

ALASKA NONAGRICULTURAL EMPLOYMENT TRENDS: 1978 THROUGH MID-1983

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Nonagricultural wage and salary employment is the most important single measure of economic activity at the state level. Gross National Product, the most important national measure, is not generally available for states. Due to a data processing problem, actual counts of Alaska nonagricultural employment were delayed. The data processing problem was corrected, and the actual counts have now been brought up to date. This article describes the methodology used to estimate nonagricultural employment, analyzes the newly available employment data, and discusses the accuracy of employment estimates and forecasts.

Methodology for Estimating Nonagricultural Employment

Actual counts of nonagricultural employment are derived from unemployment insurance records in a program referred to as ES-202. The actual counts are normally delayed six to nine months.

The nonagricultural employment estimates published in *Alaska Economic Trends* lag one month. Normally, estimates for which actual counts have become available are replaced each January, and succeeding estimates are adjusted to reflect the more accurate actual counts. This replacement and reestimation process is referred to as "benchmark".

This process broke down when the actual counts were delayed 24 months rather than the usual six to nine months. The estimates in *Alaska Economic Trends* became increasingly less reliable as the benchmark correction process was delayed due to unavailable actual counts. The crucial period affected by the data processing breakdown was January 1981 through July 1983. The extremely rapid growth of the Alaska economy during this period exacerbated the estimation problem.

A special benchmark was done in September utilizing newly available actual counts. The nonagricultural employment series are now up to date. The remainder of this article analyzes these newly available data.

Employment Trends 1978-1983

Table 1 lists annual average employment for the years 1978 through 1983. (1983 is an average through August only.) Table 2 lists percentage changes in employment for each year. (1983 is compared to the corresponding period in 1982.)

In 1980 the Alaska economy began a period of robust growth which is currently continuing. The primary cause of this growth is State expenditure of oil wealth. State expenditures induce a characteristic pattern of industry growth, typified by extremely rapid construction expansion, rapid State employment expansion, and rapid, broad-based expansion in the secondary industries. This compositional pattern is evident throughout the boom period. In addition, more ephemeral economic events have had a strong influence in particular years.

As indicated in Table 2, 1979 was the second and final year of the post-pipeline lull in the Alaska economy. Sharp declines in construction and seafood processing employment were almost balanced by increases in state and local government employment.

The current boom began in 1980, when employment expanded by 7.0%. The pattern of industry growth caused by increasing State expenditures began to emerge. This transitional year saw a 30.5% increase in construction employment and 8.0% increase in services employment, a major secondary industry. State government and the other secondary industries did not join in the expansion, however.

Three factors unrelated to state spending made important contributions to 1980 growth. Oil and gas employment grew 15.5%. This was partially the result of a nationwide boom in oil and gas following the 1979 oil price increase. Seafood processing employment almost doubled, due to strong salmon and crab harvests. 1980 also saw strong demand for Alaska logs, cants and pulp, boosting employment. While these factors were important generators of employment growth in 1980, they were anomalies which have not had a continuing impact.

The State spending-induced growth pattern became firmly established in 1981, the peak year for employment expansion during the 1978-1983 period. Construction employment increased by 20.9%, State government employment by 7.6%, local government employment (strongly influenced by State funding) by 10.2%, and the secondary industries by 13.2% (trade), 9.5% (services), and 7.2% (finance, insurance, and real estate). Augmenting this State spending-induced growth was a 32.1% increase in oil and gas employment. 1981 was the second and final year of petroleum expansion following the 1979 price hike.

During 1982 and the first eight months of 1983, employment growth continued, due almost entirely to State spending and its indirect effects. Declines in fish processing, lumber and pulp, and oil and gas employment were overwhelmed by expansion in construction, state government, trade, services, and finance, insurance and real estate.

Table 1
Annual Average Nonagricultural Employment
1982 Benchmark (Completed 9/83)

	1978	1979	1980	1981	1982	1983 1/
Total	162,492	159,430	170,525	186,111	199,508	209,500
Mining	5,517	5,606	6,671	8,915	8,977	8,200
Oil and Gas	5,138	5,321	6,146	8,117	8,221	7,500
Construction	12,150	8,177	10,672	12,901	16,780	18,000
Manufacturing	11,398	9,475	14,105	13,971	12,649	13,900
Food and Kindred	6,207	4,069	7,966	8,115	6,935	8,100
Lumber and Pulp	2,861	2,965	3,482	3,164	2,883	2,800
Other Manufacturing	2,330	2,441	2,657	2,692	2,831	3,000
Trans. Comm. & Utilities	16,240	16,508	17,156	18,249	18,399	18,800
Trade	28,609	28,914	29,314	33,194	37,547	41,100
Wholesale	5,718	5,310	5,538	6,449	7,206	7,800
Retail	22,891	23,604	23,776	26,745	30,341	33,300
Finance-Ins. & R. Estate	8,617	8,149	8,134	8,723	9,562	10,500
Services	28,387	27,924	30,154	33,021	35,964	38,600
Government	51,575	54,697	54,319	57,136	59,630	60,500
Federal	18,117	17,597	17,981	17,479	17,642	17,400
State	14,376	15,298	15,406	16,583	17,995	19,100
Local	19,083	21,802	20,932	23,074	23,993	23,900

1/ First eight months, average monthly estimated employment.

State spending influences economic expansion in a variety of ways. State employment increases and massive State construction funding are the most obvious. The secondary industries are stimulated directly by State purchases and subsidized business loans, and indirectly by Permanent Fund dividends, tourism advertising, and processing of State-subsidized home loans, to mention a few mechanisms.

State spending-induced employment growth, in combination with the recession in the rest of the U.S., resulted in rapid population growth in Alaska. This population growth is in itself a major stimulus to the economy. Increasing population allows more goods and services to be provided locally, boosting secondary industry employment.

The current boom will likely enter a plateau phase sometime in late 1984 or

Table 2
Percentage Change in Annual Average Nonagricultural Employment
1982 Benchmark

	78-79	79-80	80-81	81-82	82-83 1/
Total Nonagricultural	-1.9	7.0	9.1	7.2	6.2
Mining	1.6	19.0	33.6	0.7	-12.3
Oil and Gas	3.6	15.5	32.1	1.3	-12.6
Construction	-32.7	30.5	20.9	30.1	14.6
Manufacturing	-16.9	48.9	-1.0	-9.5	5.8
Food and Kindred	-34.4	95.8	1.9	-14.5	8.2
Lumber and Pulp	3.6	17.4	-9.1	-8.9	-1.5
Other Manufacturing	4.8	8.8	1.3	5.2	6.9
Trans. Comm. & Utilities	1.7	3.9	6.4	0.8	2.2
Trade	1.1	1.4	13.2	13.1	11.9
Wholesale	-10.3	4.3	16.4	11.7	9.4
Retail	3.1	0.7	12.5	13.4	12.5
Finance-Ins. & R. Estate	-5.4	-0.2	7.2	9.6	11.8
Services	-1.6	8.0	9.5	8.9	8.2
Government	6.1	-0.7	5.2	4.4	2.9
Federal	-2.9	2.2	-2.8	0.9	-1.7
State	6.4	0.7	7.6	8.5	8.5
Local	14.2	-4.0	10.2	4.0	1.7

1/ Percentage change, first eight months 1983 average estimated employment from corresponding period in 1982.

1985. As State expenditures decline as a result of diminished oil revenue the impetus for growth will fade.

1981 Estimation Error

The employment estimates which appear in *Alaska Economic Trends* are based on a sample of employers and/or analyst judgement. In some industries the sample, which is voluntary, is either nonexistent or very small. For this reason, the estimates are subject to error. Table 3 lists the percentage error of the employment estimates for 1982.

The first column lists the estimates as they originally appeared in *Alaska Economic Trends*. At the time these estimates were made actual counts of employment were available only through June 1980. The second column lists the estimates as they were revised following availability of actual counts through June 1981. These estimates appeared as appendix tables in

Table 3
1982 Annual Average Employment
1980 and 1981 Benchmark Estimation Error

	1980 1/ Benchmark	1981 2/ Benchmark	1982 3/ Benchmark	% Error 1980 Benchmark	% Error 1981 Benchmark
Total Nonagricultural	188,300	194,400	199,508	-5.6	-2.6
Mining	8,300	9,100	8,977	-7.5	1.4
Oil and Gas	7,500	8,200	8,221	-8.8	-0.1
Construction	14,600	14,500	16,780	-13.0	-13.6
Manufacturing	10,400	11,100	12,649	-17.8	-12.2
Food and Kindred	4,900	5,700	6,935	-29.3	-17.8
Lumber and Pulp	2,500	2,700	2,883	-13.3	-6.3
Other Mfg.	3,000	2,700	2,831	6.0	-4.6
Trans. Comm. & Util.	18,500	18,400	18,399	0.5	0.0
Trade	33,600	35,600	37,547	-10.5	-5.2
Wholesale	6,700	7,100	7,206	-7.0	-1.5
Retail	26,900	28,500	30,341	-11.3	-6.1
Fin.-Ins. & R. Estate	9,200	9,400	9,562	-3.8	-1.7
Services	33,800	35,000	35,964	-7.1	-2.7
Government	60,400	61,200	59,630	1.3	2.6
Federal	17,800	17,900	17,642	0.9	1.5
State	17,600	17,900	17,995	-2.2	-0.5
Local	24,900	25,400	23,993	3.8	5.9

1/ 1980 Benchmark estimates were based on actual counts through 6/80.

2/ 1981 Benchmark estimates were based on actual counts through 6/81.

3/ 1982 Benchmark data are actual counts through 12/82.

the March 1983 issue of *Alaska Economic Trends*. The third column lists the actual counts derived from unemployment insurance payment records. The fourth and fifth columns list the percentage error of the estimates.

As can be seen in Table 3, the lack of actual counts resulted in large estimating errors for some industries. In general, industries which expanded rapidly during 1980-1982 were underestimated, in some cases substantially. Industries which were more stable, such as federal government and transportation, communication, and utilities, had small estimation errors. This results partially from the estimating methodology, which is vulnerable to underestimation during periods of rapid expansion, and to excessively conservative analyst judgement.

Table 4
1982 Employment Forecasts
Percentage Change, 1981 to 1982 Annual Averages

	Alaska Pacific Bank 1/	Office of Management & Budget 2/	Department of Labor 3/	Actual Count
Total Nonagricultural	5.0+%	5.0%	4.4%	7.2%
Mining		7.4	11.1	0.7
Construction		8.6	7.3	30.1
Manufacturing		9.8	4.6	-9.5
Trans. Comm. & Utilities		4.6	2.3	0.8
Trade		5.5	4.4	13.1
Finance-Ins. & R. Estate		7.7	3.6	9.6
Services		3.4	5.1	8.9
Government		3.3	3.2	4.4

1983 Employment Forecasts

	Alaska Pacific Bank 4/	Office of Management & Budget 5/	Department of Labor 6/	First 8 Months Estimates
Total Nonagricultural	2.0%	1.9%	4.8%	6.2%
Mining		7.2	8.6	-12.3
Construction	0.0	-2.9	1.4	14.6
Manufacturing		5.9	11.5	5.8
Trans. Comm. & Utilities		2.1	4.9	2.2
Trade		2.4	4.5	11.9
Finance-Ins. & R. Estate		0.0	3.2	11.8
Services		3.0	5.7	8.2
Government		0.0	3.3	2.9

Footnotes:

1/ *Alaska Business Trends, 1982 Economic Forecasts*; (publishing date not given); Alaska Pacific Bank.

2/ *AEIRS Quarterly Report, October 1981*; Alaska Office of the Governor, Division Budget and Management.

3/ *Alaska Annual Planning Information 1982*; January 1981; Alaska Department of Labor, Research and Analysis.

4/ *Alaska Business Trends, 1983 Economic Forecasts*; (publishing date not given); Alaska Pacific Bank.

5/ *AEIRS Quarterly Report, November 1982*; Alaska Office of the Governor, Division of Budget and Management.

6/ *Alaska Annual Planning Information 1983*; January 1982; Alaska Department of Labor, Research and Analysis.

Forecast Error-1982-83

Several organizations publish forecasts of Alaska nonagricultural employment on an ongoing basis. Table 4 compares actual employment counts for 1982 and current employment estimates for the first eight months of 1983 to forecasts for 1982 and 1983. The forecasts were made by Alaska Pacific Bank, Office of the Governor (Division of Management and Budget), and Alaska Department of Labor. In all cases, the forecasts listed are one year ahead forecasts expressed as percentage change in annual average employment.

The forecasts for 1982 were consistently low, although not by a large margin. If estimates for the first eight months of 1983 are indicative of what the actual counts for the entire year will be, the under-forecasting problem became worse for 1983 forecasts. In general, economists have misjudged both the strength and duration of the current boom.

Two factors obviously contributed to this forecast error. The delay of actual employment counts contributed to the substantial underestimation of employment noted earlier. The low estimates contributed in turn to low forecasts. Additionally, many economists thought that declining oil prices would quickly effect the Alaska economy. As has now become clear, only the oil and gas industry was quickly affected. State expenditures, which are driving growth, are affected by declining revenues only after a substantial lag. At the time of this writing, almost two years after oil prices began to decline, State expenditures appear to be largely unaffected by revenue declines. (See "Cash-on-the-Street" article in September, 1983 *Alaska Economic Trends*).

Summary

A data processing problem delayed the availability of actual counts of Alaska nonagricultural employment. Due to this delay, substantial error resulted in employment estimates. This underestimation of employment contributed to uniformly low forecasts.

The data processing problem was corrected, and actual counts are now up to date. A much clearer picture of Alaska's recent economic growth is now available. Estimates, and perhaps forecasts, should be subject to less error now that actual counts are available.
