

## Alaska geography makes it an important sector

**N**early 19,000 wage and salary employees work in Alaska's private sector transportation and warehousing industry. This is more than construction, oil, information, and a number of other industries. (See Exhibit 1.) Fourteen of the state's top 100 private sector employers are involved in transportation. The industry generates more than \$3.3 billion in annual revenues. Public sector transportation is also important and includes the high profile Alaska Marine Highway and Alaska Railroad. Impressive as these facts may be, the real value of transportation lies in its contributions to the rest of

the economy. Transportation weaves the web that ties Alaska's economy together and binds it to the world.

### It's big and it's inter-modal

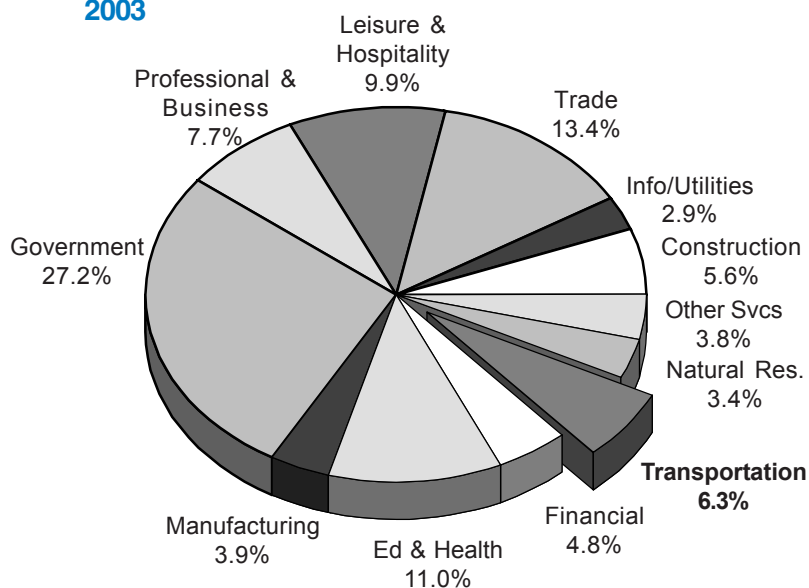
Six percent of all Alaska's private sector wage and salary workers are employed in transportation versus three percent in the country as a whole. (See Exhibit 2.) Geography is a principal reason for this disparity. What would involve a single delivery vehicle in most of the nation often requires a truck, ship, airplane and four-wheeler in Alaska. It is almost as if the term inter-modal transportation were coined for Alaska! There are very few cases in this state where a good is shipped and arrives at its destination via a single mode of transport.

### An interesting history shapes the industry

Alaska's size, geography and weather, as well as its isolation from the rest of the nation, help explain its unique transportation network. History also plays a role.

Prior to European contact, Alaska's indigenous people used sea-going canoes, kayaks, skin boats, river canoes, rafts, walking trails, sleds, and dog teams. During the Russian period sailing ships and some primitive ports were added to this rudimentary infrastructure. Soon after Alaska was acquired by the United States, steam replaced sail but little else changed. In the early 20<sup>th</sup> century a congressional committee found that there was "not to be found a single wagon road over which vehicles can be drawn summer or winter" in Alaska.

## 1 Transportation's<sup>1</sup> Share Of Alaska wage and salary employment 2003



<sup>1</sup> Private sector transportation only

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

After World War I a series of events and innovations altered this framework. The arrival of the airplane in the early 1920s, the completion of the Alaska Railroad in 1923, the construction of the Alaska Highway during World War II and major federal support for mail carriers all shaped Alaska's unique transportation system. The introduction of the airplane was probably the single most important event. As one historian succinctly described it, "Alaskans jumped from river traffic and dog sleds to the air, bypassing the automobile entirely."

### Various groupings create the industry

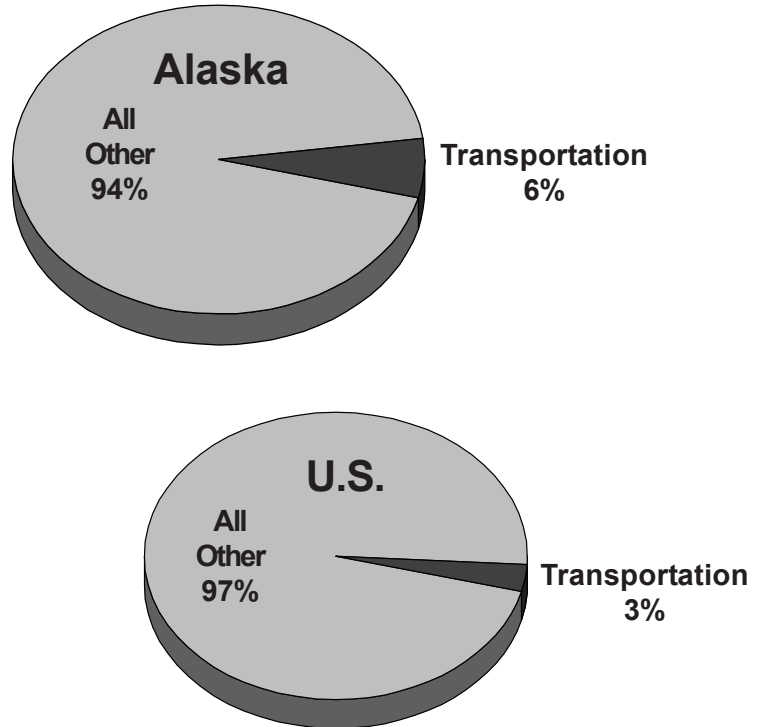
Alaska's transportation industry can be broken down into a number of broad categories. (See Exhibit 3.) Most of these classifications, such as air transportation, trucking, warehousing and water are self explanatory, but others require explanation.

The transit and ground passenger category includes school bus companies, charter buses, special needs transportation, limousine services, taxis and more. Scenic and sightseeing transportation involves recreation and entertainment such as bus tours and whale watching. Couriers include both local delivery services and nationwide employers like Federal Express.

Support activities provide services to all other segments of the transportation industry. Pipelines, although not usually thought of as part of the transportation grid, are another important source of employment. Alaska is also home to the only state-owned railroad in the nation, an enterprise that falls into a unique niche.

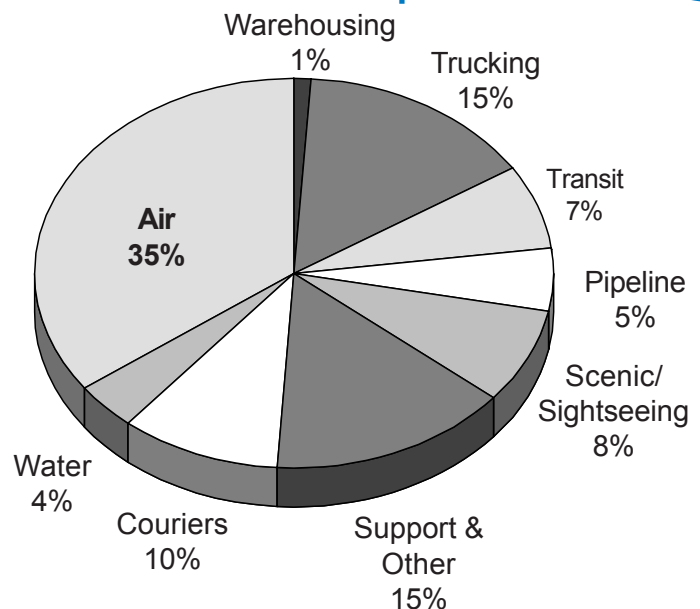
Most transportation operators in Alaska operate in close collaboration with one another and the lines between the various modes of transportation such as trucking, air, and water-borne freight are often blurred. For example, Lynden Transport, one of Alaska's largest transportation firms, is involved in almost all segments of the industry.

## Transportation is Big in Alaska **2** Relative to rest of the nation—2003



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

## Air is the Biggest Sector **3** In Alaska transportation—2003



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

# 4 Transportation Employment And payroll by area—2003

Private sector

	Employment	Payroll
Statewide	18,926	\$851,732,843
Aleutians East Borough	22	n/a
Aleutians West Census Area	266	11,400,242
Anchorage, Municipality	10,180	494,106,461
Bethel Census Area	338	10,242,565
Bristol Bay Borough	100	4,277,026
Denali Borough	341	n/a
Dillingham Census Area	100	2,270,641
Fairbanks North Star Borough	2,381	100,193,377
Haines Borough	110	2,090,632
Juneau Borough	778	25,942,999
Kenai Peninsula Borough	686	21,942,502
Ketchikan Gateway Borough	580	21,895,904
Kodiak Island Borough	221	5,434,447
Lake and Peninsula Borough	46	1,595,488
Matanuska-Susitna Borough	454	12,345,323
Nome Census Borough	269	8,202,620
North Slope Borough	200	19,068,713
Northwest Arctic Borough	108	4,662,091
Prince of Wales Census Area	84	2,913,719
Sitka Borough	207	7,384,294
Skagway-Hoonah-Angoon CA	228	8,224,855
Southeast Fairbanks Census Area	72	5,537,490
Valdez-Cordova Census Area	662	52,597,392
Wade Hampton Census Area	218	n/a
Wrangell-Petersburg CA	99	3,122,595
Yakutat Borough	14	n/a
Yukon Koyukuk Census Area	120	6,416,192
Unknown	41	2,922,457

## Transportation is everywhere

Unlike regionally based industries such as oil and timber, transportation provides employment in every borough and census area in the state. (See Exhibits 4 and 5.) In nearly every community there are jobs in trucking, air transportation and school bussing. Even the relatively small pipeline industry employs people in communities all along the 800-mile trans-Alaska pipeline and beyond.

## A large and growing industry with good wages

In 1990, there were 14,400 jobs in Alaska's transportation industry. By 2003 this number had increased to 18,900. (See Exhibit 6.) Over the past decade employment has grown by 20 percent versus 17 percent for overall employment. (See Exhibit 7.) These similar growth rates are not surprising because transportation is strongly linked to the general economy. Still, two factors gave this industry an extra boost: the growth in international air cargo business and the expansion of the visitor industry. Wages for the transportation industry tend to come in above average. (See Exhibit 8.)

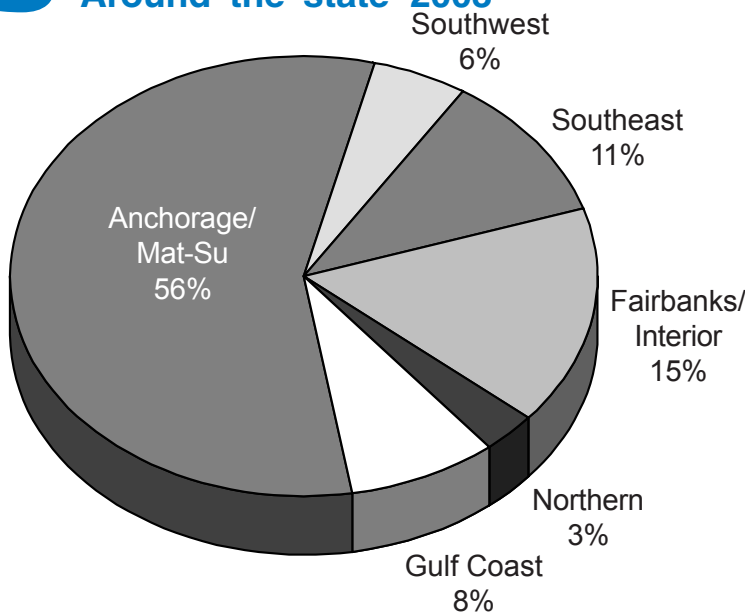
Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

## The public sector has a large role

Public sector transportation is also important and provides much of the state's infrastructure. (See Exhibit 9.) The Alaska Railroad has 769 employees. The Alaska Marine Highway, with 894, is counted as part of the Alaska Department of Transportation's 3,063 employees.

The Federal Aviation Administration and Transportation Security Administration employ 1,450 and 500 workers respectively. While the Coast Guard's 1,562 uniformed and 220 civilian employees are not typically considered part of the transportation industry, one of the primary missions of the Coast Guard is to lend support to the industry. Others actors, both public and private, provide direct support to transportation but are not included in the industry's employment totals. They include job categories such as caterers, customs and security people, some tour operators,

# 5 Transportation Jobs Are Found Around the state—2003



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

and local governments that run harbors and airports, training schools, fuelers, and others.

## Air is biggest in Alaska

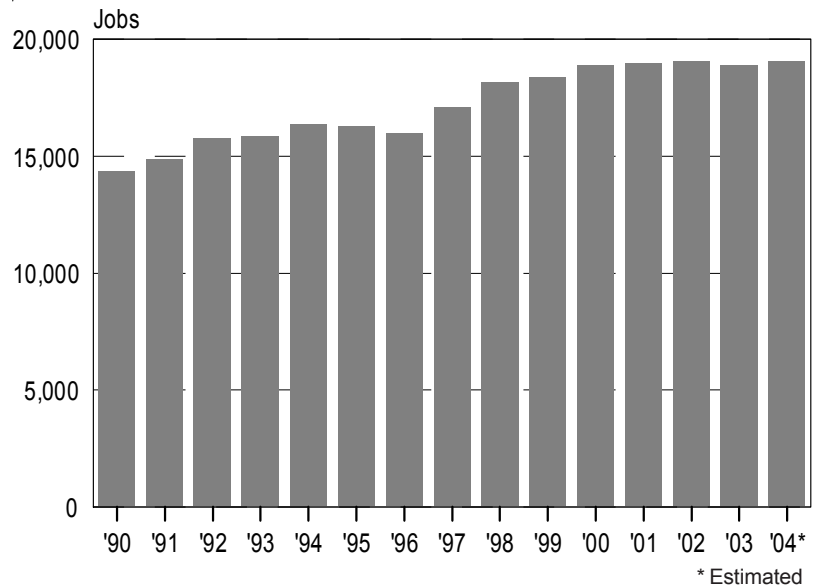
Ever since the first commercial airline in Alaska was established in Ketchikan in 1922, air transportation has left its mark on the state's economy. Today, with only 100 of its 300 communities served by road, air transport remains an essential part of modern Alaska. There are more than 1,100 airports, seaplane bases, and aircraft landing areas as well as more than 3,000 airstrips in the state. More than 8,700 Alaskans hold pilot licenses. Alaskans are 16 times more likely to own a plane than other American citizens. The "average" American flies twice a year compared to the "average" Alaskan, who flies nine times.

Many communities in the state are dependent on air transportation for their very existence. Approximately 30 percent of the state's population and most of its natural resources are not connected to the state's road and ferry systems, according to the Statewide Transportation Policy Plan.

One manifestation of this dependence is the huge role the U.S. Postal Service plays in Alaska's transportation industry. Unlike anywhere else in the nation, nearly all of Alaska's mail finds its way onto an airplane. For many of the state's intra-state air carriers, mail represents the biggest part of their business.

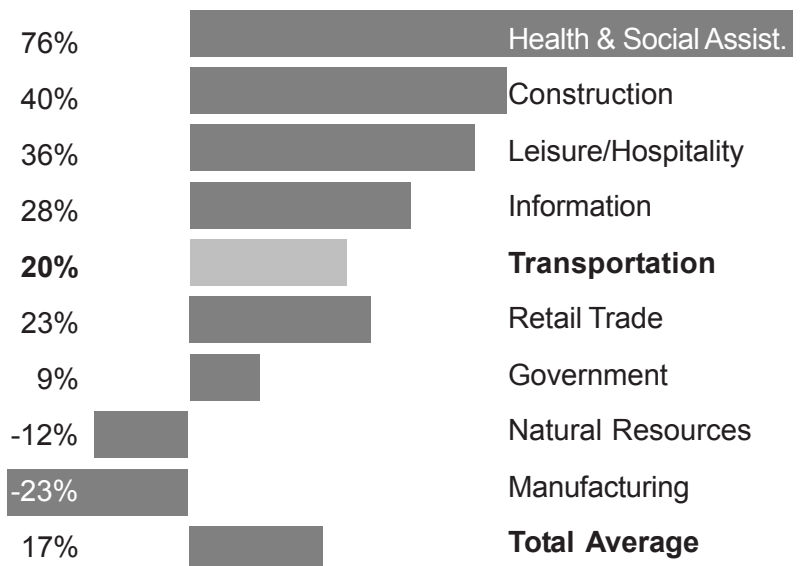
The U.S. Postal Service is mandated to provide "uniform and universal services" to all locations in the country. In Alaska, a unique subsidized program called "by-pass mail" delivers goods to much of rural Alaska. By-pass mail provides the lowest rates for moving most goods, including groceries and other staples, to roadless communities. Nearly all bush residents and businesses utilize this service for most of their freight needs. Without the U.S. mail, Alaska's intra-state air transportation system would be very different and much smaller than it is today. Not only does this service help insure a far-flung passenger carrier network, it also provides a source of jobs to many of Alaska's smaller rural

## 14 Years Steady Growth 6 In Alaska's transportation industry



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

## Transportation Grows Faster 7 Than average from 1993 to 2003



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

## 8 Transportation Earnings Are above average

Average monthly earnings 2003

\$10,666	Oil and Gas
\$4,375	Construction
\$3,866	Prof/Scientific/Tech Svcs.
<b>\$3,750</b>	<b>Transportation/Warehousing</b>
\$3,744	Information
\$3,352	Government
\$3,249	Finance/Insur/Real Estate
<b>\$3,113</b>	<b>Statewide Average</b>
\$2,913	Health Care/Social Assist.
\$2,881	Manufacturing
\$2,120	Retail Trade
\$1,380	Leisure/Hospitality

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

## 9 Public Sector Employers In transportation – 2003

	Average Annual Employment
Alaska Department of Transportation	3,063
Alaska Marine Highway System	894
Federal Aviation Administration (FAA)	1,450
Transportation Security Administration (TSA)	500
Alaska Railroad	769
U.S. Coast Guard (uniformed)	1,562
U.S. Coast Guard (civilian)	220

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section; Alaska Marine Highway System, U.S. Coast Guard

communities where other employment opportunities are scarce.

Air transportation's economic impact was the subject of a study undertaken by the University of Alaska in 2001. The report found that the Ted Stevens International Airport was five times as large as one would expect in a city the size of Anchorage. The research also pointed out that nearly one in every nine wage and salary jobs in Anchorage owes its existence to the airport. It should therefore come as no surprise that the air transportation sector accounts for 35 percent of all transportation employment in Alaska versus 13 percent nationally. (See Exhibit 10.)

International air cargo and tourism are other contributors to air transportation's large role in the Alaska economy. Because Alaska lies equidistant between Europe and Asia, more freight is landed at the Ted Stevens Anchorage International Airport than at any other airport in the nation. (See Exhibit 11.) Fairbanks International Airport also figures in the international cargo arena. According to the University of Alaska, more than a third of all of the jobs generated at the Anchorage airport comes from international cargo. A related fact is that air transportation's employment payroll in Anchorage is seven times the national average.

In addition to the boost from international cargo, air transportation has also benefited from tourism. Approximately 1.4 million visitors came to the state in 2004 and many arrived or left by air. The industry grew by 28 percent between 1998 and 2002. According to a 2004 study produced for the Alaska Department of Community and Economic Development, nearly 13 percent of visitor sales are for the purpose of air travel. The study also found that air transportation accounted for 22 percent of the local value generated by visitor spending.

In 1993, there were 5,800 jobs in air transportation; by 2003 this number had increased to 6,500. This 12 percent increase in air transportation employment was somewhat lower than



# Transportation Compared **10**

## Alaska and U.S. employment—2003

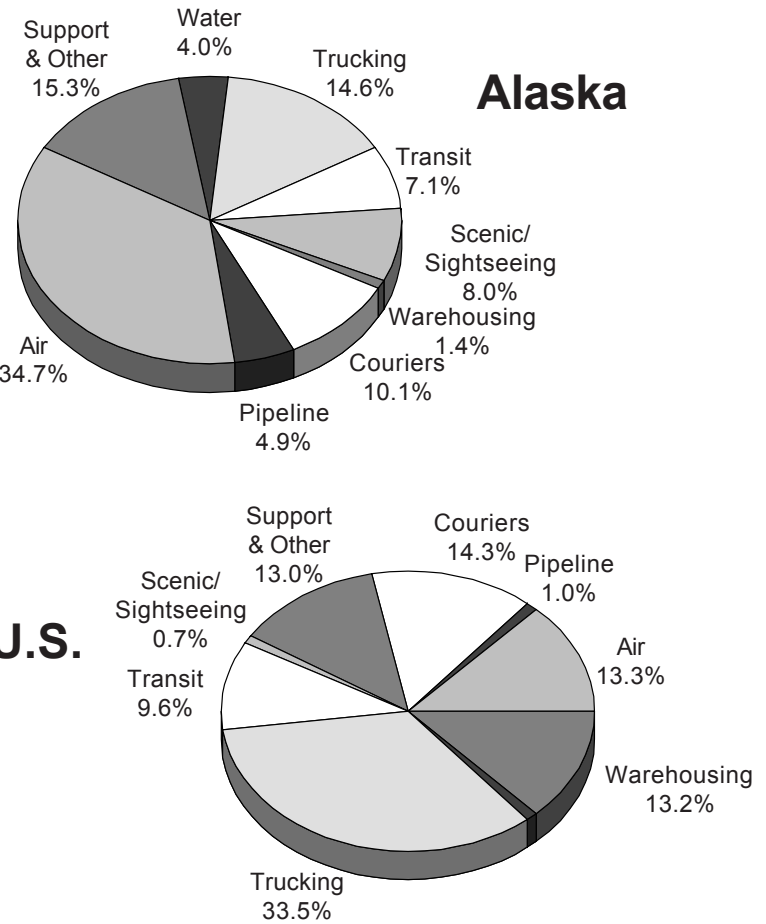
the 20 percent growth experienced by the broader transportation industry and the 17 percent generated by the overall economy.

During the past six years employment in air transportation has grown little compared to the rest of transportation. There are a number of reasons why this growth has lagged. September 11th and its aftershocks put a definite crimp on the industry's growth. The national recession and at least two soft visitor seasons also contributed. High fuel prices remain a challenge and the recent restructuring of the by-pass mail system to favor larger carriers may be playing a role in the current sluggish performance.

As of September 2004, the state's air transportation industry provided over 6,900 jobs. This number represents the employment of all scheduled and nonscheduled air passenger and cargo services as well as charters and airport services, which include things such as repair and maintenance. Six of the state's 50 largest private sector employers are counted in the air transportation industry. (See Exhibit 13.)

In 2003 Congress passed new international cargo transit regulations. These are expected to produce some important advantages over the next two years. As a result, Alaska's airport officials are forecasting annual increases of five to seven percent in international cargo traffic.

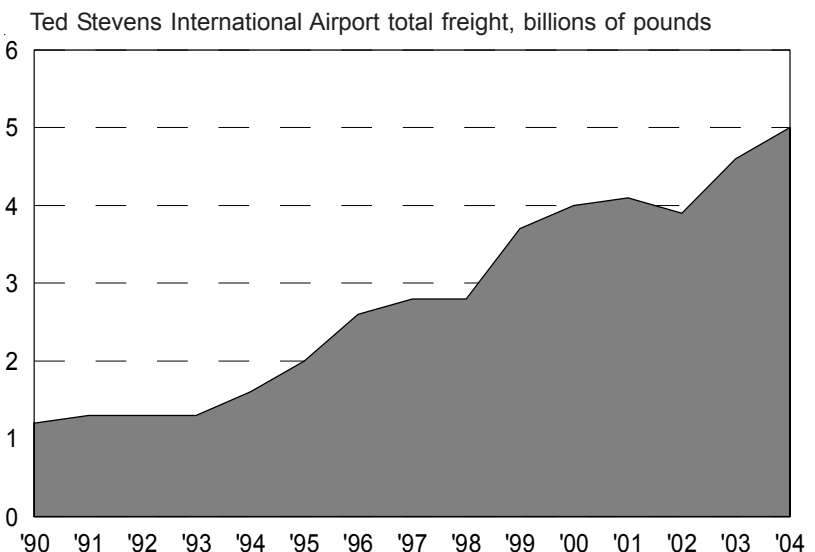
The passenger side of the business also has positive developments. Low cost carriers, such as Frontier Airlines and America West, entered the Anchorage market in 2004 with direct flights to Denver and Phoenix respectively, while the Minneapolis-based carrier Sun Country Airlines doubled its number of summer flights in 2004. The number of Japanese charters doubled from 12 in 2003 to 24 in 2004. Cathay Pacific reentered the Anchorage market in 2004. The company had stopped routing international transit passenger flights through Anchorage in 2003 due to security concerns. Delta Airlines, after an extended absence, is returning to the Fairbanks market in 2005.



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

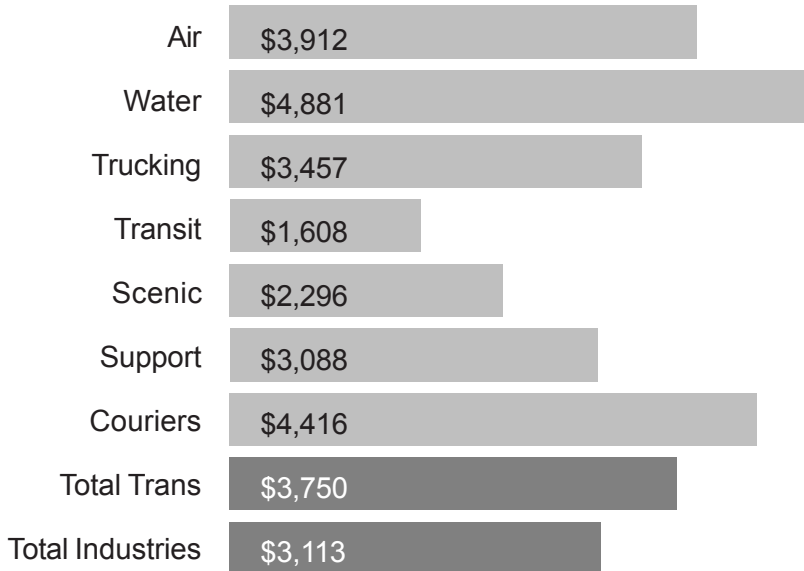
# Air Cargo Helps Diversify **11**

## Alaska's economy



Source: Ted Stevens International Airport

# 12 Average Monthly Earnings Transportation – 2003



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

# 13 Alaska's Top 30 Transportation Private Sector Employers – 2003

Average Annual Employment

Alaska Airlines	1,726
Federal Express	1,094
Alyeska Pipeline Service Company	895
ERA Aviation	617
Northwest Airlines	511
Laidlaw Transit	429
United Parcel Service	409
Peninsula Air Service	398
First Student	384
CSX Lines	354
Carlisle Enterprise	348
Swissport USA	333
Royal Highway Tours	310
Northern Air Cargo	269
Crowley Marine Services	245
Tatonduk Flying Services	238
Westour Motorcoaches	232
CIRI Alaska Tourism	213
Tower Group International	200
Frontier Flying Service	183
Hageland Aviation Services	179
Atlas Air	157
Sea Star Stevedore	152
Grant Aviation	149
Arctic Transportation Service	140
Southeast Stevedoring	137
Lynden Air Cargo	136
Lynden Transport	128
American Fast Freight	118
Evergreen Aviation Ground Logistics	114

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

## Trucking keeps on rolling

Compared to the rest of the nation, trucking's share of transportation employment in Alaska is considerably smaller. Nationwide, the trucking industry employs over a third of all transportation workers. But the rest of the nation enjoys a vast network of interstate highways that connects almost every community and hamlet to the road system.

Alaska is connected to the rest of the nation via the Alaska Highway but it is not part of the extensive interstate highway system. The largest state in the nation ranks 47<sup>th</sup> in terms of highway mileage. Compared to the continental United States where there is one mile of road per square mile of land area, Alaska has a mile of road for every 42 square miles of land.

In spite of this much smaller highway network, trucking represents the third largest segment of the state's transportation workforce. On an annual monthly average there are nearly 2,800 trucking jobs. This count is conservative, because a large number of independent truckers are not included in these wage and salary numbers and many unrelated businesses employ truck drivers that are not tallied in transportation employment. An example is Sysco, which employs nine truck drivers.

The Division of Motor Vehicles reports more than 11,000 commercial trucks of 12,000 pounds or greater registered in Alaska. They are involved in both local and longer haul services. Trucks move much of the freight throughout Railbelt Alaska and also serve Prudhoe Bay via the Dalton Highway. Even in Alaska's smallest communities where most of the freight comes via air or barge, a truck may ultimately deliver the cargo to its final destination. While the amount of freight trucked via the Alaska Highway is usually relatively small, the highway forms a vital link. During the 2002 West Coast port lockout, truck traffic along this route dramatically increased.

Wages in the trucking sector run 11 percent above the state's monthly average for all industries.

(See Exhibit 12.) Employment in trucking has grown moderately, along with the economy, and remains closely tied to the overall economic trends.

### Water transport delivers most of the goods

No other state in the continental U.S. depends on water transportation to the extent Alaska does. Water transportation is one of the smaller transportation sectors in terms of employment but it handles the greatest tonnage of freight coming into the state. Access to water has been a critical factor in the development of the state and has often dictated the location of communities. Even the Interior community of Fairbanks owes its existence to the Chena River. Alaska's 33,900 miles of coastline is far greater than that of the entire Lower 48. Commercial shippers serve this extensive coastline as far north as Prudhoe Bay. The Yukon, Tanana, and Kuskokwim rivers and some of their tributaries are also important shipping routes for communities along these drainages.

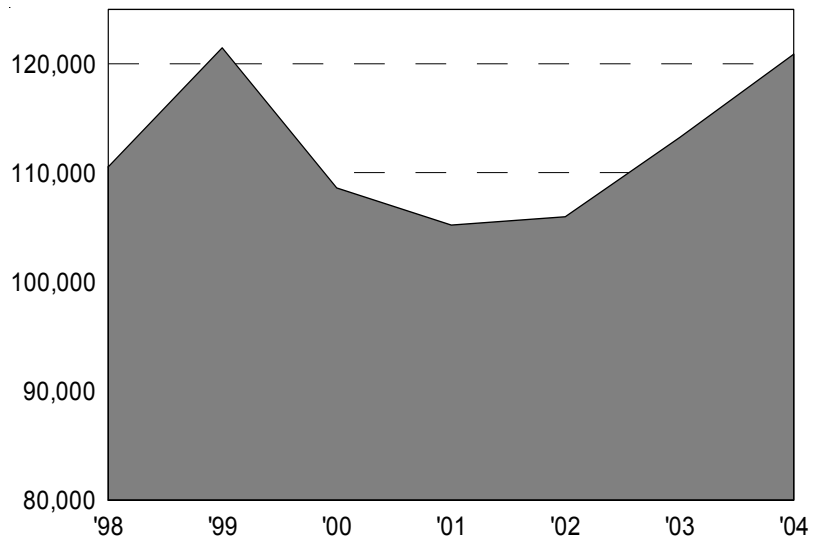
Water transportation employment includes barge workers, shipyard employees, and operators of tug boats, freighters, water taxis, lighterage and other services. It even includes those who operate the hovercraft based in Bethel that supply a number of villages along the Kuskokwim River.

In 2003, there were about 750 jobs in Alaska's water transportation industry. As with trucking, this job count understates the industry's real economic impact. For example, these numbers do not include the Alaska Marine Highway System, which serves 30 different Alaska ports and two outside ports and carries approximately 400,000 passengers per year. The Alaska Marine Highway has a workforce of approximately 894.

Valdez is the state's leading port in terms of tonnage, with oil the major commodity. Anchorage, by contrast, is more diversified and handles 90 percent of all consumer goods sold in the Railbelt. Approximately 80 percent of the state's population rely on goods that cross Anchorage wharves. But water transport is

## Alaska Railroad 14

### Passenger load has fluctuated

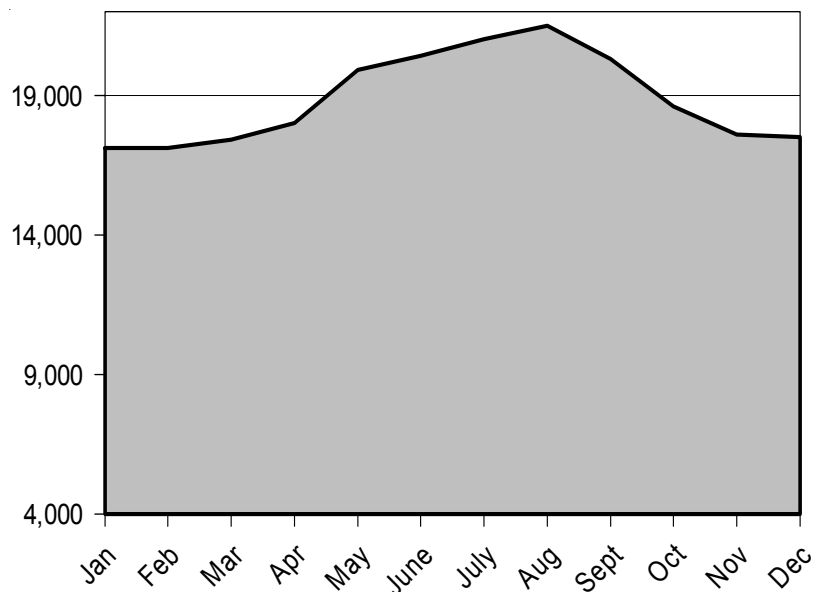


Source: Alaska Railroad

## Transportation Employment 15

### Peaks in summer months

Number of jobs – 2003



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



important nearly everywhere. Southeast Alaska communities are directly served by water transportation, and rely heavily on barge lines for their freight supply. Ironically, the region's thriving cruise ship industry provides little recorded employment in the transportation sector.

### Pipeline transportation is big in Alaska and could get bigger

Alyeska Pipeline Service Company dominates employment in this field. The company is the 17th largest private sector employer in the state and the third largest in the transportation industry. (See Exhibit 13.) These jobs represent some of the highest paying jobs in Alaska's economy.

Unlike most other sectors of transportation, pipeline employment has been falling for nearly a decade. This has been a result of steep production declines and improvements in technology. Alyeska recently announced that it

expects to eliminate approximately 175 positions over the next two to three years, largely as a result of automation. The impact of these cutbacks will register in Valdez, Fairbanks, and Anchorage especially.

While current trends are not encouraging, the construction of a gas pipeline could rapidly reverse this trend in pipeline employment.

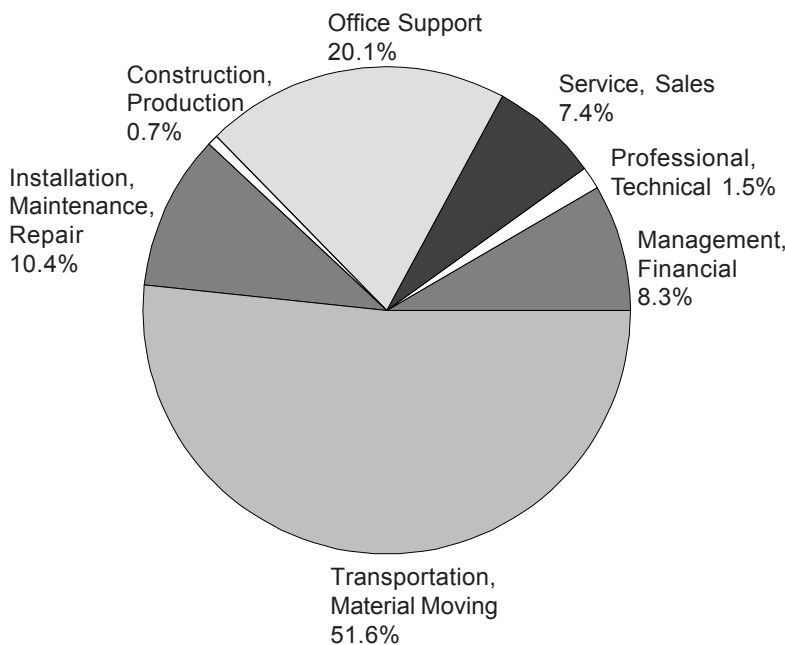
### Tale of two railroads

Over the past 100 years, more than 20 different railroads have operated in Alaska. Today, there are only two: the White Pass and Yukon Railroad, which hauls summer visitors from Skagway to Lake Bennett and Frazier, British Columbia, and the full-service Alaska Railroad that operates year-round in the Seward-Anchorage-Fairbanks corridor.

In 2003, White Pass generated 93 jobs on an annual basis and peak employment reached 115 in July. White Pass was built at the turn of the twentieth century to carry goods into the Klondike and Interior gold fields. In the late 1960s, it began to haul ore from Canada to Skagway. The mine closed in 1982 and the railroad was forced to close down the same year. Then, in 1988 the railroad reopened strictly as a tourist attraction and it has enjoyed steady growth over the past decade. The company's employment is captured under the scenic and sightseeing category.

The Alaska Railroad has had a more far reaching impact on the state's economy. In 1914, Congress passed legislation to buy or build a railroad in Alaska to connect the Interior with an ice-free port and to facilitate the exploitation of coal and mineral deposits. It took nearly 10 years to complete the line running from Seward to Fairbanks. A by-product of this transportation project was the establishment of Anchorage. In 1985, the state bought the railroad from the federal government and the Alaska Railroad Corporation was formed. Today, the railroad employs 769 people, making it the eighth largest transportation employer in the state and the only full service railroad in the nation. The largest number of workers live in Anchorage, Fairbanks, and Seward but employees also live in Wasilla, Talkeetna, Healy,

## 16 The Staffing Pattern Alaska transportation – 2002



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

and elsewhere. It is a state-owned enterprise, so employment is recorded under state government.

The Corporation has some ambitious plans for the future that may include commuter passenger service between the Matanuska Valley, Anchorage, and Girdwood. Major rail line realignment that will make this possible and which will speed train traffic is underway. The possibility of a 90-mile track connecting Fairbanks with Delta Junction is being explored, and new inter-modal facilities are planned for both Fairbanks and Anchorage.

### **Couriers and messengers**

Federal Express and United Parcel Service employees are counted in this category. Nationally these companies derive most of their business from package and parcel delivery. In Alaska most of their activity deals with international air cargo. Without these major companies, courier services would be a very small part of the state's transportation industry.

### **Support activities for transportation are significant**

Included in this category are the employees of ports and harbors, cargo handling, navigational services, towing services, private air traffic control, fueling, and other support services. It is not surprising that some of the larger companies in Alaska, like Southeast Stevedoring Company, support water transportation.

### **Transit rides in school buses**

Over three quarters of all transit employment is based on the operation of school buses (76 percent). First Student and Laidlaw are the major employers in this industry. Transit also includes shuttle services, limousine services, charter bus companies and others.

## **Warehousing**

Although warehousing is included in the overall title of Transportation and Warehousing, it accounts for very little employment. In fact, less than two percent of transportation's employment is directly tied to this segment of the industry. This does not mean there is a shortage of warehousing facilities in Alaska. Most warehousing operations are owned and run by companies such as airlines, wholesalers, trucking firms, and the like. Employees of these firms are reported in appropriate industrial categories, but this probably results in understated warehouse totals. The largest company among the warehousing group is American Fast Freight.

## **Scenic and sightseeing**

This visitor-directed component is the most seasonal of all the transportation industries, and is responsible for most of the spike in summer employment seen in Exhibit 15. In 2003, employment peaked at 3,115 in July and reached its low point of 444 employees in February. Royal Highway Tours, Westours and water transportation operators such as Kenai Fjord Tours are major companies in this field. The health of this industry is directly linked to that of the visitor industry. Because the latter seems robust the outlook would seem to point toward continued growth.

## **Outlook tied to the economy and more**

Since nearly every Alaska business depends in some way upon transportation, the overall health of Alaska's economy is the best predictor of the industry's future. Still, some important contributors, such as international air cargo and visitor-based transportation, show signs of growing more rapidly than the industry as a whole. Other fortuitous events, such as the construction of a gas pipeline, could lead to expanded employment as Alaska developed the workforce required to maintain and operate it. This would give this industry a new pillar of support.

## Transportation's occupational mix

The most recent Alaska industry forecast projects employment in Alaska's transportation industry to increase 30 percent between 2002 and 2012, from 19,241 to 25,066. This forecast estimates the number of wage and salary workers for the industry sector but does not include the self-employed. Job opportunities may vary from year to year as the demand for transportation services—particularly pleasure travel, a discretionary expense—fluctuates with the ups and downs in the economy.

Alaska's transportation industry employs workers in nearly 200 separate occupations including those as diverse as Aircraft Mechanics & Service Technicians and Security Guards. Educational attainment and the employment skills and experience needed by workers are varied. Some jobs require a high school education while others may require extensive specialized training or two or four year college degrees. Many people who work in this industry carry specific credentials such as FAA certificates, ratings for aircraft mechanics and pilots, or special DOT certificates for tractor trailer truck drivers who engage in interstate commerce. Within the industry are managers, administrative support personnel, highly skilled professionals and technicians, and semi-skilled workers and laborers, all of whom make their contribution to transportation in the state.

For the purposes of this article, the study of the transportation industry's occupational mix is limited to the 98 occupations with employment of 10 or more in 2002. (See Exhibit 17.) Not included are federal and state employees engaged in transportation-related jobs, for example, Transportation Security Administration (TSA) workers and Air Traffic Controllers. Two other groups not included are Alaska Marine Highway and Alaska Railroad workers.

Transportation industry employment is highly concentrated. Over 50 percent of it in 2002 is in the broad occupational category of Transportation & Material Moving occupations – jobs operating the equipment used for moving people and

materials, such as buses, trucks, barges, airplanes, taxicabs, and fork lifts. (See Exhibit 16.) The remaining employment is split between six other broad categories of occupations with such varied functions as office support; installation, maintenance and repair; and management and finance.

About one-in-three transportation workers fall into the industry's five largest occupations – Laborers & Freight, Stock & Material Movers; Airline Pilots, Copilots, & Flight Engineers; Aircraft Mechanics & Service Technicians; Truck Drivers, Heavy & Tractor Trailer; and Reservation & Transportation Ticket Agents & Travel Clerks. Combined, employment growth in these five occupations over the 2002 – 2012 decade is projected to account for nearly 30 percent of overall industry growth.

## Future prospects vary by occupation

Continued passenger and cargo expansion should result in solid employment opportunities in the future. Demand will be driven by both the need for additional workers and the need to replace workers that either retire or leave their occupation to pursue other careers. But even though the overall demand for transportation services is expected to rise, the need for individual occupations will vary. Growth rates (within the transportation industry) for the occupations analyzed in this article range from an increase of 51 percent for Tour Guides to a decline of just over 9 percent for Petroleum Pump System Operators.

With projected growth rates of 22 percent and 33 percent respectively, the occupations of Airline Pilots, Copilots & Flight Engineers and Commercial Pilots are expected to grow rapidly as the growing population, rising incomes, and increasing international cargo stimulate the demand for airline transportation. By contrast, the number of Reservation & Transportation Ticket Agents & Travel Clerks is expected to increase by a modest 10 percent over the forecast period, from 987 to 1,090 — as electronic "ticketless" travel becomes increasingly common.

Demand for relatively unskilled occupations such as Laborers & Freight, Stock & Material Movers; Conveyor Operators & Tenders; and Truck Drivers, for which short-term on-the-job training (OJT) is the norm, will be high. In addition to growth in demand for these occupations, numerous job openings are expected to be available as experienced workers leave these occupations to transfer to other fields or to retire.

Technological innovations will continue to change the skills and duties required of workers in many transportation occupations. For example, changes in ship designs, such as automated controls and computerized monitoring systems in navigation, engine control and cargo handling, will change the skills required of Sailors & Marine Oilers; Captains, Mates & Pilots of Water Vessels; and Aircraft Cargo Handling Supervisors.

## Wages vary widely

Although earnings in transportation occupations vary widely, a wage premium for education and skill attainment is evident. (See Exhibit 17.) All of the transportation occupations requiring an associate degree or higher, for which wage data exist, have estimated earnings in the top two wage quartiles in 2003. Nineteen of the 21 occupations requiring a bachelor degree or more have wages in the highest wage quartile — \$24.62 or higher an hour. (Wage quartiles are determined by sorting the total number of Alaska employees by their average wage from the lowest to highest. One fourth of total employment was placed in each quartile.)

Average wages for occupations requiring on-the-job training vary considerably by occupation. Fifteen of the 26 occupations requiring either medium- or long-term OJT have higher than average wages. Only one occupation requiring short-term OJT — Production, Planning & Expediting Clerks — commanded a wage higher than the all occupation average.

## Nonresident worker rates

Exhibit 17 also lists the percentage of nonresident transportation workers in 2002 by occupation. Nonresident employment in high-wage/high-growth occupations such as Commercial Pilots and Welders, Cutters, Solderers & Brazers (with 37.3 and 28.2 percent nonresident employment respectively) signal lost opportunities for Alaska's workers.

## Notes for Exhibit 17

Exhibit 17 organizes the occupations commonly found in the transportation industry by the minimum level of training or education generally required for entry. The table includes 2002 and 2012 projected employment within the transportation industry, the wage quartile (noted by \$), the percentage of workers 50 years of age or older, and the percentage of nonresident workers in the occupation. Employment estimates for occupations that occur in multiple industries include only the transportation industry component. Unlike the employment estimates, the wage, age and nonresident data are not transportation industry specific. Nonresident status is based on the Alaska Permanent Fund definition. Bolded occupations have higher than average wages and good employment prospects, based on projected employment growth and the number of positions.



# 17 Transportation Occupations by Education or Training Required

	Employment 2002 <sup>1</sup>	Growth Rate <sup>1</sup> 2002-2012	Employment 2012 <sup>1</sup>	Wage Quartile	2002 % Nonresident Workers <sup>2</sup>	2002 % Workers 50+ <sup>2</sup>
<b>Wage Quartiles</b>						
\$	<\$12.71 hour					
\$\$	\$12.71-\$17.48					
\$\$\$	\$17.49-\$24.62					
\$\$\$\$	>\$24.62					
<b>BACHELOR'S OR ABOVE</b>						
<b>Airline Pilots, Copilots, and Flight Engineers</b>	<b>1,395</b>	<b>1,708</b>	<b>22.4</b>	<b>\$\$\$\$</b>	<b>41.7</b>	<b>29.4</b>
<b>General and Operations Managers</b>	<b>446</b>	<b>623</b>	<b>39.7</b>	<b>\$\$\$\$</b>	<b>9.8</b>	<b>28.2</b>
Chief Executives	75	96	28.0	\$\$\$\$	7.7	44.7
Accountants and Auditors	62	79	27.4	\$\$\$\$	6.1	25.3
Civil Engineers	55	56	1.8	\$\$\$\$	11.0	25.5
<b>Sales Managers</b>	<b>52</b>	<b>71</b>	<b>36.5</b>	<b>\$\$\$\$</b>	<b>8.0</b>	<b>23.4</b>
Marketing Managers	48	63	31.3	\$\$\$\$	9.6	23.3
Training and Development Specialists	45	60	33.3	\$\$\$	4.7	20.4
Financial Analysts	43	41	-4.7	\$\$\$\$	9.1	16.8
<b>Financial Managers</b>	<b>42</b>	<b>51</b>	<b>21.4</b>	<b>\$\$\$\$</b>	<b>6.2</b>	<b>25.9</b>
Administrative Services Managers	38	49	28.9	\$\$\$\$	5.9	32.4
Human Resources Managers	30	36	20.0	\$\$\$\$	5.4	32.8
Operations Research Analysts	22	32	45.5	\$\$\$	5.4	21.6
Occupational Health and Safety Specialists and Technicians	22	22	0.0	\$\$\$\$	23.7	31.6
Computer and Information Systems Managers	18	24	33.3	\$\$\$\$	7.1	27.2
Advertising and Promotions Managers	16	21	31.3	\$\$\$\$	5.1	20.3
Environmental Scientists and Specialists, Including Health	16	17	6.3	\$\$\$\$	7.0	22.3
Health and Safety Engineers, Except Mining Safety Engineers	14	18	28.6	na	25.2	31.9
<b>Environmental Engineers</b>	<b>12</b>	<b>16</b>	<b>33.3</b>	<b>\$\$\$\$</b>	<b>10.7</b>	<b>21.2</b>
Engineering Managers	12	12	0.0	\$\$\$\$	17.2	34.4
Lawyers	12	12	0.0	\$\$\$\$	6.4	26.5
Computer Programmers	11	10	-9.1	\$\$\$\$	7.8	22.7
<b>ASSOCIATE OR SIGNIFICANT POSTSECONDARY VOCATIONAL TRAINING</b>						
<b>Aircraft Mechanics and Service Technicians</b>	<b>1,105</b>	<b>1,340</b>	<b>21.3</b>	<b>\$\$\$</b>	<b>16.4</b>	<b>20.6</b>
<b>Commercial Pilots</b>	<b>391</b>	<b>521</b>	<b>33.2</b>	<b>\$\$\$\$</b>	<b>37.3</b>	<b>31.7</b>
<b>Bus and Truck Mechanics and Diesel Engine Specialists</b>	<b>219</b>	<b>310</b>	<b>41.6</b>	<b>\$\$\$</b>	<b>15.0</b>	<b>18.2</b>
Automotive Service Technicians and Mechanics	99	142	43.4	\$\$\$	12.5	12.7
Avionics Technicians	77	99	28.6	\$\$\$	20.4	25.4
Ship Engineers	61	87	42.6	\$\$\$	49.2	35.4
Electrical and Electronics Repairers, Commercial & Industrial Equipment	17	18	5.9	\$\$\$\$	16.7	26.0
Computer Support Specialists	16	22	37.5	\$\$\$	8.4	12.1
<b>WORK EXPERIENCE IN A RELATED OCCUPATION</b>						
<b>Captains, Mates, and Pilots of Water Vessels</b>	<b>244</b>	<b>349</b>	<b>43.0</b>	<b>\$\$\$\$</b>	<b>42.7</b>	<b>26.7</b>
<b>Transportation, Storage, and Distribution Managers</b>	<b>233</b>	<b>319</b>	<b>36.9</b>	<b>\$\$\$\$</b>	<b>12.4</b>	<b>32.5</b>
First-Line Supvs/Mgrs of Office and Administrative Support Workers	167	203	21.6	\$\$\$	7.5	25.1
First-Line Supvs/Mgrs of Trans & Material Moving Machine/Vehicle Opr	165	228	38.2	\$\$\$\$	4.9	35.7
First-Line Supvs/Mgrs of Mechanics, Installers and Repairers	140	178	27.1	\$\$\$\$	10.4	34.7
<b>First-Line Supv/Mgrs Helpers, Laborers, Mat'l Movers, Hand</b>	<b>128</b>	<b>185</b>	<b>44.5</b>	<b>\$\$\$</b>	<b>8.4</b>	<b>24.2</b>
Aircraft Cargo Handling Supervisors	123	166	35.0	\$\$	7.7	12.6
Transportation Inspectors	77	105	36.4	\$\$\$\$	16.3	30.2
Purchasing Agents, Except Wholesale, Retail, and Farm Products	40	55	37.5	\$\$\$\$	3.8	28.7
<b>First-Line Supvs/Mgrs Construction Trades &amp; Extraction Wrkr</b>	<b>31</b>	<b>35</b>	<b>12.9</b>	<b>\$\$\$\$</b>	<b>23.6</b>	<b>31.3</b>
First-Line Supvs/Mgrs of Personal Service Workers	25	34	36.0	\$\$	12.9	24.8
First-Line Supvs/Mgrs of Non-Retail Sales Workers	20	27	35.0	\$\$\$\$	8.3	16.2
Emergency Management Specialists	16	17	6.3	\$\$\$\$	5.7	38.2
Lodging Managers	12	17	41.7	\$\$\$	27.3	29.0
<b>MEDIUM OR LONG-TERM TRAINING OR EXPERIENCE</b>						
<b>Truck Drivers, Heavy and Tractor-Trailer</b>	<b>997</b>	<b>1,458</b>	<b>46.2</b>	<b>\$\$\$</b>	<b>14.7</b>	<b>25.8</b>
Cargo and Freight Agents	534	597	11.8	\$\$	4.6	17.5
Bus Drivers, Transit and Intercity	492	720	46.3	\$\$	15.8	46.9
Dispatchers, Except Police, Fire, and Ambulance	315	437	38.7	\$\$	10.1	19.8
Flight Attendants	272	321	18.0	\$\$	11.9	15.4

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



# Transportation Occupations by Education or Training Required

# 17

	Employment 2002 <sup>1</sup>	Growth Rate <sup>1</sup> 2002-2012	Employment 2012 <sup>1</sup>	Wage Quartile	2002 % Nonresident Workers <sup>2</sup>	2002 % Workers 50+ <sup>2</sup>
Bookkeeping, Accounting, and Auditing Clerks	249	311	24.9	\$\$	7.5	22.0
Customer Service Representatives	214	292	36.4	\$\$	13.1	12.9
Tour Guides and Escorts	198	299	51.0	\$	53.9	13.7
Pump Operators, Except Wellhead Pumpers	138	130	-5.8	na	31.0	13.7
Executive Secretaries and Administrative Assistants	126	159	26.2	\$\$\$	8.6	22.3
Maintenance and Repair Workers, General	123	151	22.8	\$\$\$	12.4	27.1
Airfield Operations Specialists	112	141	25.9	\$\$\$	28.4	26.7
Billing and Posting Clerks and Machine Operators	88	119	35.2	\$\$	5.8	17.2
Secretaries, Except Legal, Medical, and Executive	69	87	26.1	\$\$	6.4	24.4
<b>Operating Engineers &amp; Other Construction Equipm't Operators</b>	<b>45</b>	<b>56</b>	<b>24.4</b>	<b>\$\$\$\$</b>	<b>17.2</b>	<b>26.0</b>
<b>Welders, Cutters, Solderers, and Brazers</b>	<b>38</b>	<b>55</b>	<b>44.7</b>	<b>\$\$\$</b>	<b>28.2</b>	<b>18.6</b>
Payroll and Timekeeping Clerks	29	36	24.1	\$\$\$	10.2	19.7
Industrial Machinery Mechanics	24	35	45.8	\$\$\$	29.9	29.5
Machinists	24	28	16.7	\$\$\$	32.0	28.0
Sales Reps, Wholesale and Manufacturing, Except Technical/Scientific	22	30	36.4	\$\$\$	5.9	19.9
Data Entry Keyers	19	25	31.6	\$\$	21.8	14.6
Cooks, Restaurant	17	24	41.2	\$	30.3	10.1
Tank Car, Truck, and Ship Loaders	16	24	50.0	\$\$\$	2.6	40.2
<b>Electricians</b>	<b>15</b>	<b>20</b>	<b>33.3</b>	<b>\$\$\$</b>	<b>19.5</b>	<b>18.7</b>
<b>Carpenters</b>	<b>13</b>	<b>16</b>	<b>23.1</b>	<b>\$\$\$</b>	<b>17.4</b>	<b>16.3</b>
Painters, Transportation Equipment	12	18	50.0	\$\$\$	18.9	0.0
<b>Petroleum Pump Sytem Opr, Refinery Opr, and Gaugers</b>	<b>11</b>	<b>10</b>	<b>-9.1</b>	<b>\$\$\$\$</b>	<b>14.1</b>	<b>20.7</b>
<b>SHORT-TERM TRAINING OR EXPERIENCE</b>						
Laborers and Freight, Stock, and Material Movers, Hand	1,682	2,271	35.0	\$\$	17.6	11.8
Reservation and Transportation Ticket Agents and Travel Clerks	987	1,090	10.4	\$\$	10.6	13.2
Bus Drivers, School	833	857	2.9	na	7.4	45.3
Truck Drivers, Light or Delivery Services	779	1,142	46.6	\$\$	15.6	12.6
Sailors and Marine Oilers	300	436	45.3	\$\$	42.3	20.6
Office Clerks, General	277	377	36.1	\$\$	10.9	18.8
Secretaries and Administrative Assistants	238	296	24.4	\$\$	na	na
Cleaners of Vehicles and Equipment	203	269	32.5	\$	17.7	4.4
Industrial Truck and Tractor Operators	191	279	46.1	\$\$	18.8	15.0
Shipping, Receiving, and Traffic Clerks	184	258	40.2	\$\$	10.3	13.1
Taxi Drivers and Chauffeurs	157	199	26.8	\$	19.5	25.5
Combined Food Preparation and Serving Workers, Including Fast Food	122	172	41.0	\$	20.2	3.9
Stock Clerks and Order Fillers	121	153	26.4	\$	13.8	12.4
Packers and Packagers, Hand	119	174	46.2	\$	12.0	3.8
Conveyor Operators and Tenders	110	162	47.3	na	5.7	6.0
Transportation Attendants, Except Flight Attendants, Baggage Porters	102	143	40.2	\$\$	21.2	21.2
Baggage Porters and Bellhops	82	95	15.9	\$	14.8	11.8
Security Guards	80	104	30.0	\$\$	16.3	29.4
Mail Clerks and Mail Machine Operators, Except Postal Service	77	76	-1.3	\$	8.3	19.6
Receptionists and Information Clerks	74	107	44.6	\$	12.3	14.6
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	44	64	45.5	\$	11.8	24.9
Production, Planning, and Expediting Clerks	36	48	33.3	\$\$\$	6.9	18.4
Human Resources Assistants, Except Payroll and Timekeeping	20	27	35.0	\$\$	4.4	16.3
File Clerks	19	24	26.3	\$	7.9	14.0
Helpers—Installation, Maintenance, and Repair Workers	18	27	50.0	\$\$	17.7	16.4
Couriers and Messengers	16	22	37.5	\$\$	9.9	16.9
Waiters and Waitresses	14	20	42.9	\$	26.8	7.2
Cashiers	13	19	46.2	\$	16.0	11.1
Bartenders	10	12	20.0	\$	17.7	16.3
Order Clerks	10	15	50.0	\$\$	9.2	12.5
Tire Repairers and Changers	10	15	50.0	\$	22.0	3.6

1 Estimates include transportation industry employment only.

2 Data cross all industries.

Bolding denotes occupations with above average wages and estimated growth rates, and projected employment increases of 75 or more between 2002 and 2112.

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