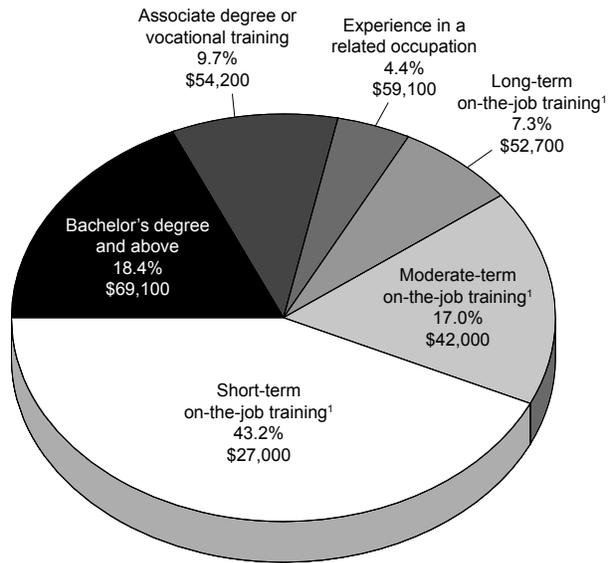
## Jobs, education and pay

Sure, 60 percent of projected openings will require less than a year of on-the-job training. (See Exhibit 5.) As entry level and seasonal employment opportunities, those jobs provide both income and valuable experience to Alas-

# Education and Training Levels

## Percentage of total openings, 2006 to 2016

# 5



Note: The dollar amounts are average annual wages as of May 2007, weighted by employment.

<sup>1</sup> For occupations requiring on-the-job training, which may include classroom time: short-term training is a month or less, moderate-term is one to 12 months, and long-term is more than 12 months.

Sources: Alaska Department of Labor and Workforce Development, Research and Analysis Section; U.S. Department of Labor, Bureau of Labor Statistics

## Methodology Notes

Industry and occupational employment estimates and projections for Alaska are developed every other year. The projections process consists of four principal steps:

### Step 1

Developing industry employment totals for the base year and industry employment estimates for the projected year. (Projections are a function of several factors, including national and local area trends in industry employment, population, personal income and the statewide economic outlook.)

### Step 2

Collecting and analyzing employment data provided by Alaska employers in their quarterly unemployment insurance tax filings. (That

information provides a picture of the number and types of occupations occurring within an industry, and the staffing pattern for each industry.)

### Step 3

Applying those occupational staffing patterns to the industry employment totals to produce base-year occupational employment estimates. In turn, expected staffing pattern changes are applied to the base-year pattern. The modified staffing patterns are then applied to projected industry employment levels to obtain projected occupational employment levels.

### Step 4

Applying replacement rates to the projected occupational employment levels and adding growth to

obtain estimates of occupational openings.

## Important changes in the methodology

The methodology used to project occupational employment in 2016 departs from prior projections, with two major changes. The first involves the use of Alaska's Occupational Database, or ODB, to estimate industry staffing patterns. The ODB replaces the previously used Occupational Employment Statistics survey, or OES.

The OES survey provides detailed staffing patterns for surveyed companies and also collects data on hourly wages paid. However, only a small number of Alaska employers are surveyed.

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kans. While many of those jobs offer only low pay, some provide either high wages, the ability to earn a good paycheck by working extensive overtime hours, or both.

Still it can't be denied: education pays. Pursuing an associate degree or continued vocational training allows job seekers to compete for jobs paying twice as much on average as jobs requiring only short-term on-the-job training. In addition, those jobs are normally less vulnerable to seasonality, providing a more stable stream of income than many jobs requiring less training or experience.

### The rest of the story

During the 10 years of the projections, employment gains of nearly 14 percent are predicted

for Alaska. That translates into an increase of nearly 44,000 new jobs. Replacing workers who leave an occupation will provide more than 74,000 additional employment opportunities in the state.

*Additional information about all occupations can be found on Research and Analysis' Web site at [laborstats.alaska.gov](http://laborstats.alaska.gov). In the blue bar on the left, click on "Occupational Information," then "Occupational Forecast" for 2006 and 2016 employment estimates, the number of growth and replacement openings, growth rates, links to other occupational data, help with understanding the methods used and what the data means, plus links to other data produced by Research and Analysis.*

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The ODB contains information on more than 90 percent of employees in the state. Because the ODB relies on self-reporting from employers, there may be some loss of detail in staffing patterns compared to the more closely edited OES survey.

Even so, many in the field think the ODB provides a more realistic picture of Alaska's industry staffing patterns.

Also, these projections don't include any estimates for the self-employed or unpaid family members working in an establishment. Previous projections included those workers.<sup>1</sup>

At the national level, the U.S. Department of Labor's Bureau of Labor Statistics estimates the number of those workers in each occupation, and applies a self-employment factor to

<sup>1</sup> Those workers aren't covered by the state's unemployment insurance program.

### Methodology Notes

each state's estimate of its covered employment.

State-specific estimates aren't available, so any differences in self-employment patterns among the states aren't represented in the states' projections.

The BLS definition of self-employment has changed over the years, including a major change in the 2004-2014 projections.

In prior projections, a person would have to get the majority of his or her income from self-employment to be considered self-employed.

In 2004, if a person received any income from self-employment, then he or she was included in the self-employment estimates for that occupation.

It's impossible to know how well BLS' national self-employment estimates

model self-employment in Alaska. Because of that uncertainty, self-employment estimates have been removed from these 2006-2016 projections.

More information on the methods, definitions and concepts of Alaska's occupational and industry employment projections is available at [laborstats.alaska.gov](http://laborstats.alaska.gov), the Alaska Department of Labor and Workforce Development's Research and Analysis Section Web site. Go to the blue bar on the left and click on "Industry Information" and "Occupational Information."