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Occupational Fatalities Decline

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Water vehicle deaths drop; air taxi deaths climb

Led by a sharp drop in deaths from water vehicle accidents, occupational fatalities in Alaska in 1997 declined to 51. Aircraft accidents were the leading cause of fatalities, with 19 for the year. (See Exhibit 1.)

In 1997, fewer people died from occupational injuries than in any year since the Census of Fatal Occupational Injuries (CFOI)[1] began in 1992. Prior to 1997, the water vehicle category accounted for an average of 33% of occupational fatalities, but the eight deaths in 1997 represented 16% of the count. (See Exhibit 2.) All other categories experienced slight increases or stayed the same for the year. Aircraft accidents accounted for 37% of fatalities.

Alaska's fatality rate dropping

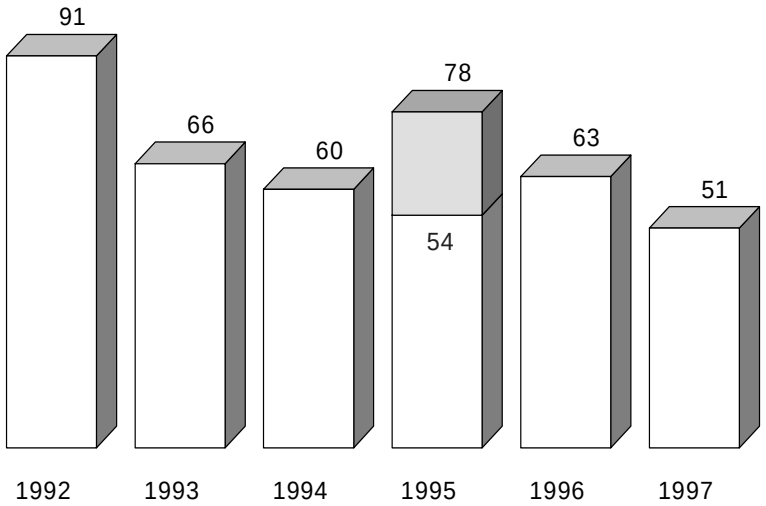
Encouragingly, the number of fatalities is declining at a time when the statewide labor force is increasing. Over the past five years, the ratio of fatalities to workers has moved from a high of 31 to a new low of 17.[2] The five-year average of the most current counts also indicates a declining trend. (See Exhibit 3.) For the period of 1993 to 1997, the state rate dropped nine percent from the previous five-year period. Looking forward, if the fatality count stays the same or continues to decline, the next five-year rate will drop by more than five percent.

In the most recent comparison among states (1992-96), Alaska held the highest fatality rate in the nation. Alaska's rate of 22 fatalities per 100,000 workers led, with Wyoming next at 12.5 per 100,000. The national rate is stable at five per 100,000.[3] The major causes of occupational fatalities in Alaska have always differed from national trends. Water vehicle and aircraft fatality cases have dominated the count here. Nationally, the majority of deaths are in the "other transportation" and "violent acts" categories. (See Exhibit 2.)

Aircraft accidents leading cause of occupational death

During 1997, aircraft accidents were the leading cause of occupational death, capturing 37% of the deaths. Nineteen deaths occurred as a result of 14 airplane crashes; the pilot was killed in all 14 crashes. Of the passengers in an occupational

Occupational Fatalities
Alaska 1992-1997 1



Note: 24 deaths in 1995 resulted from a single military air crash.

Source: Alaska Department of Labor, Research and Analysis Section

2 Fatalities by Accident Type*
1992-97, Alaska and U.S.

	Alaska									U.S.			
						1992-1996		1997		1992-1996		1997	
	'92	'93	'94	'95	'96	Avg.	%		%	Avg.	%		%
Total	91	66	60	78	63	72		51		6,331		6,218	
Water Vehicle	38	21	14	21	26	24	33%	8	16%	106	2%	109	2%
Aircraft	26	22	10	34	16	22	31	19	37	334	5	261	4
Other Transportation	4	4	6	11	6	6	8	6	12	2,147	34	2,229	36
Contact with Object	10	4	9	4	4	6	8	6	12	998	16	1,034	17
Violent Acts	4	12	6	3	6	6	8	6	12	1,275	20	1,103	18
Falls	-	-	-	1	0	1	1	0	0	645	10	715	11
Fires & Explosions	0	1	3	0	1	1	1	2	4	193	3	196	3
Exposure	6	0	10	3	4	5	7	4	8	596	9	550	9
Other	-	-	-	1	0	0.4	1	0	0	37	1	21	0.3

* Event groupings are coded using the Bureau of Labor Statistics Occupational Injury and Illness Classification Structure (OIICS).
– Not publishable as presented.
Data revised, September, 1998
Sources: Alaska Department of Labor, Research and Analysis Section, and U.S. Department of Labor, Bureau of Labor Statistics

status, two were fish spotters, two were on business trips, and one was an airline ground crew member. (See Exhibit 4.)

The Federal Aviation Administration (FAA), in conjunction with the National Institute of Occupational Safety and Health (NIOSH), is currently conducting audits of carriers of similar size class, location and operational complexity.[4] Dissimilar practices between carriers with and without high numbers of accidents are being examined to identify solutions to Alaska's high accident rates. The first of two studies, released in April 1998, focused on takeoff and landing accidents, and the next will address visibility-related accidents.

Marked differences between the two groups in pay structures, management involvement in "go-no-go" decisions, and safety management styles were noted by the study. None of the carriers in the high accident group reported paying pilots a salary, but instead used flight hour incentives. Only half of the companies in the minimal-to-no-accident group reported paying pilots with incentives. Further, almost all the companies in the low accident group reported management's involvement in "go-no-go" decisions, in contrast to much lower involvement of management at high-rate companies. Findings outside the scope of the audits, but also salient, were that pilot judgment has been the root cause of most of the accidents reviewed. The high-rate group evaluated for the audit had an accident rate of 0.223 per 1,000 flights versus 0.005 per 1,000 flights nationally.

Air taxi deaths rose sharply in 1997

The employee fatality rate[5] rose dramatically in unscheduled air transportation in 1997. (See Exhibit 5.) Eleven pilots were killed. This industry group generally flies under FAA flight rules commonly known as "on-demand air taxi" commercial operations (CFR 14 Part 135). Nine of the 11 pilots killed had less than two years with the company, most less than a year. Six of the 11 had not established residency, and two more had done so only the year before.[6]

Is pilot experience linked to aircraft accidents?

Employment indicators suggest a strong job market for commercial pilots. From 1995 to 1997, summer quarter data from Alaska's Occupational Database reveal a 10% increase in the number of pilots reported. Wage and salary employment for the industry also increased strongly. A total of 193 jobs in unscheduled air transportation was added in 1996 and another 117 in 1997. This mirrors employment growth for pilots during the same period.

In 1996 and 1997, labor market forces may have drawn less experienced pilots, with low flight hours or flight experience in Alaska, or both, into the industry. From 1996 to 1997, the proportion of non-resident to resident new hires of pilots in the spring-summer season rose from 50/50 to a 57/43 split.[7] Residency alone does not indicate experience or flight hours in Alaska. Some pilots return seasonally to fill positions in the tourism industry, but do not establish year-round residency.

The sharp increase in fatalities in 1997 leads to questions about a possible relationship between the level of pilot experience and fatal crashes. The number of fatalities in 1997 is insufficient to draw any conclusion, but does suggest an area for further research.

The commercial fishing industry also lost pilots during 1997. Four individuals, two pilots and two spotters, were killed while spotting for fish or while practicing for an upcoming opening. In 1995, a midair collision while fish-spotting killed two pilots.

Water vehicle fatalities drop sharply

In all, 18 fewer water vehicle-related deaths were reported in 1997 than in 1996. Unlike the two previous years, there was no major fatal loss from a crabbing vessel sinking or capsizing. (See *Alaska Economic Trends*, September 1997.) Fewer fishermen were lost overboard or pulled over by long lining or crabbing gear.

Three fishermen were lost in water vehicle-related accidents, compared to 33 in 1992. One skipper, attempting to save a sinking vessel near St. Paul, did not put on a survival suit before entering the water. His crew of three in survival suits lived. Another fisherman lost his life when he was pulled over after being caught in a line connecting crab gear. This is the eighth case involving a fisherman being pulled over since 1992.

Strong U.S. Coast Guard regulations requiring survival equipment on board are working. Fishermen abandoning ship are now able to stay alive longer and are located sooner after a vessel

Fatality Incidence Rates* 3
Alaska and U.S., 1992-97

	Alaska			U.S.
Year	Fatalities (CFOI)†	Employees (CPS)†‡	Rate	Rate
1992	82	261,155	31	5
1993	64	274,788	23	5
1994	54	281,417	19	5
1995	51	281,502	19	5
1996	61	291,246	21	5
1997	50	291,102	17	5
1992-1996	62	278,022	22	5
1993-1997	56	284,011	20	5
1994-1997	54	286,317	19	5

* The incidence rate is calculated as (N/Wx100,000) where N is the number of fatal occupational injuries and W is workers employed, multiplied by a base number of 100,000 workers.

† These CFOI counts exclude military personnel, volunteer workers, and workers under 16 years of age.

†‡ Current Population Survey (CPS) estimates the civilian labor force based on a monthly survey of Alaska households. Use of CPS data in this comparison is experimental. See Endnote[2] for CFOI/CPS limitations of comparability.

Source: Alaska Department of Labor, Research and Analysis Section

4 Census of Fatal Occupational Injuries
Alaska 1997

Event Grouping*	Cause	Cases	Occupation	Industry†
Water Vehicle				
	Pulled over by crab gear	1	Fisher	Commercial Fishing
	Fell overboard	1	Deckhand	Transportation, Water
	Fell overboard	1	Guide	Services, Lodge Operation
	Sinking or capsized	1	Crew	Transportation, Water
	Sinking or capsized	1	Fisher	Commercial Fishing
	Skiff fell during loading and struck worker	1	Fisher	Commercial Fishing
	Ship in distress	2	Deckhand	Transportation, Water
Aircraft				
		11	Pilots	Transportation, Air
		2	Pilots	Commercial Fishing
		2	Fish Spotters	Commercial Fishing
		1	Board Member	Finance, Native Corporation
		1	Manager	Education, School District
		1	Ground Crew	Transportation, Air
		1	Trapper	Trapping
Other Transportation				
	Highway accident	1	Manager	Retail, Food Services
		1	Marine Pilot	Transportation, Water
		1	N/R	
		1	Truck Driver	Transportation, Motor Freight
	Highway & rail accident	1	Manager	Manufacturing, Wood Products
	Roller compactor overturned during offloading	1	Truck Driver	Construction, Heavy
Contact with Objects				
	Crushed by falling ice	1	Miner	Mining, Metal
	Struck by falling trees	2	Logger	Manufacturing, Logging
	Struck by falling headache ball	1	Laborer	Construction, Heavy
	Struck by falling forklift tines	1	Stock Clerk	Manufacturing, Paper Products
	Caught in avalanche	1	Artist	Services, Not Classified
Exposure				
	Concrete pump truck contact with powerlines	1	Driver/Operator	Construction, Special Trades
	Diving to secure mooring line	1	Diver	Construction, Heavy
	Diving to inspect hull	1	N/R	
	Ran into deep water lake	1	Biologist	Government, Wildlife Conservation
Fire & Explosion				
	Dry-docked boat caught fire	1	N/R	
	Welding dry-docked skiff, explosion	1	Welder	Manufacturing, Shipbuilding & Repair
Violent Acts				
	Homicide, shot	1	Taxi Driver	Transportation, Local
	Homicide, other	1	Police	Government, Local
	Homicide, shot by student	1	Principal	Government, Education
	Homicide, shot by customer	1	Mechanic	Services, Auto Repair
	Homicide, stabbed in fight	1	Processor	Manufacturing, Fish Processing
	At-work suicide	1	N/R	

*Event is coded using the Bureau of Labor Statistics Occupational Injury and Illness Classification Structure (OIICS).
† Industry is classified using the *Standard Industrial Classifications Manual*, 1987 edition.
N/R: Not releasable as presented. Data obtained from other than public information sources such as newspapers, OSHA, U.S. Coast Guard, or Workers' Compensation reports cannot be released.

Source: Alaska Department of Labor, Research and Analysis Section

loss. Despite the intervention, this work remains hazardous. Already this year a number of fishermen have been killed and the count will be up again for 1998. Prevention of the accidents is now key to continued long-term reductions.

The water transportation industry had four work-related deaths compared to six in 1996. None of them was in the cruise ship industry. The grounding of a freighter during a storm claimed two lives. A crewman was lost when a tugboat sank in Bristol Bay. Survival suits and deployed rafts minimized the loss of life. Miraculously, the skipper of the boat, who did not have time to put on his survival suit because he was helping a crew member, survived by hanging onto a raft dropped by a U.S. Coast Guard C-130. The third incident and fourth fatality involved a deckhand falling overboard from a freighter.

AKDOL investigates 12% of deaths

The Alaska Department of Labor (AKDOL) Occupational Safety and Health (OSH) investigates fatalities that do not come under the jurisdiction of other agencies. In 1997, OSH investigated six deaths, concentrated in two major industry groups, construction and logging. As in years past, these fatalities often related to use of heavy equipment. This is the third straight year an industry has reported an electrocution due to equipment contact with overhead power lines. A truck driver was killed when the roller compactor he was off-loading from a trailer overturned. Other cases investigated by OSH for the year included two loggers killed while harvesting trees. (See Exhibit 6.)

No change or slight increases in all other event categories

Because of the sharp decline in water vehicle-related accidents, all other event categories saw a percentage increase for 1997. For example, "other transportation" rose from 10 percent to 12 percent, but the number of cases was unchanged. Of the six cases, five were highway or roadway accidents.

In 1997, exposure event cases other than the electrocution incident included two fatal diving accidents. In the past, diving accidents have been primarily related to fishermen diving to clear line and net from a vessel propeller. In 1997, however, a commercial diver was killed while diving to secure a mooring line and another worker was lost when diving to inspect a vessel hull.

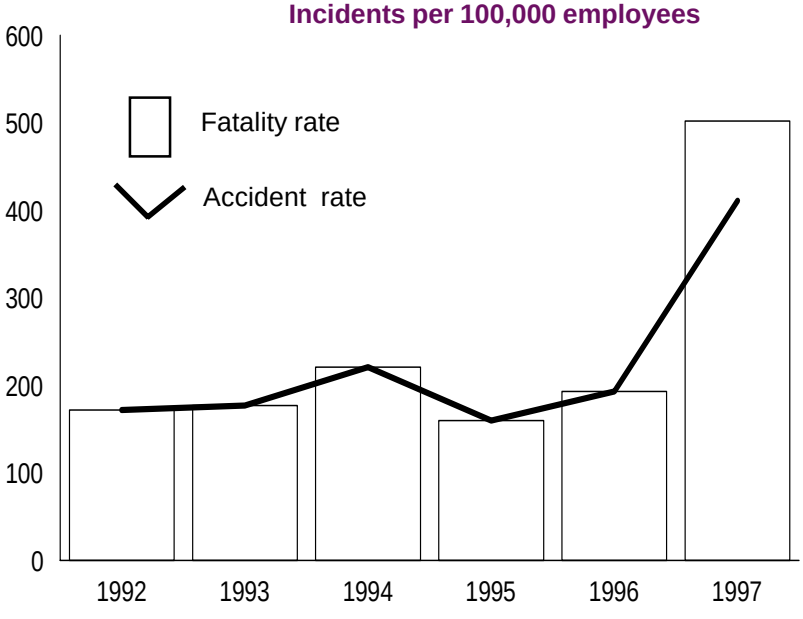
Violent acts claimed five lives in five different occupations. Only two of the five homicides involved criminal intent. A police officer was killed in a confrontation with an assailant being chased from a stolen car, and a cab driver was killed in an apparent robbery. Three others were related to disputes over money or other motives.

Summary

The Alaska occupational fatality rate is declining. The five-year average from 1993 to 1997 dropped nine percent from the prior five-year average.

Unscheduled Air Transportation 5
Fatality & Accident Rates

Incidents per 100,000 employees



Source: Alaska Department of Labor, Research and Analysis Section

Aviation experts are researching the high number of aircraft-related deaths. The first of two joint studies between the FAA and NIOSH found a relationship between company practices and takeoff and landing accidents. A sharp fatality rate increase in 1997 among wage and salary employees in air taxi operations occurred during a period of strong employment growth. With pilot error consistently being identified as the root cause of aviation accidents in Alaska, further research into the safety implications of pilot flight hours in and out of Alaska seems warranted.

The number of fishermen killed in water vehicle-related accidents was down significantly in 1997. Major safety intervention improvements are keeping fishermen alive longer and helping the Coast Guard rescue them sooner. Despite the decline, the work remains hazardous, and lives lost are going up again in 1998. The focus must now be on preventing accidents.

Vehicle-related fatalities, although varied, consistently appear among those investigated by the AKDOL OSH. It was the third year an electrocution fatality was reported after equipment came in contact with overhead power lines.

With the sharp decline from 1996 to 1997 of water vehicle-related accidents, all other events rose in percentage representation in the census. However, the number of cases in all other event categories stayed the same or rose slightly.

Endnotes:

[1] The census records workplace fatalities under the broadest definitions of *labor force*, including military. Fatalities of unpaid family workers and volunteers in an otherwise compensated position at commercial operations are also included.

[2] The use of Current Population Survey (CPS) data presents limitations of comparability alongside CFOI figures and is experimental. CPS employment data are by place of residence and CFOI fatality data are by place of occurrence. However, the CPS employment rate currently remains the only available benchmark with which to assess national and state rates.

[3] U.S. Department of Labor, Bureau of Labor Statistics, "Fatal Workplace Injuries in 1996: A Collection of Data and Analysis," June 1998.

[4] Federal Aviation Administration, "Audit of Alaska Air Carriers Focused on Take-off and Landing Accidents," April 30, 1998.

[5] To calculate this rate, CFOI cases were matched to Alaska Department of Labor (AKDOL) workers' compensation claims to establish wage and salary employment status. This method clearly distinguished the self-employed from other employees; to make valid comparisons to employment data, this delineation is important. Then, air carriers reporting a fatality were examined within the employment database to verify industry coding in unscheduled air transportation. Prior to 1997, one death equaled one accident. One midair collision in 1997 did result in the death of two pilots and is counted as one incident for the accident rate analysis. Actual flight hours or number of flights in relation to the industry were not available but would improve the precision of this analysis.

[6] To be a resident, an individual must apply for the State of Alaska Permanent Fund Dividend. The term "residency" used here follows previously established AKDOL, Research and Analysis methods as established in the publication, "Nonresidents Working in Alaska-1996," January 31, 1998.

[7] A "new hire" is defined as an employee who was hired by the firm in the report quarter and has not been employed by the firm during any of the previous four quarters. This data set is influenced by both job creation and job turnover.

6 AKDOL OSH Investigations
1997 Reports

Construction

A concrete pumping truck operator had finished a delivery to a residential construction site and was cleaning the equipment. The operator, when folding the boom, made contact with an overhead power line and was electrocuted.

A truck driver was off-loading a roller compactor from a tilt-bed trailer when the compactor slipped off the ramp and overturned. The driver was crushed by the vehicle after attempting to jump clear.

A laborer, working as a rigger, was attempting to hook a bridle assembly to the block hook of a hydraulic crane. The operator "boomed out" and two-blocked the auxiliary hoist line headache ball. The ball fell, striking the laborer below.

Logging

A timber feller completed the back cut of a 16-inch diameter tree with a 10-inch rotten core. The tree twisted while falling, striking the feller.

A timber feller was cutting trees on steep terrain. One of the cut trees became lodged against a standing tree. The feller felled an adjacent tree to strike the lodged tree. However, upon striking the lodged tree, it rebounded and struck the timber feller.

A worker was operating a forklift that was leaking hydraulic fluid. He stopped the forklift and crawled under the raised forks to check the damaged hydraulic coupler. The coupling failed, causing the forks to fall, striking the worker below.

Source: Alaska Department of Labor, Labor Standards and Safety Division