

COMMERCIAL FISHING FATALITIES: U.S. REGIONAL COMPARISONS

By CAPT Thomas R. Bender, USPHS

Mrs. Kathleen W. Johnson: The next speaker is CAPT Thomas R. Bender of the U.S. Public Health Service whose presentation is entitled *Commercial Fishing Fatalities: U.S. Regional Comparisons*. Thomas R. Bender, M.D., M.P.H., Director, Division of Safety Research since May 1988, joined CDC as a Medical Epidemiologist in 1969. He directed the Anchorage Field Station of the CDC from its establishment in 1970 through 1981. Dr. Bender was a CDC/ASPH adjunct professor at the School of Public Health and the School of Medicine, University of Hawaii (1981-1986), where he also was the Director of the Preventive Medicine Residency Program. During his last two years in the Pacific (1984-1986) he was Special Advisor to the Assistant Director for International Health, CDC. From 1986-1988, he was the Senior Epidemiological Research Advisor to the Office of Health, Bureau for Science and Technology, Agency for International Development. Dr. Bender received his M.D. from Hahnemann Medical School and Hospital, and his M.P.H. from The Johns Hopkins University School of Hygiene and Public Health. He is certified by the National Board of Medical Examiners, the Board of Medical Examiners of Alaska, and the American Board of Preventive Medicine. Dr. Bender has authored numerous publications and has held a wide variety of advisory appointments. Dr. Thomas Bender:

Dr. Lemen has already mentioned in the *Charge to the Workshop* what most of you are very familiar with, namely that Alaska appears to have the highest occupational fatality rate of any state in the nation. The primary reason for this is a disproportionately high number of fatalities in the commercial fishing industry.

Earlier today, many of you heard my introductory remarks where I reiterated some of these statistics. I remarked how NIOSH is engaged, through close collaboration with many of your agencies, in a program to significantly reduce the impact of these traumatic injuries in fishers and other workers here in Alaska.

I would like to compare and contrast fatalities in the Alaska commercial fishing industry with those of other states and regions within the United States. Some of you may have fished or sailed the waters off other

states and therefore know much about the similarities and differences between areas.

Several of our speakers have mentioned the national surveillance system that we at NIOSH have employed to capture data on worker fatalities for the past 10 years, the National Traumatic Occupational Fatality program (NTOF). Data for NTOF are obtained by close review of death certificates provided by all 50 states, New York City, and the District of Columbia.

It is true that death certificates are not always coded correctly. NTOF, nevertheless, provides valuable data on the demographics of occupational fatalities in the U.S., and provides important clues to the nature of risk in the workplace. My remarks are based on nine years of NTOF data (1980-1988).

The National Marine Fisheries Service (NMFS) divides the fishing waters of the US into eight regions (Table I). For convenience I have combined the South Atlantic with the Chesapeake and the Mid-Atlantic with the New England regions.

Just under ten thousand million pounds of fish were landed by US fishermen in 1990. Alaska was responsible for more than half (56 percent) of the total commercial fishing pounds landed. This tonnage was three times that of the second ranked Gulf of Mexico region.

All of the Pacific Coast and Hawaiian fisheries combined amount to only about 12 percent of the Alaska landings. As many of you know, a substantial portion of Alaska's largest fishery, the Bering Sea groundfish industry, is harvested then transferred and processed aboard huge factory trawlers. These fish are eventually off loaded at non-domestic ports far outside Alaska, and do not show in these figures.

In the U.S., from 1980 through 1988, a total of 517 commercial fisher

men and women lost their lives. This translates to an average yearly rate of approximately 90 fatalities for every 100,000 fishers (Figure 1). Despite the peaks and valleys, the overall trend remains fairly constant over the nine years.

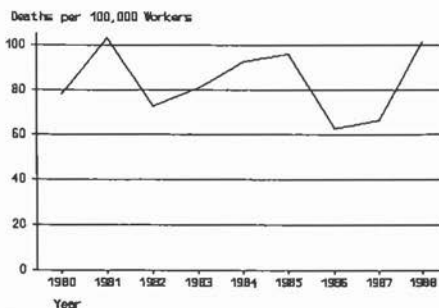


Figure 1. Occupational Fatality Rates in the U.S. Commercial Fishing Industry, 1980-1988. — Source: NTOF

These fatality rates are inclusive of all fisheries, but we know that some fisheries are substantially more risky than others. Later this afternoon, Richard Kennedy will present his findings on which Alaskan fisheries

Table I. U.S. Commercial Landings in Tons by Region and State, 1990.

Region	States	Landed harvest (percent)
Alaska	Alaska	5,400,000,000 (56%)
Pacific Coast and Hawaii	Washington, Oregon, California, Hawaii	650,200,000 (7%)
Gulf	Texas, Louisiana, Mississippi, Alabama, Florida (West Coast)	1,600,000,000 (17%)
South Atlantic (South Atlantic with Chesapeake)	Florida (East Coast), Georgia, N & S Carolina, Virginia, Maryland	1,128,200,000 (12%)
North Atlantic (Mid-Atlantic with New England)	New Jersey, New York, Rhode Island, Connecticut, Delaware, Maine, New Hampshire, Massachusetts	854,800,000 (10%)
Great Lakes	Michigan, Wisconsin, Minnesota, Pennsylvania, Ohio, Indiana, W New York	44,700,000 (<1%)

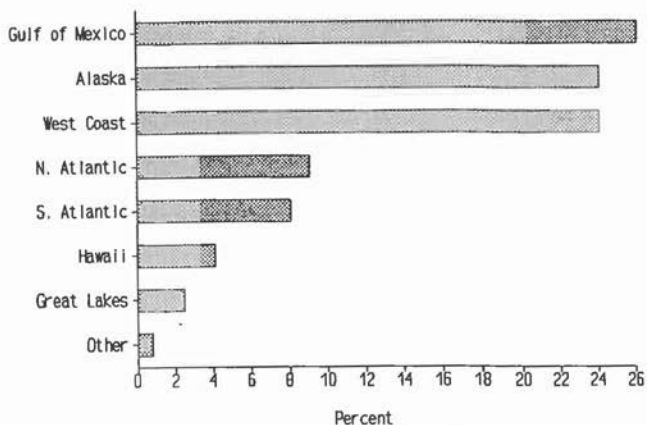


Figure 2. Percent of Workers Killed in U.S. Commercial Fishing Industry per NMFS Region, 1980-1988.

— Source: NTOF

are the most risky. It is important to calculate fatality rates, as we have done here, in addition to examining the numbers of workers killed, because the rates give a direct measure of risk.

Unfortunately, some of the specific rates we would like cannot be calculated, since we do not have adequate estimates of the specific worker subgroups at risk. But, while it is not possible at this time to determine fishing fatality rates for most individual states or even regions, we can at least begin to compare regional fatality experience by contrasting the number of fishers who died within each region.

Figure 2 shows for the NMFS regions, with Hawaii shown separately, the percent of workers killed in

that region out of the total number of U.S. commercial fishing fatalities. Of the 517 fishers who died in the nine-year period, over one-quarter died in the Gulf of Mexico region. Alaska and the Pacific West Coast follow closely behind, each accounting for slightly under one-quarter of the total. The North Atlantic and

South Atlantic regions as well as Hawaii and the Great Lakes areas accounted for a substantially smaller proportion of the total commercial fishing fatalities.

As can be seen in Figure 3, Alaska, as a state, has the greatest number of occupational fatalities in the commercial fishing industry, and far outranks every other state. Nearly a quarter of all U.S. commercial fishing

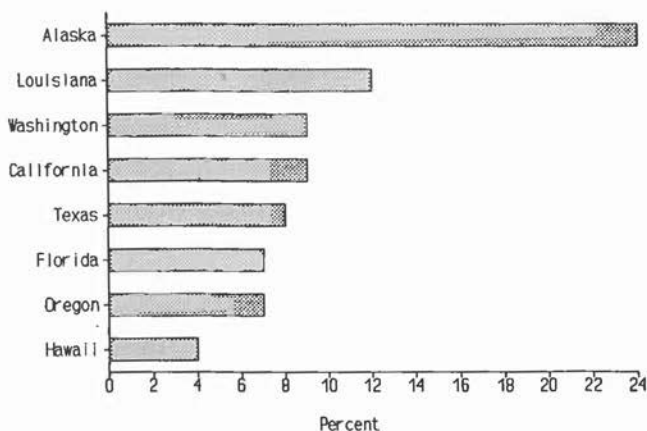


Figure 3. Percent of Workers Killed in the U.S. Commercial Fishing Industry by State of Occurrence, 1980-1988.

— Source: NTOF

fatalities occur in Alaska, twice the number of the second highest state: Louisiana. Fishing fatalities in Washington and California accounted for 9 percent each.

Given the difficult working conditions, abbreviated fishing seasons, and high tonnage harvested, it is not surprising that from 1980 through 1988, there were 126 deaths that occurred in Alaskan waters: a staggering statistic when one considers the relatively small size of the Alaskan commercial fishing workforce.

The Alaska region had the highest number of nonresident fisher fatalities, of any of the regions—54, or 43 percent. This may reflect the seasonal migration for fishing employment. Hawaii also had a high percentage of nonresident fisher fatalities (76 percent) but a relatively lower number, 16. The other regions each reported less than 10 percent nonresident fatalities; the national average, excluding Alaska and Hawaii, was 5 percent.

Table II. Mean Age of Fishers Killed in Alaskan Waters by Place of Residence, 1980-1988, N=526.

Place of Residence	Mean Age (Years)
Alaska	36.2
All Other States	32.3
- Oregon	27.8
- Washington	35.9
- Virginia	26.2
Other Country	34.4

Fishers who were killed in Alaskan waters, and whose state of residence was other than Alaska, were generally younger than the Alaskan fishers killed (Table II). While the average age of death for Alaskan fishers was 36.2 years, the mean age of death for residents of Oregon was

27.8 years, for Washington State, 35.9 years, and for Virginia, 26.2 years. Foreign nationals who were killed in Alaskan commercial fishing waters had a mean age of 34.4 years. Death certificate data from other states reported low numbers of nonresident fatalities, and were not counted for this reason.

Multiple fatalities are of special concern (Table III). The average number of deaths per multiple fatal incident is considerably higher in Alaska than in other regions. Alaska reports an average of 4.3 deaths in each multiple-fatality incident; Hawaii had an average of 3, but that was a result of a single 3-person incident. The other regions reported less than 3 fatalities per incident on the average. As detected by death certificates, the West Coast had the highest number of multiple-case incidents, 13. Alaska certificates were useful in identifying at least 12 multiple-fatality incidents.

Table III. Drowning Deaths Among Commercial Fishers by U.S. Region, 1980-1988, N=369.

U.S. Region	Total Fatalities	Total Drownings	Drowning as a Percent of Total
Alaska	126	97	77%
West Coast	127	100	79%
Hawaii	21	3	14%
Gulf of Mexico	137	89	65%
South Atlantic	42	33	79%
North Atlantic	47	34	72%
Great Lakes	13	13	100%
TOTAL	513	369	71%

Nationally, drowning was the most common cause of death within the

commercial fishing industry. For the 9-year period, 369 fishers or 72 percent of the total dead, drowned. Of these 369, 56 or 15 percent, included hypothermia as a contributing factor.

To gain additional insight into the nature of drowning events, a comparison was made of the percent of those who drowned within regions (Table IV). A second motivation was to acquire a fuller understanding of the nature of drowning incidents to better comprehend how intervention strategies, such as the use of personal flotation devices (PFDs), may influence fatality outcome. (See also Surveillance for Work-Related Fatalities in the Alaskan Commercial Fishing Industry.

By Dr. George A. Conway.)

Table IV. Fishing Vessel-Related Drownings of Commercial Fishers by Region, 1980-1988, N-227.

U.S. Region	Total Fatalities	Total Drownings	Drowning as a Percent of Total
Alaska	97	76	78%
West Coast	100	76	76%
Hawaii	3	1	33%
Gulf of Mexico	89	32	36%
South Atlantic	33	12	36%
North Atlantic	34	21	61%
Great Lakes	13	9	69%
TOTAL	369	227	61%

Of the 126 fishing deaths in Alaska, 97 were reported as drowning, representing 77 percent of all Alaskan fishing fatalities. Virtually the same number of drowning fatalities, 100, were reported for the Pacific West Coast region; this

represented 79 percent of that region's commercial fishing fatalities. In the Gulf of Mexico region, 89 deaths were due to drowning, or 65 percent of the region's total; and in the South Atlantic region, 33 deaths were by drowning, or 79 percent of their total. The North Atlantic region had very nearly identical count as the South Atlantic region—34 deaths by drowning, representing 72 percent of their total. The Great Lakes region was unique in that all 13 commercial fishing deaths that occurred were caused by drowning. Hawaii only had 3 deaths from drowning, and these 3 represent a minor percentage of overall commercial fishing deaths, 14 percent.

Since drownings are by far the most common cause of death for fishermen and women in Alaska and nationally, it may be appropriate to examine the circumstances of drowning fatalities in more detail. Fishing vessel-related incidents, which include sinkings, capsizings, and collisions, accounted for 227 deaths nationally and were the leading event that led to drownings in each state. Alaska reported the highest number (76) of these fatalities; 78 percent of the 97 drownings in Alaska were vessel-related.

In Alaska, sinkings of the vessel accounted for 19 percent of drowning fatalities, collisions accounted for 16 percent, and capsizing accounted for 10 percent. Vessel-related drownings were also important in the West Coast region where they accounted for 76 percent of that region's drownings. A full 43 percent of drownings were caused by fishing vessels capsizing; 15 percent involved falls overboard, and sinkings were responsible for 11 percent. Within a single state of this region, Oregon, 88 percent of drownings were fishing vessel-related.

Of drownings in the Great Lakes and the North Atlantic, 69 percent and 62 percent respectively, were vessel-related. The Great Lakes region reported 23 percent of drownings were caused by fishing vessel collisions and 15 percent were caused by sinkings, and by capsizings.

North Atlantic falls overboard were the leading cause of drownings (29 percent); the second leading cause was fishing vessel sinkings (27 percent) followed by fishing vessel capsizings (18 percent). Fishing vessel-related drownings in each of the three remaining regions, South Atlantic, Gulf of Mexico, and Hawaii, represent about one-third of the total number of drowning fatalities. In the South Atlantic region, falls overboard represented the most common cause of drowning, 24 percent; capsizings were responsible for 12 percent, and sinkings or lost fishing vessels each accounted for 9 percent.

In the Gulf of Mexico, 35 percent of drownings were caused by falls overboard, 15 percent from vessels capsizing, and 8 percent from sinkings. Hawaii had three drowning deaths—one of which was vessel-related (a fall overboard). Hawaii had an additional net-related fatality, and another drowning for which no information was available.

Nationwide, the second leading cause of death for commercial fishers (just 5 percent of all deaths in this industry) was acute traumatic injuries as a result of being stuck by objects. The third and fourth leading causes were traumatic injuries as a result of being caught or entangled, generally in winches or nets, and asphyxia. With the exception of Hawaii, each region of the country reported drowning as the leading cause of death for commercial fishers.

In summary, Alaska commercial fishers remain at elevated risk of fatal injury. Drowning, and drowning with hypothermia, are the most common causes of death. Fishing vessel-related fatal incidents are much higher in Alaska than in the nation as a whole. Sinkings and collisions are the most common causes of vessel-related deaths.

The mean age of death for Alaska fishers is about the same as that for those in other regions of the country — a mean age of around 36 years. Alaska had the highest number of non-resident commercial fishing fatalities; the mean age of death of nonresidents was generally lower than that of residents.

All of this information indicates that certain kinds of interventions may be appropriate in Alaska that would not be appropriate in the Gulf of Mexico or other regions. This information certainly does not minimize the risk faced by other commercial fishers throughout the country, but clearly points out that Alaskan waters continue to be among the most harsh and unforgiving work environments known to man.

Our ability to extract meaningful information of this kind, both from NTOF and from various other data sources, has steadily increased over the last several years. Much of this improvement in data, in Alaska in particular, is because of the dedicated work of the many workshop participants present.

All of you deserve commendation for increasing our knowledge of the risks faced by fishers, especially in Alaska. Your continuing dedication and support are especially important now — we must now emphasize more vigorously the intervention and prevention efforts that will help save lives in this risky industry. □

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