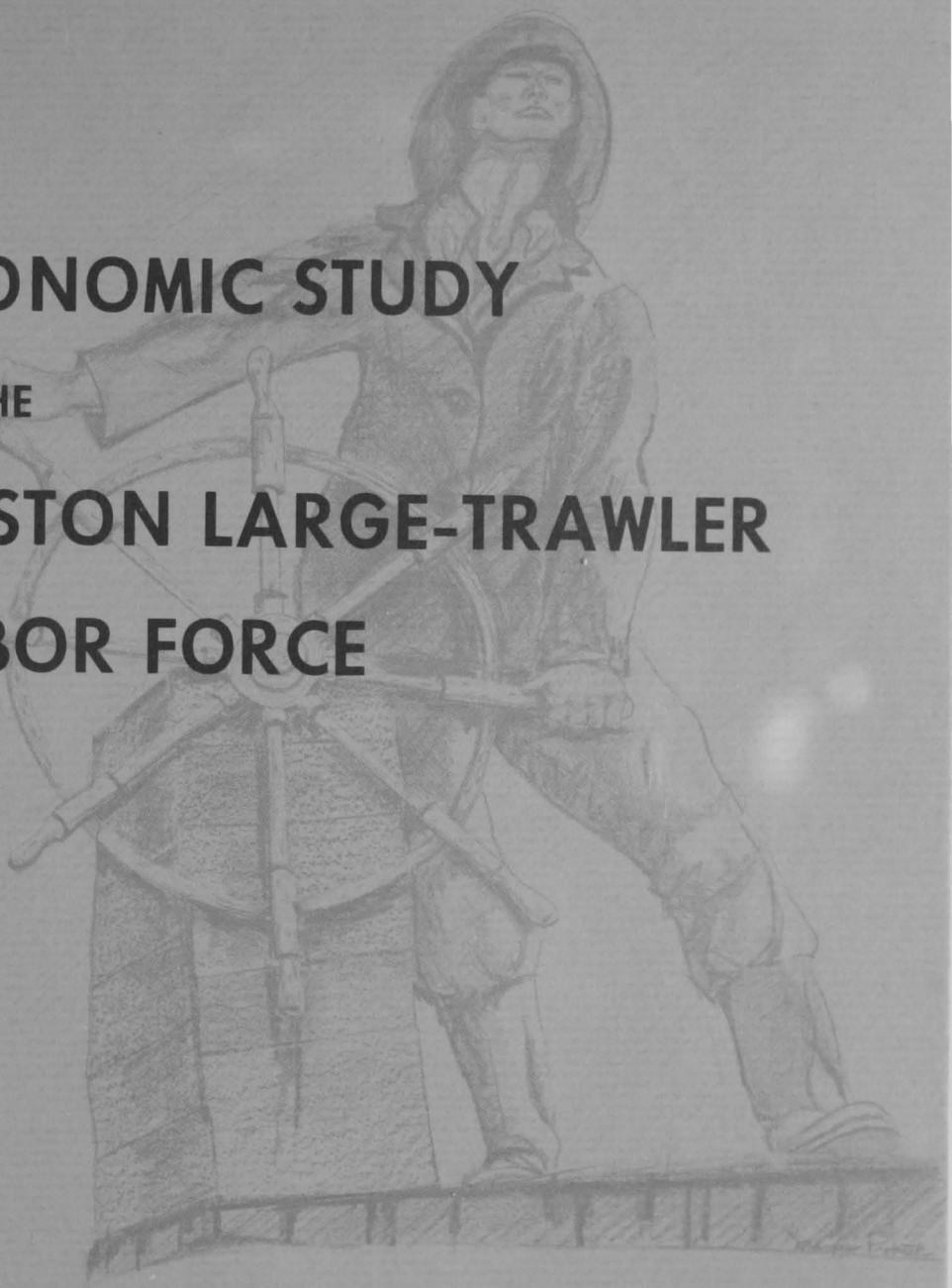
AN

ECONOMIC STUDY

OF THE

BOSTON LARGE-TRAWLER

LABOR FORCE



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An Economic Study of the Boston Large-Trawler Labor Force

By

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INTRODUCTION

The number of persons in the United States dependent on commercial fishing for a livelihood has dropped sharply in recent years. In a labor intensive industry such as commercial fishing, declining employment can be a signal of economic problems in the industry. Nevertheless, the Nation's fishing industry retains a considerable amount of capital investment and is responsible, directly or indirectly, for substantial economic activity in the United States economy. Investment in vessels and fishing gear alone is about $500 million, and directly related processing industries represent a much greater investment. The domestic fishing "crop" is worth more than $400 million annually. Estimates place the retail value of all fishery products sold in the United States at about $2 billion. It has also been estimated that over 600,000 people are employed in the fishing industry or directly related industries.[1]

These facts help identify the public's interest in maintaining its fisheries. Legislation aimed at replacing aging vessels--in the form of a construction differential subsidy program--indicates a public awareness of major fishing problems.[2] Additional capital investment, in itself, however, is no guarantee of industrial recovery. Crewmen who are capable of learning the skills required to man the new vessels and equipment will be needed. It is imperative, therefore, that the fishing manpower situation be clearly understood and this information be available for planning and decision making on both public and private levels.

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[1] Here's how the U.S. fisheries stand in statistical profile. Fish Boat 10(5): 41, 43, 45-47. H. L. Peach Publications, New Orleans, La.

[2] Reference is made to the United States Fishing Fleet Improvement Act, P.L. 86-516, approved June 12, 1960, amended by P.L. 88-498, approved August 30, 1964. A key provision of this Act states that "the vessel will be of advanced design . . . and be equipped with newly developed gear."

Scope of the Study

This study focuses on the fishing manpower resource in Boston, Mass., one of the major U.S. fishing ports. Its purpose is to evaluate the fishing labor resource in terms of current and future requirements. Under the assumption that many labor problems are as a rule not purely economic,[3] elements of both the social and economic characteristics of commercial fishermen were investigated. Most of the information for the study was acquired through personal interviews with crewmen who fished aboard large-offshore-trawler vessels of the Boston fleet in 1964. Data were obtained pertaining to age, place of birth, education, scope of work experience in both fishing and nonfishing jobs, and employment and earnings experience during 1964. Information was also collected from records on file at the Atlantic Fishermen's Union in Boston.[4]

The Study Locale

Choice of Boston as a study locale was based on the Port's relative importance in the fishing industry. The findings, of course, relate specifically to the situation in Boston. Nevertheless, many of the problems brought to light by the study are common throughout the industry.

Boston is the Nation's leading port for haddock. It accounts for about two-thirds of the domestic landings of this important species. The major fishing grounds for the Boston large-trawler fleet are in an area on the Continental Shelf known as Georges Bank (fig. 1). The western edge of this 21,000 square-mile area is about 100 miles from Boston, and the distance to the principal center of operations is about 150 miles, or a 15 to 16-hour trip for a large trawler. In addition to haddock, which accounts for about 70 percent of the catch, the vessels also land quantities of cod, pollock, hake, and cusk. Haddock are fished throughout the year, but there is a seasonal cycle with peak landings in spring and summer.

Boston, like many other fishing ports in the United States, has experienced a decline in commercial fishing employment. Its peak years occurred in the mid-1930's, when nearly 2,000 fishermen and 164 vessels were regularly employed. Since that period, however, the Port's roster of commercial fishermen has been reduced by more than 60 percent (table 1).

The Boston Large-Trawler Fleet

The bulk of Boston haddock caught in 1964 was harvested by 23 large otter-trawlers (fig. 2). This fleet of large trawlers is locally referred to as the "Boston offshore fleet," even though

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[3] Reynolds in an essay on the economics of labor, states, "Many of the central issues (in labor) are not economic in the technical sense of being amenable to the categories of economic theory. A successful attack on them required the diverse techniques of psychology, sociology, politics, law, and administration." [p. 255.] Lloyd G. Reynolds. 1948. Economics of labor. In Howard S. Ellis (editor), A survey of contemporary economics, vol. 1, ch. 7, p. 255-287. Richard D. Irwin, Homewood, Ill.

[4] Details of the study procedures are presented in appendix A.

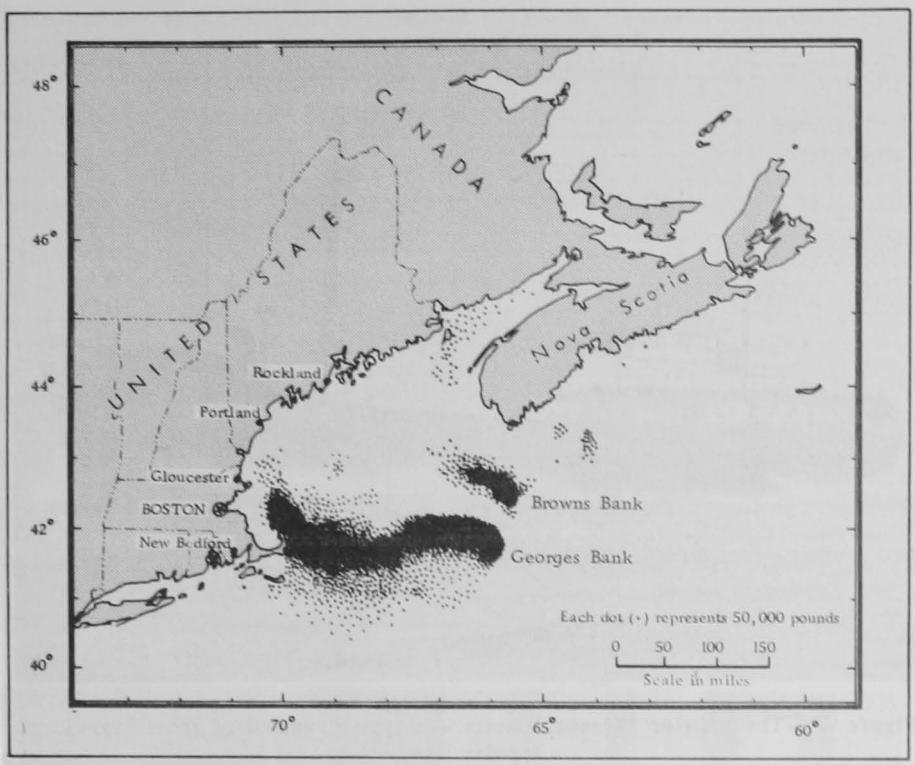

Figure 1.--U.S. haddock catch on the principal New England fishing grounds, 1964.

Table 1.--Number of fishing vessels and fishermen at Boston, Massachusetts, 1935, 1950, 1964[1]

Year	Vessels	Fishermen
	Number	
1935	164	1,933
1950	129	1,092
1964	68	731

[1] Source:
1935: Ackerman, Edward A. New England's fishing industry. Univ. Chicago Press, Chicago, Ill., 1941, p. 167.
1950: White, Donald J. The New England fishing industry. Harvard Univ. Press, Cambridge, Mass., 1954, p. 20.
1964: U.S. Bureau of Commercial Fisheries, Branch of Fishery Statistics, unpublished data.

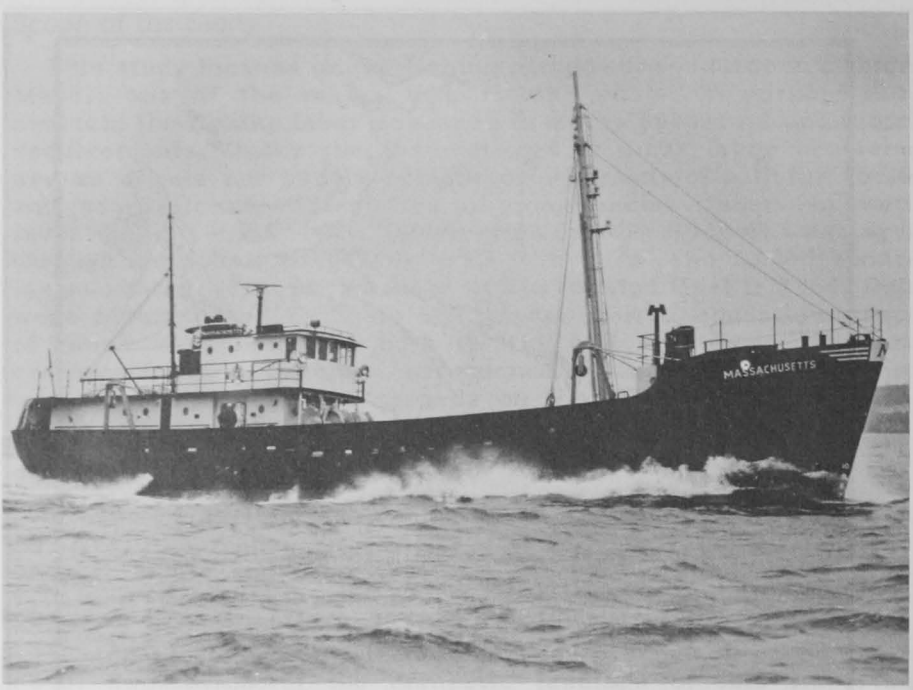

Figure 2.--The trawler "Massachusetts"--a typical vessel of the Boston large trawler fleet.

many of the smaller vessels based in Boston also fish in offshore waters.

Most of the vessels were manned by a crew of 17, including the captain, although a few carried a crew of 13 or 15 men. There were 582 fishermen in this force, but a sizable portion of this total worked only part time. The number of full-time fishermen--those working 21 trips (or 210 days) or more--made up 42 percent of the fleet total. Table 2 gives a breakdown of the fleet's manpower by job classification and by number of days fished, as represented by number of trips made.

Trips for the offshore vessels average about 10 days, including running time to and from the grounds.

On return to port, the trawlers' catches are auctioned at the Boston Fish Pier, where sales are normally made Monday through Friday mornings (fig. 3). The New England Fish Exchange administers all sales transactions. Crewmen and owners share in the proceeds of the catch on the basis of an agreement known as the "lay." Under this system, certain expenses are deducted from total revenue (gross stock), and the net revenue is divided between crew and vessel owner on a 60/40 basis. The crew's 60 percent, however, is subject to further deductions for the principal trip expenses such as fuel and provisions, bringing the amount going into crew's wages down to just under 40 percent of gross revenue.[5]

[5] For a description of the Boston auction and the lay system, see appendix B.

Table 2.--Manpower in the Boston offshore trawler fleet by job classification and number of trips made in 1964

Job classification	Number of trips[1]				Total	Percent of fleet total
	1-5	6-12	13-20	21 & over		
	--------Number of personnel--------					--Percent--
ptain	1	3	5	15	24	4
te	2	2	12	13	29	5
gineer	8	8	10	33	59	10
ok	3	4	8	16	31	5
ckhand	108	80	81	170	439	76
Total	122	97	116	247	582	100
of fleet total	21	17	20	42	100	

[1] Trips averaged 10.4 days. Fishermen were classed as follows: 1-5 ips, casual; 6-12 trips, part-time; 13-20 trips, part-time; and 21 ips and over, full-time.

Figure 3.--The selling room of the New England Fish Exchange, Boston, with an auction in progress.

CHARACTERISTICS OF THE BOSTON OFFSHORE FISHERMEN[6]

Age Distribution

While the number of fishermen in Boston has been declining, their average age apparently has been advancing. This is a condition similar to observed short-run personnel behavior in declining industries where older workers are, in effect, trapped in contrast to younger, more mobile workers who are able to depart for expanding industries. The relatively advanced age of Boston's fishermen is highlighted in a comparison with the U.S. male labor force. The proportion of men in the U.S. labor force who were under 55 years in 1964 (83 percent) was more than double that of Boston's fishermen (38 percent). Conversely, about three out of five Boston fishermen were over 55, while fewer than one out of five men in the total labor force had reached this age (table 3).

Table 3.--Age distribution of U.S. male civilian labor force and Boston offshore trawler labor force, 1964

Age group	Male labor force[1]	Boston offshore fishermen
	Percent	
Under 25	20	2
25-34	21	10
35-44	22	9
45-54	20	17
55-64	13	41
65 & over	4	21

[1] Source: U.S. Department of Labor, Manpower Report of the President, Washington, D.C., Mar. 1965, p. 195.

The figures presented in table 3 are for part- and full-time fishermen. Considering the part-time and full-time fishermen separately, it was found that, in general, the full-time fishermen were older than the part-time fishermen (fig. 4). For example, the median age of the full-time fishermen was 59 compared to a median age of 45 for fishermen with 1 to 5 trips.

The fact that full-time fishermen are considerably older than those working on a part-time basis reflects the paucity of alternative job opportunities for older workers. Wages and working conditions in other expanding industries may be better, but it is only the younger workers who can shift. Thus, the majority of those fishermen who worked 1 to 5 trips with the Boston fleet--the youngest age group--earned the bulk of their income in 1964 in jobs other than fishing. For these men, it is apparent that work with the Boston fleet offered an alternative, but jobs other than fishing were preferable.

[6] Background data for this section are presented in detail in appendix D.

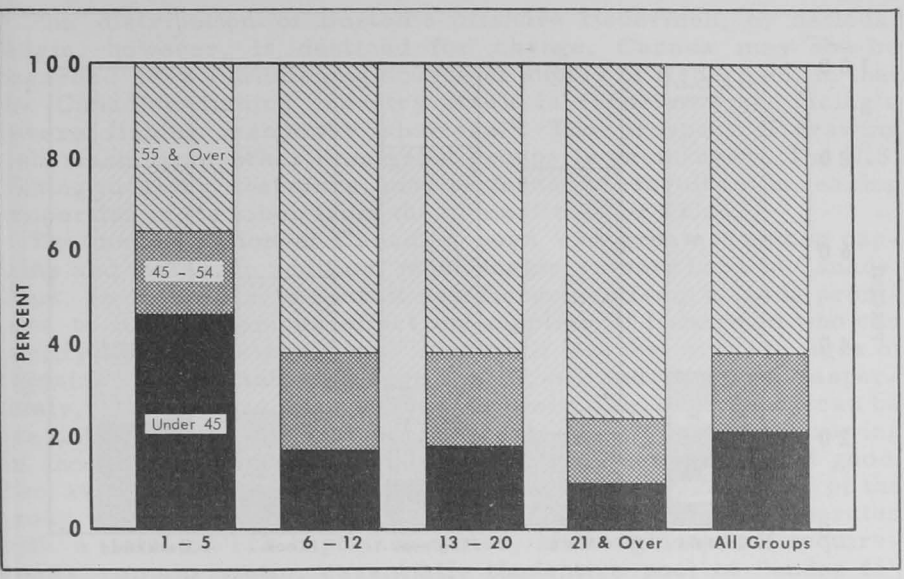

Figure 4.--Age distribution of Boston offshore fishermen, 1964, grouped by number of trips taken during year.

Although older fishermen predominated all job classes, there were some differences between classes in age distribution. For example, there were relatively fewer captains in the 65 and over group than deckhands (fig. 5). This observation suggests that captains are in a better position, financially, to retire at 65 than other fishermen. A captain, during the course of a year, can be expected to earn 2 1/2 times the amount earned by the average deckhand. It is likely that a fisherman who has worked chiefly as a deckhand during his life simply has not accumulated the savings which, in addition to social security payments, would make retirement possible.[7]

National Origin

Traditionally, crewmen in the Boston fleet have been attracted from the ranks of the foreign born. Nearly two-thirds of the crewmen in the 1964 force were born in the Maritime Provinces of Canada--mainly Newfoundland and Nova Scotia. Another 6 percent were of European stock and the remaining 29 percent were U.S. born (fig. 6).

Because the majority of Boston's offshore fishermen originated in Maritime Canada, it may be assumed that the bulk of the current labor force was predisposed to follow a fishing career. This assumption is given weight by the fact that about four out of five fishermen in the Boston offshore fleet have relatives who are, or were, commercial fishermen. In most instances, the relationship is that of either father or brother, or both.

[7] Nearly half the cooks in the fleet are 65 years or older, indicating that certain older fishermen may shift to a somewhat less physically demanding job.

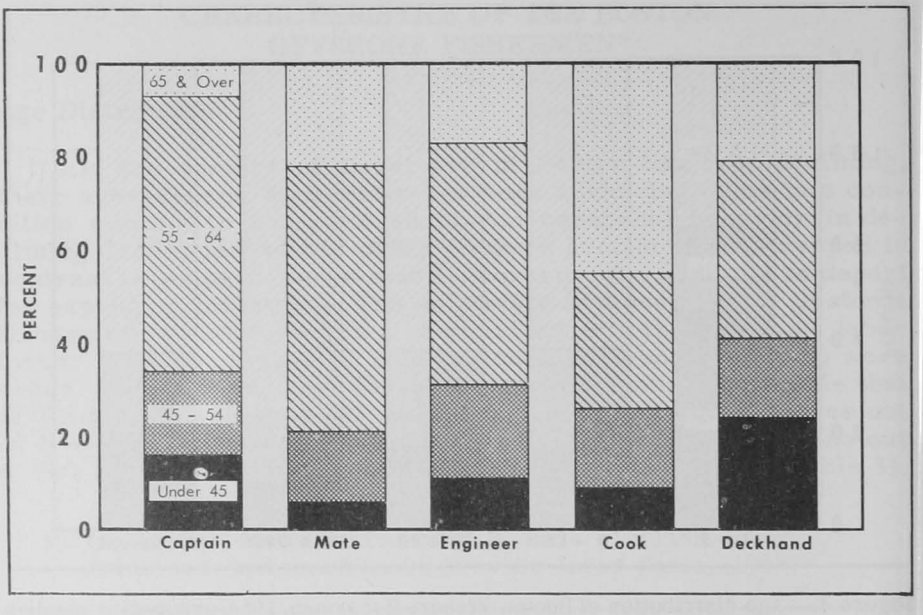

Figure 5.--Age distribution of Boston offshore fishermen, 1964, grouped by job classification.

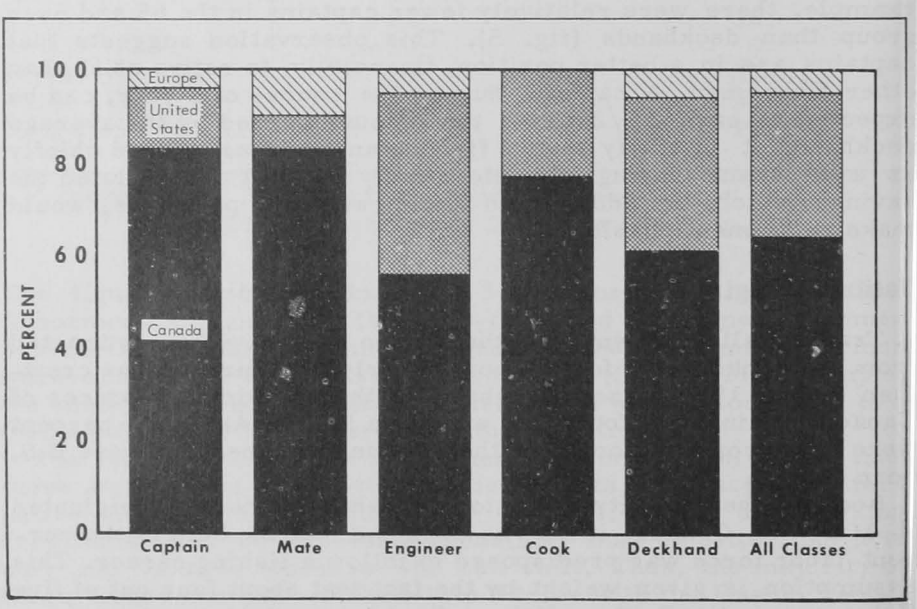

Figure 6.--Distribution of Boston offshore fishermen, 1964, by place of birth, grouped by job class.

The distribution of Boston's offshore fishermen, by national origin, however, is destined for change. Canada may now be regarded as a diminishing source of supply of fishermen, in that the Canadian fishing industry itself is reported to be facing a severe fishing manpower shortage.[8] The prospect of drawing fishermen from other immigrant groups is an unknown. The U.S. fishing industry, therefore, may be forced to recruit an increasing proportion of its labor from the domestic labor force.

The concentration of Canadian born was greatest among captains and mates. In addition, most engineers were born in Canada. Thus, the inability to recruit new fishermen from Canada promises to have a serious effect on supplies of fishermen who can qualify for these positions. Inasmuch as the average ages of captains, mates, and engineers are 57, 61, and 54 years, respectively,[9] little more than a 10-year work-life expectancy can be predicted for the present complement. The prospect of drawing on the present force of deckhands for replacements is not good. The average deckhand is 53 years old, and only one-fifth of the group, about 120 men, is under 45. The fleet in 1964 operated with a total of 112 captains, mates, and engineers. If requirements remain static, essentially the entire pool of "under 45" deckhands would be necessary to fill the skilled jobs if outside recruitment is not possible. This raises the question, however, as to whether all these men are capable of being trained in the higher skills.

Education and Training Levels

In educational achievement, fishermen in the Boston offshore fleet are below the current U.S. norm. Although high school education has become commonplace in the United States, nearly two-thirds of the Boston crewmen did not continue their formal education beyond the grade school level. As seen in table 4, the majority of male workers in the United States are high school graduates. In contrast, less than one-fifth of Boston's offshore fishermen have completed high school.

The educational lag may explain why many of the Boston fishermen have remained in an industry where hourly earnings have not kept pace with earnings in other industries. Their educational lag also supports the hypothesis that a declining industry tends to attract or retain those with lower levels of education.

Although the skill levels of the present labor force may be sufficient for current fishing operations, expected application of new technology will upgrade the skill requirements. In this event, some degree of retraining will become necessary, and the

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[8] Reference to this problem is made by Allan T. Muir. 1965. Crashing the manpower shortage barrier. Canad. Fisherman 52(11): 23-26 and See shortage of fishermen. 1965. Atl. Fisherman Shipping Rev. 5(8): 12.

[9] Averages referred to are means.

Table 4.--Education achievements of the U.S. male civilian labor force and of the Boston offshore large-trawler labor force

Educational achievement	Male civilian labor force[1]	Boston offshore fishermen
	Percent	
Attended college	23	[2] 6
Did not attend college	77	94
With high school diploma	54	19
Without high school diploma	46	81
With some high school attendance	73	37
With no high school attendance	27	[3] 63

[1] Source: U.S. Department of Labor. Manpower Report of the President. Washington, D.C., Mar. 1965, p. 225.

[2] Includes 2 percent with post-high school training other than college.

[3] Includes 4 percent with no formal education.

average fisherman may find his lack of formal education a distinct handicap.

There has been little in the way of formal commercial fishing manpower training in the United States. Most of those with formal training are relatively young fishermen who participated in recent programs under the Manpower Development and Training Act.[10] Lack of formal training is true for both the lesser skilled jobs--deckhand--and those jobs requiring higher skills, such as captain and mate. Only 5 percent of the crewmen in the Boston offshore fleet have had some type of formal training for commercial fishing or other seafaring occupations.

Even among the captains in the fleet, only 18 percent have had formal seamanship training. Despite a lack of formal training, however, most captains, mates, and engineers have qualified for official licenses.[11] Four out of five captains and mates and over half the engineers do hold licenses for their particular specialties. On the other hand, only 1 out of 10 deckhands is licensed to perform a higher skilled job. This means that there may be fewer than 50 qualified replacements for the more than 100 skilled positions needed to operate the present Boston offshore trawler fleet.

[10] Manpower Development Training Act of 1962 (P.L. 87-415), as amended.

[11] Under the "Officers' Competency Act," personnel aboard fishing vessels of 200 gross tons or over who are in charge of a watch (captain, mate, engineer) are required to be licensed by the U.S. Coast Guard. Fourteen of the 23 vessels in this study were over 200 gross tons. To obtain a license, a candidate must pass an oral examination given by the Coast Guard, and fill minimum experience requirements. To be licensed as a captain or chief engineer, a candidate must have at least 4 years of seagoing experience on deck or in the engine room, respectively, one year of which must have been as a licensed mate or assistant engineer. To qualify for the license of mate or assistant engineer, individuals are required to have 3 years of experience on deck or in the engine room, respectively.

Work Experience and Labor Mobility

The average fisherman has followed his occupation for over 30 years, and one in five has at least 45 years of experience in commercial fishing. This record of long experience, plus the fact that only about one-third have ever held any other type of job, credits the Boston fisherman as a specialist in his trade. Moreover, his experience in most cases narrows to a particular type of fishing operation. Most fishermen have served only aboard otter trawl type vessels during their work career and 20 percent have worked only aboard large otter trawlers similar to the vessels of the Boston offshore fleet.

The narrow range of fishing experience achieved by Boston's fishermen reflects the fact that most of them have worked only within the New England area. Furthermore, a significant number--two out of five--have worked only aboard Boston fishing vessels. Thus, it is likely that the attitudes of fishermen, insofar as geographical shifts are concerned, parallel those of workers in other occupations who are thought to be "sufficiently attached to their home communities so that they have little interest in jobs elsewhere at even considerably higher wages."[12]

EMPLOYMENT AND EARNINGS OF BOSTON OFFSHORE FISHERMEN IN 1964[13]

Boston's commercial fishermen in 1964 encountered what could be called a normal year in the sense that fishing operations were on about the same scale as in recent years. In 1964, the large Boston trawlers landed 60.4 million pounds of fish with an ex-vessel value of $5.7 million. During 1959-63, these vessels landed an average of 65.5 million pounds worth about $6 million annually.

Time Worked

It is evident that most of the offshore vessels are rarely idle during the year, as these vessels log 27 to 28 trips or about 280 days at sea. This leaves an average of only 3 days ashore between trips for repairs and restocking of supplies. A significant portion of the men who work aboard these vessels adhere to an intensive work schedule. The average full-time fisherman of the fleet logged 267 days at sea during 1964. In comparison, a full-time U.S. worker is on the job about 245 days per year, or about 22 days less than the full-time Boston fisherman.

Converted into hours, the full-time fisherman's work year contrasts even more sharply with the average in other industries. For example, on the basis of a 12-hour work day at sea (the norm for offshore fishermen) deckhands worked an average of 3,192 hours in 1964. By way of comparison, paid time (including holidays and vacations) tallied by nonsupervisory workers in mining,

[12] Reynolds (1948), p. 273.

[13] Background data for this section are presented in detail in appendix E.

contract construction, and manufacturing was 2,168, 1,934, and 2,116 hours, respectively.[14] This means that full-time deckhands in the Boston offshore fleet worked at least 3 hours to every 2 worked by nonsupervisory full-time employees in other industries.

Deckhands who made between 13 and 20 trips with the Boston fleet in 1964 averaged 2,148 work hours at sea. For the large majority in this group, Boston fishing was the sole source of work income. Their accumulated work time, however, did not class them as full-time fishermen, even though their hours were on a par with the annual workload in other industries.

Most of the fishermen who made less than 13 trips in 1964 received some earnings from other jobs, indicating that fishing out of Boston was only a part-time work activity.

Intrafleet Mobility

Full-time employment with the Boston offshore trawler fleet does not necessarily mean employment aboard the same vessel. In fact, considering the fleet as a whole, service aboard only one vessel during 1964 was the exception. Full-time fishermen, however, were less apt to change vessels than part-time or occasional fishermen. For example, the proportion of fishermen with multivessel experience among those taking 2 to 5, 6 to 12, and 13 to 20 trips was 48, 70, and 78 percent respectively. On the other hand, only 42 percent of the full-time fishermen changed vessels during 1964.

The prospect of higher earnings was the chief reason given by fishermen for changing from one vessel to another. A directly related reason given by deckhands was to follow the captain. This is, in effect, a recognition of the importance of the captain's skill to successful fishing operations. Another frequent consideration, especially among those with under 21 trips, was a simple desire for a "change." "Vessel tieup" (presumably due to mechanical failure) was also a factor behind multivessel service, but this applied primarily to those fishermen who worked less than 13 trips during the year. Involuntary separation accounted for only a small portion of the changes.

Vessel Preference

Over half of Boston's fishermen indicated a definite preference for work aboard particular vessels. The reasons for preferring one vessel over others in the fleet varied with the type of job held. For deckhands, a vessel's reputation for good earnings was paramount in stating a choice. Captains and engineers on the other hand considered the degree of maintenance and quality of equipment as being most important. Relatively few captains considered a vessel's record of past earnings in making a choice of vessels. This reflects a captain's confidence that his skill is a major factor

[14] U.S. Department of Labor. Manpower Report of the President. Washington, D.C., Mar. 1965, p. 236.

in fishing success. Mates in the fleet gave equal weight to captains and quality of equipment in making a vessel choice. Cooks likewise expressed a concern for quality of equipment, but also cited "good earnings experience and better living conditions" as factors behind their vessel preference.

Labor Turnover

A significant degree of intrafleet mobility of fishermen in the Boston fleet in 1964 produced a high labor turnover rate. The average crew size on the offshore vessels was 16 men. On essentially all vessels, however, at least two breaks in service per job site or position occurred during the year. The number of men employed per vessel ranged from 36 to 51 men.

There was evidence that high turnover rates were associated with low vessel earnings. Using an index of continuous service (C.S.I.) as a measure of turnover,[15] it was found that vessels with below average C.S.I. (hence, the highest turnover per job) fished less than the other vessels, had a smaller gross stock, and produced a smaller net percentage return to labor.

Vessels with a relatively high rate of labor turnover were, in general, the older vessels of the fleet. These vessels made four to five fewer trips than the rest of the fleet in 1964, indicating that "vessel tieup" (due perhaps to breakdown or severe weather when older vessels may be unsafe on the sea) was a causative factor in labor turnover. Thus, it appears likely that security of employment and earnings is jeopardized aboard the older vessels, influencing crewmen to change jobs. A high rate of labor turnover, furthermore, may lower vessel efficiency and thereby reduce earnings capability further, making jobs even less attractive and more liable to turnover. Table 5 summarizes the relation between labor turnover rate and certain measures of vessel performance.

Table 5.--Relation of labor turnover rate to vessel performance

Continuous Service Index[1]	Average gross stock	Average days at sea	Average age of vessel	Average labor share	Net labor share as a percent of gross stock
	Dollars	Days	Years	Dollars	Percent
Four lowest	166,393	246	24.5	4,761	37.1
Below average	209,884	269	23.0	5,535	37.5
Above average	289,636	299	18.0	6,859	39.8

[1] A low Continuous Service Index indicates a high labor turnover rate.

[15] This Index expressed the relation between the number of consecutive trips made by crewmen in a given site and the number of possible consecutive trips for that site. Thus, a vessel making n trips would have the possibility of (n-1) consecutive trips for each job site. The total number of consecutive trips for a vessel then would be s(n-1) where s represents crew size. If a count of actual consecutive trips was c, then the C.S.I. would be $\frac{c}{s(n-1)}$.

Job Site Earnings[16]

Over the 12-month span, cumulative individual job site shares exceeded $6,800 on the 17-man offshore vessels and $5,200 for the smaller offshore vessels.

In addition to the computed site share, certain job classifications receive bonuses each trip. Captains, as previously noted, are paid a bonus in the amount of 10 percent of the vessel owner's share. Chief engineers receive a fixed sum of $25 per trip; mates $20; and second engineers and cooks $15. As a result of the bonus, a captain's site aboard a 17-man vessel paid over $17,000 and about $11,600 on other vessels. Mate, engineer, and cook sites paid over $7,000 on the 17-man vessels and $5,700 on others. By way of comparison, job or position earnings in the manufacturing industries in the Boston area in 1964 were about $5,300.[17]

Although annual job earnings in the Boston fleet are on a par with annual earnings in other industries, hourly wage rates are lower because the fishermen work an average of 50 percent more hours per year. Table 6 lists the average hourly earnings of job classifications in the Boston fleet, major U.S. industry groups, and selected industries and occupations in the Boston, Mass., area.

Earnings Instability

The financial success of a given commercial fishing trip depends on many variables. Poor fishing, bad weather, or mechanical failure on the vessel are all possible. Even if fishing conditions are ideal and a good catch is brought aboard, the market at the time of landing may be unfavorable and prices extremely low. Daily prices are quite sensitive to changes in supply, and a large catch is no guarantee of a large revenue return. By the same token, volatile market forces can partially compensate for generally bad fishing luck by bringing higher prices.

Along with the wide variation in vessel earnings per trip come unstable job site shares. Average computed site shares per day at sea ranged from almost zero to over $70 per day. Crewmen earnings, however, are protected to a certain degree against the effects of a poor trip by a minimum wage guarantee that assures $12 per day for deckhands, and $13 a day for other job classes. In the event that computed site shares for a trip yield a daily average wage that is short of the guaranteed minimum, the trip is declared a "broker trip" and the minimum wage agreement takes effect (See appendix B for a detailed description of the share system in the offshore fleet).

About one out of six trips in the offshore fleet in 1964 were brokers and over three-fourths of the labor force received wage payments under the "broker scale." Vessels with 17-man crews,

[16] It is important to note that the discussion in this section relates to earnings per job site for the fishing fleet and earnings per position in other industries. The earnings per site or position accrue to one or more individuals.

[17] U.S. Department of Labor. Employment and earnings statistics for states and areas, 1939-64. Washington, D.C., June 1965, p. 275.

Table 6.--Average hourly earnings in Boston offshore fleet and other selected industries and occupations

Industry or occupation	Average hourly earnings
Boston offshore fishermen[1]	Dollars
17-man vessels:	
Deckhand	1.98
Cook	2.09
Mate	2.13
Engineer	2.13
Captain	5.09
13 and 15 man vessels:	
Deckhand	1.71
Cook	1.82
Mate	1.86
Engineer	1.86
Captain	3.76
Major U.S. industry groups:	
Mining	2.83
Manufacturing	2.53
Contract construction	3.55
Selected industries, Boston, Massachusetts, Area:[2]	
Durable goods manufacturing	2.68
Primary metal industries	2.64
Textile mill products	2.05
Food and kindred products	2.40
Carpenters, maintenance	3.13
Electricians, maintenance	3.24
Engineers, stationary	3.06
Firemen, stationary or boiler	2.66
Helpers, maintenance trades	2.62
Mechanics, maintenance	2.97
Oilers	2.48
Painters, maintenance	2.88
Pipefitter, maintenance	3.19
Tool and die makers	3.40
Janitors, porters, and cleaners	1.86
Laborers, material handling	2.25
Packers, shipping	2.32
Shipping and receiving clerks	2.50
Truckdrivers	2.91
Elevator operators	1.55
Guards and watchmen	1.74

[1] Does not include value of meals at sea. This would add approximately 28 cents per hour to the hourly wages of the offshore fishermen.

[2] Non-supervisory or production workers.

Source: U.S. Department of Labor, Bureau of Labor Statistics. Area wage survey, Boston, Massachusetts, metropolitan area. Washington, D.C., Oct. 1965, Bull. 1465-12: 13-16.

U.S. Department of Labor. Manpower Report of the President. Washington, D.C., Mar. 1965, p. 236-237.

U.S. Department of Labor, Bureau of Labor Statistics. Employment and earnings for states and areas, 1939-1964. Washington, D.C., 1965, Bull. 1370-2: 275-276.

however, made proportionately fewer broker trips than the smaller vessels and showed a smaller differential between shares computed on the lay system and actual wage payments. The excess of actual annual wage payments over computed shares per site on the 17-man vessel averaged $150, while on other vessels the differential was $318. This meant that about 2 cents out of every dollar of wages paid aboard 17-man vessels, and 6 cents out of every wage dollar for other vessels, were derived from broker payments.

Income from Fishing[18]

The income earned by Boston crewmen from fishing in 1964 correlated directly with the number of trips made. Most full-time fishermen earned well over $6,000 from commercial fishing, an income level close to the national median of $6,283 for all "year-round" full-time male workers. On the other hand, fishermen who made between 13 and 20 trips (four out of five of whom had no income other than from the Boston offshore fishery) earned, in most instances, less than $4,000 during the year. This was about 50 percent below the national median. The majority of fishermen with 6 to 12 trips earned under $2,000 from Boston fishing, and most fishermen with 5 trips or less received under $600 (table 7).

In relating fishermen's income to national norms, it is important to recall the differential in hours worked between fishing and other occupations. As previously noted, full-time fishermen work about 3 hours to every 2 worked in other industries. Thus, fishermen in this group were required to work the equivalent of a 60-hour week during 1964 in order to achieve a standard level of income. Fishermen who worked a less intensive schedule, and

Table 7.--Median earnings from fishing in the Boston offshore trawler fleet, by number of trips made and job classification, 1964

Job classification	Number of trips made			
	1-5	6-12	13-20	21 and over
	Dollars			
Captain	3,414	3,684	8,565	13,252
Mate	1,122	1,754	4,597	7,329
Engineer	871	2,207	3,872	6,149
Cook	390	1,531	4,049	6,047
Deckhand	312	1,728	3,490	6,333
All classes	352	1,869	3,679	6,473

[18] It is important to note the difference between income earned as discussed in this section and earnings per job site as discussed previously. Income earned represents the actual gross earnings of individuals in the fleet. Earnings per site, on the other hand, represents the total amount earned in a given position on the vessel during the year. Earnings for each site were actually divided among two or more individuals.

who had no other source of income, earned a substandard living.[19] This is exemplified by those in the 13 to 20 trip group who are not considered as full-time fishermen, but do work a full year when compared to most other industries and yet earn 50 percent less than the national norm.

Other Income

Most Boston fishermen earned little from jobs outside the fleet. With the exception of those who took five trips or less in 1964, crewmen in the Boston fleet were almost fully dependent on their Boston fishing job for their livelihood. Fishing out of Boston, for example, provided on the average about 94 percent of the income of those fishermen with 13 to 20 trips in 1964, and essentially 100 percent of the total income of fishermen who made 21 trips and over. For those fishermen who made between 6 to 12 trips and 1 to 5 trips, fishing accounted for 70 percent and 30 percent, respectively, of total income.

In summary, taking into account all fishermen who sailed with the fleet in 1964 (the full-time, part-time, and the casual), income produced by the offshore Boston fleet accounted for 83 cents out of every 1964 income dollar earned by the fleet's labor force. Fishermen's work income outside the Boston fleet was derived principally from shore-based jobs, whereas fishing from other ports was somewhat less important. For example, over half of the casual fishermen also worked in some type of nonfishing job and earned nearly 80 percent of their total income in this manner in 1964. On the other hand, fishing from other ports was an important source of income for only about one-fourth of the group. Among the part-time fishermen, shore jobs were held by one-third of those with 6 to 12 Boston trips but by less than one-tenth of those with 13 to 20 trips. For neither group, however, were shore jobs an important source of income. In regard to other ports, fewer than 10 percent of the 6 to 12 or 13 to 20 trippers earned fishing income elsewhere.

Apparently a small degree of moonlighting was done by the full-time fishermen. About 6 percent of this group was paid for some type of shore work in 1964. None, however, fished from other ports.

Unemployment Experience

Apparently there were occasions when some fishermen were unable to secure a job fishing with the Boston fleet. This observation is based on an indication that over one-third of the fishermen were involuntarily unemployed for some period of time during the year. The periods of unemployment ranged from 1 week to over 27 weeks; most of the unemployed were idle 11 weeks or more.

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[19] Many regard multiple person families with incomes in the $4,000-$5,999 range as "living for the most part in deprivation." Multiple person families with incomes ranging from $6,000-$7,499 are classified as living on levels extending from "the top ranges of the deprivation level to the middle ranges of the comfort level." Conference on Economic Progress. Poverty and deprivation in the U.S. Washington, D.C., 1962, p. 13-15.

As can be expected, the highest incidence of involuntary unemployment was found among those making less than 21 trips during the year. Periods of "fishing" unemployment were experienced by over half the men in the 1 to 5 trip group, two-thirds of those in the 6 to 12 trip group and over 40 percent in the 13 to 20 trip group. Among the full-time fishermen, about 12 percent were involuntarily unemployed at one time or another during the year.

On the basis of type of job held, the least amount of involuntary unemployment was found among captains and mates, and the most among deckhands. This is likely a reflection of the relative shortage of skills in the Boston offshore fleet.

From the data assembled in the study, there was no way to determine an unemployment rate that could be compared with averages for other industries. The data, however, did yield a sufficient basis for comparing the duration of unemployment. As indicated by the following table, unemployed Boston fishermen were out of work for periods much longer than the average unemployment periods for workers throughout the United States. For example, a little over half the U.S. labor force that was unemployed during 1964 was idle 5 weeks or more. In contrast, four out of five of the unemployed fishermen were out of work this length of time. Long-term unemployment--11 weeks or more--was experienced by over half of the fishery unemployed, but only one in three of the unemployed in the U.S. labor force in total (table 8).

Most unemployed fishermen received compensation under the auspices of the State's unemployment insurance system. These benefits were received for more than half of the unemployment time accumulated by the fleet in 1964. Thus, out of a total of 3,000 man-weeks of unemployment, almost 1,700 weeks of unemployment compensation was paid. Among those receiving compensation payments, the average period of unemployment was 14 weeks, with benefits received in 11 of these weeks.

Fishermen making 12 or less trips accounted for almost three-fourths of the $84,000 paid in unemployment compensation to fishermen in the offshore fleet in 1964. This group, it will be recalled, comprised about 38 percent of the fleet's total number of fishermen. The average benefit received by these claimants was well over $600, an amount greater than the average earned

Table 8.--Distribution of unemployed fishermen by duration of unemployment, by trip group, compared with U.S. labor force, 1964

Weeks unemployed	Trip group				All groups	U.S. labor force[1]
	1-5	6-12	13-20	21 & over		
	Percent					
Under 5	11.2	3.8	21.5	68.7	19.5	46.1
5-10	24.6	34.2	11.7	14.5	23.2	20.6
11-14	22.6	22.1	42.8	6.4	24.7	8.2
15-26	19.0	11.2	24.0	10.4	16.4	12.6
27 and over	22.6	28.7	0	0	16.2	12.4

[1] U.S. Department of Labor. Manpower Report of the President. Washington, D.C., Mar. 1965, p. 209.

from fishing by the 1 to 5 trip group. Table 9 summarizes the 1964 benefits paid in unemployment compensation to Boston's offshore fishermen. In the three groups making less than 21 trips, the number of claimants amounted to more than two of every five men.

Social Security Benefits

One out of five fishermen in the 1964 Boston offshore fleet was at least 65 years old and, thus, a potential candidate for social security benefits. Over half of those eligible for social security actually did receive social security benefit payments during the year. The largest number of beneficiaries occurred in the group that took 6 to 12 trips (table 10).

The average benefits for the year for all claimants were $962. Social security payments were a substantial source of income for fishermen making less than 13 trips. For those with 13 to 20 trips--a group almost wholly dependent on Boston fishing for a livelihood--benefit payments to claimants brought total earnings up to the level of earnings of the group's nonclaimants. Payments made to full-time fishermen, however, amounted to less than 10 percent of what these men earned in fishing during the year and fell short of bringing the average total earnings of claimants up to the average received by nonclaimants in the group.

Illness and Injury

Illness or injury kept about one-fourth of Boston's fishermen ashore for periods ranging up to 32 weeks and averaging about 8 weeks. In total, 1,189 man-weeks were lost to the fleet--a sum equal to about 1 out of every 12 man-weeks worked during the year.

Incapacities due to illness or injury hit hardest among the fishermen who were credited with 13 to 20 trips during the year. More than one-third of these men missed trips and accounted for 35 percent of the total time lost. This group, it will be recalled, numbers about 20 percent of the fleet's labor force. This likely is the reason many in this group fished less than full time but had no supplemental income source.

Table 9.--Fishing income and unemployment benefits paid crewmen in the Boston offshore fleet, by trip group, 1964

No. of trips fished	Claimants		Average income of claimants			Nonclaimant fishing income	Total benefits paid group
	Number	Percent of group total	From fishing	Unemployment benefits	Total		
	Number	Percent	Dollars				
1-5	48	40	474	664	1,138	500	31,861
6-12	43	44	1,754	618	2,372	1,953	26,581
13-20	47	41	3,722	398	4,120	3,927	18,689
21 & over	43	18	5,899	155	6,054	7,333	6,654
Total or average	181	31	2,910	463	3,373	4,767	83,785

Source: Commonwealth of Massachusetts, Division of Employment Security, Boston, Mass.

Table 10.--Fishing income and social security benefits paid crewmen in the Boston offshore trawler fleet, by number of trips, 1964

	Number of trips fished				Total or average
	1-5	6-12	13-20	21 & over	
			Number		
Total number in group	122	97	116	247	582
Number in group 65 years or older	18	43	22	40	123
Number of claimants in group	18	24	17	11	70
			Dollars		
Total social security benefit payments	19,746	32,016	10,336	5,258	67,356
Average benefits per claimant	1,097	1,334	608	478	962
Fishing income per claimant	644	1,592	3,367	6,271	2,154
Fishing income of claimant plus social security	1,741	2,926	3,975	6,749	3,116
Fishing income per nonclaimant	467	1,963	3,943	7,140	4,438

Source: Department of Health, Education and Welfare, Social Security Division.

In the full-time group, 28 percent of the crewmen lost work time as a result of illness or injury. The duration of illness among those in the full-time group, however, was much below the average time lost by all groups--5 weeks compared with 8 weeks. As a result, the full-time fishermen, who comprise about 42 percent of the fleet, accounted for only about one-fourth of the total time lost. Sixteen percent of the crewmen in the 6 to 12 trip groups lost time due to sickness or injury during the year, as were about 29 percent of those who took less than 6 trips.

Among those who lost time because of illness or injury, nearly half suffered a job-connected disability. Relative to the total number of fishermen in the fleet, 13 percent attributed lost time to a job-connected illness or injury. Somewhat less time was lost as a result of job-connected illnesses or injuries than for disabilities of other origin.

Compared with other industries in the United States the work-connected injury experience of the Boston fleet in 1964 was high. As seen in the following table, the "injury frequency rate" in the Boston fleet, computed on the basis of the number of disabling work injuries (or illnesses) per million employee hours worked, is above several other major industries. The duration of disabilities per case for the fishermen also appears to be longer than in other industries. Lack of available data, however, prevents a comparison on this point with the mining industries (table 11).

Table 11.--Work-connected injury experience of the Boston fleet in 1964 compared with other industry experience (1963)

Industry Group	Injury frequency rate[1]	Average days disability per case[2]
Boston fishermen	40.3	47
Manufacturing	11.9	18
Coal mining	43.5	([3])
Metal mining & milling	23.8	([3])
Contract construction	28.6	18
Major freight transportation warehousing	31.3	17
Wholesale and retail trade	12.2	14

[1] Number of disabling work injuries per million employee hours worked. In the case of Boston fishermen, work-connected illnesses are included.

[2] Pertains to injuries which do not result in death or permanent impairment.

[3] Not available.

Source: Boston fishermen - estimates from replies on questionnaires. All other - U.S. Dept. of Labor, Bureau of Labor Statistics, Injury Rates by Industry, 1963, BLS Report 295, July 1965

Hospitalization and Other Benefits[20]

About two out of every three injuries and illnesses experienced in the Boston fleet in 1964 required hospital care. Almost without exception, fishermen were treated at United States Public Health Service Hospital, Boston, Mass., facility where commercial fishermen can receive free medical services. Their average length of stay in the hospital was 3 weeks.

Hospitalized fishermen of the Boston offshore fleet who are members of the Atlantic Fishermen's Union are also eligible for certain benefits under the "Boston Fishermen's Welfare Plan." This welfare plan provides for cash payments of $5 per day payable from the first day of hospitalization and continuing for up to 26 weeks if hospitalization exceeds 5 days. Over two-thirds of those hospitalized during 1964 benefited under the plan--a number equal to 46 percent of the total who were disabled during the year.

Welfare payments from other sources, such as city or county welfare programs, were also made to some who suffered

[20] See appendix C for a detailed discussion of social welfare available to commercial fishermen.

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disabilities during the year. These payments went to about one-third of the men who missed time because of illness or injury.

Only about one-fourth of Boston's offshore fishermen have served with the armed forces, and, hence, are potentially qualified for veterans' benefits. This means that the ailing Boston fishermen depend mainly on the Public Health Service hospitals for medical care, and most aging Boston fishermen must depend on the social security system for maintenance during advanced years.

In summary, 73 percent of the disabled in 1964 received some type of welfare payments; 46 percent were beneficiaries of the "Boston Fishermen's Welfare Plan." In proportion to the entire fleet labor force, 19 percent received some type of welfare payment during 1964 and 12 percent benefited under the fishermen's welfare plan.

SUMMARY

Commercial fishing in the New England Region is destined for change. The industry has become aware of the need to improve economic efficiency. To accomplish this, managers have been required to examine each of their factors of production and, among other things, have found they are faced with a potentially serious labor problem. Fishermen, like the vessels on which they serve, are becoming old and are not being replaced. Moreover, questions have arisen concerning the adaptability of the current labor force to impending technological change.

This study of the Boston offshore labor force was carried out to illuminate aspects of the labor problem that must figure in managerial decisions with regard to allocation of labor and capital. The purpose of the study was to determine, in detail, socio-economic characteristics of the Boston offshore fishing labor force. An understanding of the labor force will assist vessel owners in ascertaining capital requirements compatible with constraints, such as the availability of skills, imposed upon the industry by the present and potential fishing labor force. Further, a thorough understanding of the characteristics of the fishing labor force will provide a base of knowledge from which new fishermen training programs can be established. The study revealed, for example, that the median age of Boston fishermen was a relatively high 57 years. This is a strong indication of relatively depressed conditions in the industry that make it unable to attract labor from other industries. It also points out the essential nature of establishing well founded training programs to replace these aging fishermen. Moreover, Canada, which has been the primary source of fishermen for the Boston offshore fleet (particularly captains and mates), is also facing a labor shortage in its own fishing industry. Therefore, it does not appear likely that Canada can be counted as a source of U.S. fishermen in the future.

The possibility of retraining the existing labor force for adapting to advanced technological developments may be limited, not only by the advanced age of the present labor force, but also by the relatively low education level. Only one-fourth of the

fishermen completed grade school, and only about 13 percent completed high school. By way of comparison, three-fourths of the entire U.S. civilian labor force is credited with at least a grade school education, while nearly one-third has finished high school.

The limited formal training of these fishermen is reflected in the relative immobility of this group with respect to both area fished and other jobs held. Four out of five fishermen were simply following the profession of their fathers. A similar number have never fished from any port other than Boston, and essentially none have fished in areas outside New England. Further, less than one-third of this labor force has held nonfishing jobs. Thus, the Boston offshore labor force is a tradition-bound, immobile group.

Fishermen's earnings, the study points out, compare favorably with other industries only in annual earnings per man. Computed on an hourly rate, wages in the Boston fisheries lagged well behind other industry averages. Further, Boston fishermen receive no paid vacations, sick leave time, or other fringe benefits common to most other industries.

The fleet's labor force in 1964 was also characterized by a relatively high job-absence rate traceable to injuries or illnesses, and by incidences of long-term unemployment. An average of over 2 weeks' time per man was lost due to injury or illness during 1964. In addition, involuntary unemployment during 1964 totaled almost 3,000 man-weeks. Thus, the labor force lost a total of over 4,000 man-weeks due to involuntary unemployment, sickness, or injury. This is an average loss of time of more than 6 weeks for each man in this labor force. Further, this group drew $84,000 in unemployment compensation and more than $67,000 in social security benefits.

That some action is needed soon to solve the Boston large-trawler labor problem is made apparent by the study's accounting of the high industrial and social costs incurred by the fleet labor force. Job absence rates and involuntary unemployment rates have been high in this industry, contributing to inflated vessel operating costs and large social welfare payments. Changes, however, must take into account the fact that present fishermen, for the most part, have had little formal education and may be indisposed to change or incapable of adapting to improved methods. Thus, it is essential to develop programs and work conditions that will attract recruits into the industry.

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ACKNOWLEDGMENTS

The cooperation of many individuals and agencies was solicited and received. The fishermen of the Boston large trawler fleet provided cooperation essential for the study. Also helpful were the vessel owners, the Atlantic Fishermen's Union, the New England Fish Exchange, the Social Security Administration, and the State of Massachusetts Bureau of Employment Security.

Donald J. White, Professor of Economics, Boston College, helped recruit qualified interviewers and provided useful comments on the study. James Ackert, President, Atlantic Fishermen's Union, gave continued cooperation that was indispensable to the research for the study.

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Preliminary data for this study were collected jointly with the Bureau of Labor Statistics, Wage Analysis Division. The pooling of effort between agencies greatly facilitated initial data work. The Bureau of Labor Statistics, U.S. Department of Labor, has published a companion report entitled "Annual earnings of Boston fisherman, 1964," by Paul V. Mulkern.

APPENDIX A

SAMPLE SURVEY PROCEDURE

Findings in this study are based primarily on responses to a questionnaire survey by personal interviews with a sample of the fishermen who were active in the Boston offshore haddock fleet during 1964.[1] The population for the survey was obtained from 1964 Atlantic Fishermen's Union listing of Boston offshore fishermen. All individuals fishing in the Boston large trawler fleet are registered with this Union. The fishermen to be interviewed were selected on the basis of a multiple stratified random sample drawn with the major strata based on number of days fished by each individual with the Boston offshore haddock fleet during 1964. Trips taken were used as a direct expression of number of days fished. Trip length averaged 10.4 days. The number of trips for each stratum were 1 to 5, 6 to 12, 13 to 20, and 21 and over. The criterion for delineation of substrata was type of position held on the vessel (i.e., deckhand, cook, engineer, mate, or captain). If a fisherman made trips under different classifications, he was listed under his most frequent classification. Stratum and substratum sample sizes were determined by consideration of two factors: (1) size of stratum or substratum, and (2) expected variations within the stratum or substratum. Elements for each substratum were drawn randomly from the substratum population.

A set of randomly drawn alternates was chosen for each substratum. If an individual in the sample was not found on the first attempt, two additional contact attempts were made. If, after three visits, the individual was not located, an alternate was selected. Likewise alternates were chosen for elements of the sample that had moved, died or refused to cooperate. Alternates were brought into the study in the order in which they were drawn.

The total sample size was not set a priori. Rather, the total sample size was determined from the sum of the substrata sample elements. The substrata sample was designed to include a minimum of 30 percent of the population in each substratum made up of deckhands and 50 percent of all other substrata. Although the minimum substratum sample size was set at five, in certain instances, it was not possible to fully meet the requirements set up in the sampling plan.

Because the sample was disproportionate, it was not possible to make a simple expansion of the sample results to obtain population estimates. Rather, it was necessary to weigh the elements from each substratum in proportion to the number of population elements represented by each sample element. The substratum population, sample size, and expansion ratios given to the individual sample elements are presented in table A-1.

By drawing upon union records, it was possible to obtain certain data for both the sample and the population. The data for the population were compared to those for the sample (as expanded by the appropriate weights). The comparison indicates that the sample was representative of the entire population (tables A-2 to A-5).

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[1] The interviews were carried out by Bureau of Commercial Fisheries personnel and Ph.D. candidates from the Economics Department, Boston College.

Table A-1.--Population, sample size, and expansion weights for Boston offshore trawler labor force questionnaire survey

Job classification	Number of trips			
	1-5	6-12	13-20	21 & over
Captain:				
Population	1	3	5	15
Sample	0	2	3	12
Weight	0	1.5000	1.6666	1.2500
Mate:				
Population	2	2	12	13
Sample	1	2	7	8
Weight	2.0000	1.0000	1.7142	1.6250
Engineer:				
Population	8	8	10	33
Sample	6	5	8	17
Weight	1.3333	1.6000	1.2500	1.9411
Cook:				
Population	3	4	8	16
Sample	2	2	6	8
Weight	1.5000	2.0000	1.3333	2.0000
Deckhand:				
Population	108	80	81	170
Sample	29	27	27	54
Weight	3.7241	3.8095	3.0000	3.1481

Table A-2.--Actual average trips per man made by population compared with average trips per man estimated by expansion of sample

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
Crewmen:					
Sample	1.9	8.8	16.1	24.9	14.7
Population	2.0	8.8	16.8	25.5	15.1
Cooks:					
Sample	2.5	9.5	16.2	26.2	19.2
Population	2.0	8.0	16.8	25.5	18.7
Engineers:					
Sample	3.2	10.8	16.4	25.9	19.2
Population	3.0	10.1	16.3	25.6	18.8
Mates:					
Sample	4.0	7.5	18.4	25.4	19.8
Population	5.0	7.5	18.3	25.5	19.9
Captains:					
Sample	--	9.0	20.0	24.8	20.8
Population	--	8.3	19.6	24.7	20.8
Total:					
Sample	2.0	8.9	16.6	25.2	15.9
Population	2.2	8.8	17.0	25.4	16.1

Table A-3.--Actual average broker trips per man for population and average broker trips per man estimated by expansion of sample

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
Crewmen:					
Sample	0.4	2.5	3.2	3.6	2.6
Population	0.5	2.3	4.2	3.5	2.7
Cooks:					
Sample	1.5	3.5	3.2	3.8	3.3
Population	1.0	3.8	3.0	4.6	3.6
Engineers:					
Sample	0.5	3.4	3.1	5.0	3.9
Population	0.7	3.2	3.3	4.7	3.7
Mates:					
Sample	1.0	3.0	3.1	4.4	3.5
Population	0.5	3.0	3.1	4.3	3.4
Captains:					
Sample	--	4.5	5.0	3.4	3.7
Population	--	3.0	6.0	3.4	3.8
Total:					
Sample	0.5	2.7	3.3	3.8	2.8
Population	0.6	2.4	4.0	3.7	2.8

Table A-4.--Actual average days fished per man for population and average days fished per man estimated by expansion of sample

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
Crewmen:					
Sample	20.0	95.0	172.2	264.3	156.3
Population	21.8	94.6	179.0	266.2	158.7
Cooks:					
Sample	27.5	94.0	177.2	275.8	202.8
Population	21.0	82.2	181.1	266.7	197.0
Engineers:					
Sample	32.0	115.8	175.8	273.6	202.8
Population	30.5	105.9	173.8	269.8	198.9
Mates:					
Sample	39.0	81.0	198.3	266.1	209.6
Population	47.0	81.0	198.8	267.8	211.3
Captains:					
Sample	--	94.5	205.0	262.3	218.5
Population	--	90.7	201.4	261.4	219.2
Total:					
Sample	21.2	96.4	176.9	266.3	168.8
Population	23.1	94.6	181.7	266.5	170.0

Table A-5.--Actual average income per man for population and average income per man estimated by expansion of sample

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
Crewmen:					
Sample	473	1,815	3,543	6,143	3,658
Population	435	1,825	3,487	6,490	3,596
Cooks:					
Sample	456	1,794	3,792	7,165	4,698
Population	395	1,487	3,946	6,587	4,648
Engineers:					
Sample	968	2,177	4,093	6,620	4,499
Population	830	1,928	4,043	6,659	4,784
Mates:					
Sample	1,122	1,754	4,202	7,923	5,412
Population	1,567	1,754	4,609	7,693	5,585
Captains:					
Sample	--	2,905	7,591	15,756	11,792
Population	--	3,624	7,357	14,932	11,460
Total:					
Sample	512	1,876	3,850	6,950	4,125
Population	503	1,873	3,849	7,095	4,196

APPENDIX B

THE BOSTON AUCTION SALE AND THE LAY SYSTEM

The Auction Sale

The following quote from a Bureau of Commercial Fisheries Market News publication gives a brief description of the Boston auction:

> "How Sales are Made: The auction sale is held at the New England Fish Exchange selling room each morning commencing at 7:30 a.m. The Exchange is open Monday to Saturday, but only in very rare instances do vessels arrive and sell on Saturday. Vessel owners employ auctioneers to sell the trips. Vessel owners cannot bid on their own trips, but reserve the right to refuse the highest bid if not acceptable. All fish sold at the first morning sale are sold at first quality or 'No. 1.' Four commission firms provide the auctioneering service. Bids are sought from the buyers gathered. More than 40 firms are members of the Exchange and can buy fish; each firm employs its own buyers. Firms pay an annual fee of $75 for the privilege . . .
>
> "The trips are sold by species. For example, all haddock on all vessels will be sold before any other species is put up for bid. In this way all vessels can begin unloading at the same time. This allows processing plants to commence operation about 8:00 a.m.
>
> "One trip can be sold to many buyers, each buyer purchasing one or more, or part of a 'scale' of a species from a vessel. The amount is specified by the buyer, or he might take the entire 'scale' of a species. Each buyer will usually purchase from more than one vessel. The 'scale' is the fish being unloaded and weighed on a scale. Most large vessels employ four scales during unloading--two scales at each of the two holds--allowing four buyers to unload their purchases at one time. If, when unloading begins, the quality of the fish is found to be below first grade, a resale will be held at the selling room. All buyers are invited to bid at the resale.
>
> "The Exchange: The New England Fish Exchange is a private corporation operating by a decree of the Federal Court. The Exchange records all transactions in the sales of the trips. When weight-out records are completed, the vessel is paid. When company purchases are tallied, the firms are billed. Payment must be made to the Exchange within 24 hours from the time unloading is completed, or no later than 5 p.m. the following day.
>
> "The Exchange deducts a fee of 1.0 percent of the gross value of the trip for its services. The Exchange also records and handles some other expenses of the trips for the vessels--auction fee, wharfage, ice and water, and these are deducted from the gross 'stock' of value of the catch."[1]

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[1] U.S. Department of the Interior, Bureau of Commercial Fisheries, Market News Service. Information and explanatory statement for daily New England Market News Services 'Fishery products reports' issued at Boston. Boston, Mass., Apr. 1963 (rev.), 9 p.

The Lay System

The system for distributing the proceeds of the catch of Boston's offshore vessels between crew and vessel owners is a share system known as the "60/40 lay." The details of this arrangement are stated in contracts between the vessel owners and the Atlantic Fishermen's Union, bargaining agent for the crewmen. All trips are settled on an individual basis. The following is a facsimile of a typical trip settlement, using hypothetical figures.

Hypothetical trip settlement for a 10-day trip of a 17-man Boston offshore vessel, 1964

Gross Sales		$10,000
less:		
Wharfage (@ 0.5% per lb. of catch)	50	
Scales	9	
Exchange fee (@ 1% of gross sales)	100	
Welfare fund (@ 1% of gross sales)	100	
Chief engineer	25	
2d engineer	15	
Mate	20	
Sounding machine	20	
Watchman	25	
Radar	50	
Lumper (unloading)[1]	72	
Ice (deductions made here only during summer)		
Subtotal		486
Net Stock Divided		9,514
Vessel owner share (@ 40% net)		[2] 3,806
Crew share (@ 60% net)		5,708
less crew expenses:		
Fuel & lubricating oil	800	
Ice	250	
Icing up	32	
Groceries & provisions	650	
Cook	15	
Water	8	
Lumper (unloading)[1]	72	
Subtotal		1,827
Net crew share		3,881
Share per crewman		[3] 228

[1] The handling of lumper fees varies between vessels.

[2] Captain receives, in addition to regular share, 10 percent of the vessel owner share.

[3] If this share was $120 or less, the trip would have been declared a "broker" (10 days x $12 per day minimum guarantee). The difference between the minimum guarantee and the actual share would be made up by the owner.

APPENDIX C

SOCIAL WELFARE FOR FISHERMEN

Medical Care

Law and custom provide for special conditions regarding the medical care for commercial fishermen. The fishing vessel owner is legally responsible for providing maintenance and care until the time an employed commercial fisherman has recovered from a job injury or sickness. Fishing vessel owners usually obtain insurance against the expenses they may incur under legal responsibilities for maintenance and care, which are applicable to them.

Medical care is provided free of charge to the employee and self-employed commercial fishermen who are engaged in commercial fishing on vessels of 5 net tons or more by U.S. Public Health Service in its hospitals maintained by the Bureau of Hospitals.[1]

Hospitalized fishermen of the Boston offshore fleet who are members of the Atlantic Fishermen's Union are also eligible for certain benefits under the "Boston Fishermen's Welfare Plan." This welfare plan provides for cash payments of $5 per day payable from the first day of hospitalization and continuing for up to 26 weeks. Generally a fisherman is eligible for welfare plan payments if he has worked at least 90 days during any consecutive 150-day period prior to his incapacity, provided he has not absented himself from fishing over a consecutive 90-day period. In the event of the latter, eligibility may be reinstated by making three trips within 60 consecutive calendar days. The welfare fund is supported by deductions of 1 percent of the gross stock of each vessel at the time trips are settled.

Retirement and Unemployment Insurance

Fishermen are covered by the provisions of the Social Security Laws and the Federal Unemployment Tax Act. All commercial fishermen, both wage earners and self-employed, qualify for Social Security benefits. Not all fishermen are eligible for unemployment insurance. Unemployment insurance benefits do not accrue to self-employed fishermen nor, generally, to fishermen serving aboard vessels under 10 registered tons. Well over half the fishing work force in the United States is in the self-employed category. Also, a significant volume of fishing operations is conducted aboard small vessels. As a result, only about one-third of U.S. commercial fishermen qualify for unemployment insurance benefits.

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[1] Details of the justification, history, and current conditions pertaining to this service may be obtained from Fisheries Legislation, hearings before the Merchant Marine and Fisheries Subcommittee of the Committee on Commerce, U.S. Senate, 88th Congress 1st Session, on S978 and other bills, April 24 and 25, 1963, and Medical Care for Self-Employed Seamen, hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 88th Congress 1st Session, on S978 and other bills.

Accident and Death Benefits

Accident and death benefit compensation to commercial fishermen or their families in the case of deceased fishermen, is a part of the employer liability law applicable to fishing vessel owners. A section of the Merchant Marine Act of 1934, known as the Jones Act, makes it possible for commercial fishermen, or their heirs, to process claims of this type in Federal District Courts. As a general rule, employed fishermen do not insure themselves for accident or death benefits. Usually, the fishing vessel owner obtains protection and indemnity insurance to cover his liability in such cases. Often the insurance firms settle claims for accident or death benefits directly with the claimants, but many cases are brought before the courts. Jury trials may be requested by the plaintiff, and many large awards have been made in such cases in recent years.

Wage Levels

The Fair Labor Standards Act of 1938, as amended, provides specific exemptions for commercial fishermen from both the minimum wage and overtime requirements of the Act. The Act, however, extends its provisions (except for overtime requirements) to employees in fish processing plants onshore. The purpose of the fishermen exemption, as indicated by the legislative history of the Act, is to exempt from the minimum wage and overtime provisions of the Act, employment in those activities in the fishing industry that are controlled or materially affected by natural forces or elements.

Generally, fishermen's wages are based on a predetermined percentage of the proceeds from the catch. Wage levels, therefore, are a function of both the volume of the catch and prices received. The fish harvesting industry is characterized by many small scale units of production competing for an undetermined resource for distribution in a market subject to widely fluctuating price levels. Marked changes in supply conditions from month to month, or even day to day, influence prices paid for fish. Because of the nature of the elasticity of demand for most fishery products, income instability is the rule in the matter of wages paid fishermen.

APPENDIX D

CHARACTERISTICS OF THE BOSTON OFFSHORE FISHERMEN--DETAILED TABLES

Table D-1.--Average ages of fishermen in the Boston offshore trawler fleet, by trip group and by job classification, 1964

Job classification	Number of trips: 1-5		6-12		13-20		21 & over		All groups	
	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.
	Age in years									
Captain	-	-	60	60	58	57	53	56	57	56
Mate	69	69	57	57	57	59	59	58	61	59
Engineer	46	46	56	59	53	53	59	61	54	59
Cook	69	69	73	73	58	56	60	61	65	62
Deckhand	45	45	56	57	54	58	57	58	53	57
All classes	47	45	57	58	55	58	57	59	54	57

Table D-2.--Age distribution of Boston fishermen by number of trips made, 1964

Age group	Number of trips: 1-5	6-12	13-20	21 & over	All groups
	Percent				
Under 25 years	4	0	3	0	2
25-44 years	42	17	15	10	19
45-54 years	18	21	20	14	17
55-64 years	21	18	43	60	41
65 and over	15	44	19	16	21

Table D-3.--Age distribution of Boston fishermen by job classification, 1964

Age group	Capt.	Mate	Engineer	Cook	Deckhand	All groups
	Percent					
Under 25 years	0	0	2	0	2	2
25-44 years	16	6	9	9	22	19
45-54 years	18	15	20	17	17	17
55-64 years	59	57	52	29	38	41
65 and over	7	22	17	45	21	21

Table D-4.--Distribution by place of birth of Boston offshore fishermen, by job classification, 1964

Birthplace	Job classification					All groups
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Canada:	83	83	56	77	61	64
Newfoundland	65	67	12	61	51	49
Nova Scotia	18	16	44	16	10	15
United States:	13	7	39	23	33	31
Massachusetts	0	0	22	3	26	22
Other New England	13	0	3	10	4	5
Other States	0	7	14	10	3	4
Europe	4	10	5	0	6	5

Table D-5.--Distribution by place of birth of Boston offshore fishermen, by number of trips made, 1964

Birthplace	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Canada:	23	65	62	83	64
Newfoundland	19	53	51	61	50
Nova Scotia	4	12	11	22	14
United States:	70	28	33	11	31
Massachusetts	58	25	19	5	22
Other New England	9	2	6	3	5
Other U.S.	3	1	8	3	4
Europe	7	7	5	6	5

Table D-6.--Distribution of Boston offshore fishermen with relatives who are (or were) commercial fishermen, by number of trips made, 1964

Relatives fishing	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Have relatives who are (or were) fishermen	58	87	76	87	79
No relatives who are (or were) fishermen	42	13	24	13	21
Relation[1/]					
Fathers	47	78	67	73	68
Brothers	26	78	51	69	59
Others	26	31	35	44	37

1/ Includes duplications.

Table D-7.--Distribution of crewmen in the Boston offshore trawler fleet by relatives who are (or were) commercial fishermen, by number of trips made, 1964

Relatives fishing	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Father only	23	4	20	13	14
Father/brother(s)	32	50	23	27	30
Father/other(s)	14	7	10	5	7
Father/brother(s) other(s)	14	28	34	40	33
Brother(s) only	0	11	10	9	9
Brother(s)/other(s)	0	0	0	3	2
Other(s) only	17	0	3	3	5

Table D-8.--Education level of crewmen in the Boston offshore trawler fleet, by job classification, 1964

Education level	Job classification					All groups
	Capt.	Mate	Engineer	Cook	Deckhand	
Percent with grade school only	46	55	66	61	59	59
Percent finished 1/	29	21	30	26	26	27
Average years attended	7	6	6	6	6	6
Percent with grade school and high school only	46	27	31	20	31	31
Percent graduated	29	10	14	10	12	13
Average years attended high school	3	3	2	3	3	3
Percent with grade school, high school, and college	4	11	0	0	4	4
Percent with 4 years and over	0	0	0	0	0	0
Average years attended	0	3	0	0	2	2
Percent with grade school, high school, and other specialized training 2/	4	7	3	0	2	2
No formal education	0	0	0	19	4	4

1/ Eight years U.S.A., nine years Canada.

2/ Mainly vocational or technical, with an average attendance of between 1 and 2 years.

Table D-9.--Boston offshore fishermen holding Coast Guard competency licenses, by job classification, 1964

Job classification	With license	Without license
	Percent	
Captain	82	18
Mate	78	22
Engineer	53	47
Deckhand	11	89

Table D-10.--Degree of formal training for commercial fishing or other seafaring jobs experienced by Boston offshore fishermen, by job classification, 1964

Job classification	With normal training	Types of training
	Percent	
Captain	18	Armed Service, Navigation School
Mate	0	-
Engineer	0	-
Cook	6	(Not classified)
Deckhand	5	Government-Industry Cooperative Training Programs 1/
All classes	5	

1/ Conducted recently in Gloucester and Boston under the Manpower Development Training Act of 1962 (P.L. 87-415), as amended.

Table D-11.--Average number of years fishing experience of crewmen in the Boston offshore trawler fleet, by number of trips and by job classification, 1964

Job classification	Number of trips								All groups	
	1-5		6-12		13-20		21 & over			
	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.
	Years									
Captain	-	-	38	38	42	40	32	35	35	35
Mate	30	30	34	34	35	40	39	38	36	38
Engineer	26	26	32	36	26	29	37	35	32	35
Cook	51	51	47	47	32	34	38	38	32	37
Deckhand	21	15	37	39	31	38	36	37	32	37
All classes	24	27	36	39	32	37	36	36	33	36

Table D-12.--Fishing experience of Boston offshore trawler crewmen, by job classification, 1964

Years of experience	Job classification					All groups
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Under 5 years	0	0	8	0	9	7
5-14 years	0	0	3	0	8	6
15-23 years	12	11	11	11	11	11
24-34 years	23	17	22	22	15	17
35-44 years	53	55	39	39	37	40
45 and over	12	17	17	28	20	19

Table D-13.--Fishing experience of Boston offshore trawler crewmen, by number of trips made, 1964

Years of experience	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Under 5 years	29	6	4	0	7
5-14 years	13	6	9	0	6
15-23 years	5	6	16	12	11
24-34 years	13	16	12	22	17
35-44 years	27	22	47	49	40
45 and over	13	44	12	17	19

Table D-14.--Jobs other than fishing held by crewmen in the Boston offshore fleet, by job classification, 1964

Job classification	With nonfishing job: Since 1959	In total work exp.	Major types of jobs held
	Percent		
Captain	0	4	Government
Mate	10	35	Construction
Engineer	30	39	Construction, mechanic, seagoing
Cook	7	17	Construction, transportation, shipyard, seagoing
Deckhand	25	34	Manufacturing, construction
All classes	23	32	Manufacturing, construction, seagoing

Table D-15.--Boston offshore fishermen having work experience on nonfishing vessels, by job classification, 1964

Type of nonfishing vessel	Job classification					Total
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Navy	4	0	10	6	2	3
Merchant	13	7	14	23	10	11
Research	0	0	3	13	5	5
Industrial	0	0	0	6	2	2
Other	0	0	7	0	5	4
	Number					
Total with other vessel experience	17	7	34	48	24	25
Total with no other vessel experience	83	93	66	52	76	75

Table D-16.--Fishing vessels on which Boston offshore trawler fishermen have served, by job classification, 1964[1]

Vessel type	Job classification					All groups
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Large otter trawler only	24	17	25	11	20	20
Medium otter trawler	71	50	50	61	53	53
Small otter trawler	29	72	50	67	52	53
Line trawler	17	28	42	61	24	28
Scalloper	-	6	19	17	8	9
Mackerel seiner	-	11	39	28	26	26
Swordfish	-	4	39	44	14	19
Menhaden	-	6	11	11	5	6
Lobster	-	-	19	-	8	8
Other	-	6	17	28	11	12

1/ Includes duplications.

Table D-17.--Ports from which Boston offshore trawler fishermen have fished, by job classification, 1964[1]

Port location	Job classification					All groups
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Boston only	48	34	42	23	37	37
Other New England	39	66	58	77	62	62
Mid-Atlantic	4	7	5	16	25	21
Chesapeake	-	-	3	6	1	1
South Atlantic	-	7	3	6	2	2
Gulf	-	-	-	-	1	1
Pacific	-	-	-	10	1	1
Foreign	-	7	5	-	2	3

1/ Includes duplications.

Table D-18.--Ports from which Boston offshore trawler fishermen fished during five years, 1959-1964 by job classification, 1964

Job classification	Ports		
	Boston only	Other New England ports	All other ports
	Percent		
Captain	94	6	0
Mate	89	11	0
Engineer	83	17	0
Cook	67	33	0
Deckhand	87	13	0
All classes	86	14	0

Table D-19.--Veteran status of fishermen in the Boston offshore trawler fleet, by job classification, 1964

Type of service	Job classification					All classes
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Army	-	7	17	6	10	9
Navy	17	-	10	7	5	6
Marines	-	-	-	-	5	4
Coast Guard	-	-	9	-	2	2
Air Force	4	-	-	-	3	3
A. F. and Navy (Combination)	-	-	-	-	1	1
Total with veteran status	21	7	36	13	26	25
Non-veterans	79	93	64	87	74	75

Table D-20.--Highest rank or rate achieved by Boston offshore fishermen who were veterans of the armed services, by job classification, 1964

Rank or rate	Job classification					All classes
	Capt.	Mate.	Engineer	Cook	Deckhand	
	Percent					
Officer	0	0	0	0	3	3
Non-commissioned	100	0	57	50	68	66
Enlisted	0	100	43	50	29	31

APPENDIX E

EMPLOYMENT AND EARNINGS OF BOSTON OFFSHORE FISHERMEN IN 1964--DETAILED TABLES

Table E-1.--Frequency distribution of number of trips made by Boston offshore fishermen, by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Engineer	Cook	Deckhand	
	Number					
1	-	-	1	1	45	47
2	-	-	1	1	34	36
3	-	-	3	1	13	17
4	-	1	3	-	13	17
5	1	1	-	-	3	5
6	-	-	1	1	13	15
7	2	1	1	1	11	16
8	-	1	-	-	11	12
9	-	-	1	1	15	17
10	-	-	1	1	13	15
11	1	-	3	-	9	13
12	-	-	1	-	8	9
13	-	-	2	-	6	8
14	-	1	1	-	6	8
15	-	-	2	2	9	13
16	-	1	-	1	13	15
17	-	-	1	4	17	22
18	-	3	1	-	12	16
19	-	4	2	-	11	17
20	4	3	1	1	8	17
21	-	1	2	1	12	16
22	3	-	4	1	14	22
23	3	3	3	1	18	28
24	2	1	3	3	21	30
25	3	2	5	2	20	32
26	1	1	4	2	24	32
27	-	2	4	2	16	24
28	4	1	2	2	20	29
29	-	-	3	2	16	21
30	-	2	-	-	4	6
31	-	-	3	-	2	5
32	-	-	-	-	2	2
	24	29	59	31	439	582

Table E-2.--Average number of trips made by Boston offshore trawler fishermen, by number of trips and by job classification, 1964

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Number				
Captain	5	8	20	25	21
Mate	5	8	18	26	20
Engineer	3	10	16	26	19
Cook	2	8	17	26	19
Deckhand	2	9	17	25	15
All classes	2	9	17	25	16

Table E-3.--Average number of days worked[1/] by Boston offshore fishermen aboard Boston offshore trawlers, by number of trips and by job classification, 1964

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Days				
Captain	61	91	201	261	219
Mate	49	81	199	268	211
Engineer	31	106	174	270	199
Cook	21	82	181	267	197
Deckhand	22	95	179	266	159
All classes	23	95	182	267	170

1/Computed on basis of days out.

Table E-4.--Average number of offshore vessels served on by Boston offshore fishermen, by number of trips and by job classification, 1964

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Number				
Captain	1.0	2.0	1.5	1.7	1.6
Mate	2.0	2.5	3.7	1.6	2.5
Engineer	1.5	1.8	3.0	1.6	1.9
Cook	1.7	2.5	3.0	1.7	2.2
Deckhand	1.3	2.8	3.2	2.1	2.3
All classes	1.3	2.7	3.0	2.0	2.2

Table E-5.--Frequency distribution of number of vessels served on by Boston offshore fishermen, by number of trips and by job classification, 1964

Number of trips and job classification	Vessels									Total
	1	2	3	4	5	6	7	8	9	
	Number									
1-5 Trips[1]										
Captain	1	-	-	-	-	-	-	-	-	1
Mate	2	-	-	-	-	-	-	-	-	2
Engineer	4	4	-	-	-	-	-	-	-	8
Cook	2	-	1	-	-	-	-	-	-	3
Deckhand	77	25	6	-	-	-	-	-	-	108
Total	86	29	7	-	-	-	-	-	-	122
6-12 Trips										
Captain	2	1	-	-	-	-	-	-	-	3
Mate	1	-	-	1	-	-	-	-	-	2
Engineer	4	2	1	1	-	-	-	-	-	8
Cook	2	-	1	-	1	-	-	-	-	4
Deckhand	20	18	18	8	11	5	-	-	-	80
Total	29	21	20	10	12	5	-	-	-	97
13-20 Trips										
Captain	3	-	1	-	-	-	-	-	-	4
Mate	2	1	3	2	1	3	-	-	-	12
Engineer	5	-	1	1	1	1	1	-	-	10
Cook	1	2	2	1	2	-	-	-	-	8
Deckhand	15	17	18	15	6	4	5	2	-	82
Total	26	20	25	19	10	8	6	2	-	116
21 Trips and over										
Captain	12	2	-	1	-	1	-	-	-	16
Mate	8	2	3	-	-	-	-	-	-	13
Engineer	21	5	6	1	-	-	-	-	-	33
Cook	11	2	1	1	1	-	-	-	-	16
Deckhand	90	25	26	13	4	6	3	1	1	169
Total	142	36	36	16	5	7	3	1	1	247
All trip groups										
Captain	18	3	1	1	-	1	-	-	-	24
Mate	13	3	6	3	1	3	-	-	-	29
Engineer	34	11	8	3	1	1	1	-	-	59
Cook	16	4	5	2	4	-	-	-	-	31
Deckhand	202	85	68	36	21	15	8	3	1	439
Total	283[1]	106	88	45	27	20	9	3	1	582

1/ Includes 47 who took only one trip.

Table E-6.--Reasons given by Boston offshore fishermen for serving on more than one vessel, by number of trips made, 1964

Reasons	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
1. Follow captain	-	-	4	20	7
2. Efficient, safe vessel and gear	-	3	-	-	1
3. A change	27	22	31	14	23
4. Involuntary separation	7	-	1	3	3
5. Vessel breakdown	12	16	-	6	8
6. Change job class	7	-	-	-	2
7. Likes good cooks	-	-	-	3	1
8. Money	7	31	43	36	30
9. All other (including no particular reason)	40	28	21	18	25

Table E-7.--Reasons given by Boston offshore fishermen for serving on more than one vessel, by job classification, 1964

Reasons	Job classification					All classes
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
1. Follow captain	1/	0	0	0	8	7
2. Efficient, safe vessel and gear	0	0	8	0	0	1
3. A change	33	21	15	36	23	23
4. Involuntary separation	0	0	0	7	3	3
5. Vessel breakdown	0	0	0	0	10	8
6. Change job class	0	0	0	0	1	2
7. Likes good cooks	0	0	0	0	1	1
8. Money	0	36	23	36	32	30
9. All other (including no particular reason)	17	43	54	21	22	25

1/ About half the captains changed vessels because of open skippers' sites on other vessels.

Table E-8.--Continuous Service Index crewmen Boston offshore fleet, 1964

Continuous Service Index[1/]	Trips made by vessel	Service breaks per job site
--- Index ---	------ Number ------	
95.0	27	1
89.2	26	1-2
88.6	30	2
88.4	29	2
86.6	29	2
85.8	24	1-2
85.7	27	2
85.2	26	2
85.1	31	2
84.3	32	2-3
83.0	27	2
81.4	31	3
77.2	28	3-4
74.6	26	3
74.4	26	3
74.4	31	4
70.0	23	3-4
66.3	22	3-4
60.1	27	5
57.2	28	6

1/ This index expresses the relationship between the number of consecutive trips made by crewmen, in a given site, and the number of possible consecutive trips for that site. Thus, a vessel making n trips would have the possibility of (n-1) consecutive trips for each job site. The total number of consecutive trips for a vessel then would be $s(n-1)$ where s represents crew size. If a count of actual consecutive trips was c, then the C.S.I. would be $\frac{c}{s(n-1)}$.

Table E-9.--Boston offshore fishermen indicating a preference for serving on a particular vessel, by job classification, 1964

Job classification	Have vessel preference	Do not have vessel preference
	Percent	
Captain	53	47
Mate	45	55
Engineer	75	25
Cook	55	45
Deckhand	45	55
All classes	51	49

Table E-10.--Reasons given by Boston offshore trawler fishermen for preferring particular vessels in the Boston fleet, by job classification, 1964

Reasons	Job classification					All classes
	Capt.	Mate	Engineer	Cook	Deckhand	
	Percent					
Better equipped or maintained	67	25	50	30	19	27
Good earnings experience	11	-	27	30	46	38
Follow captain	-	25	4	-	10	9
Prefer crew	-	-	4	10	7	6
Better living conditions	-	-	-	20	3	4
Steady tripper	11	12	-	-	2	2
Other	11	38	15	10	13	14

Table E-11.--Average annual vessel earnings and site or position shares by vessel size, Boston offshore fleet, 1964[1]

Vessel group	Gross stock	Net stock	Share per site[2]	Average days at sea	Site share per day[2]	Site share per hour[2]
	Dollars			Number	Dollars	
17 crew member vessels	287,384	274,623		290		
Deckhand			6,874		23.70	1.98
Cook			7,287		25.12	2.09
2d engineer			7,287		25.12	2.09
Mate			7,424		25.60	2.13
1st engineer			7,562		26.08	2.17
Captain			17,708		61.06	5.09
Less-than-17 crew member vessels	177,387	166,037		257		
Deckhand			5,257		20.46	1.71
Cook			5,625		21.89	1.82
2d engineer			5,625		21.89	1.82
Mate			5,747		22.36	1.86
1st engineer			5,870		22.84	1.90
Captain			11,581		45.06	3.76
All vessels	247,385	235,137		278		
Deckhand			6,286		22.61	1.88
Cook			6,682		24.04	2.00
2d engineer			6,682		24.04	2.00
Mate			6,814		24.51	2.04
1st engineer			6,946		24.99	2.08
Captain			15,480		55.68	4.64

1/ Bonuses are paid as follows:
Cooks and second engineers, $15 per trip; mates, $20 per trip; first engineers, $25 per trip; captain, 10 percent of owners' share.

2/ Includes broker payments.

Table E-12.--Earnings distribution of fishermen in the Boston offshore fleet by number of trips and by job classification, 1964

Earnings distribution	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5 Trips						
Under $600	-	-	50	100	81	77
600-1199	-	100	13	-	15	16
1200-1799	-	-	37	-	3	5
1800-2399	-	-	-	-	1	1
2400-3399	-	-	-	-	-	-
3400-4399	100	-	-	-	-	1
Median ($)	$ 3,414	$1,122	$ 871	$ 390	$ 312	$ 352
Mean ($)	3,414	1,122	831	395	432	488
	Percent					
6-12 Trips						
$600-1199	-	-	25	25	14	15
1200-1799	-	50	25	75	41	40
1800-2399	33	50	37	-	29	29
2400-3399	-	-	13	-	14	12
3400-4399	33	-	-	-	2	3
4400-5399	34	-	-	-	-	1
Median ($)	$ 3,684	$1,754	$2,207	$1,531	$1,728	$1,869
Mean ($)	3,624	1,754	1,746	1,487	1,825	1,868
	Percent					
13-20 Trips						
$1800-2399	-	15	-	-	12	10
2400-3399	-	8	30	25	34	29
3400-4399	-	8	40	63	42	37
4400-5399	25	46	30	12	7	15
5400-6399	-	23	-	-	5	6
6400-7399	25	-	-	-	-	-
7400-8399	-	-	-	-	-	1
8400-9999	25	-	-	-	-	1
10,000-11,999	25	-	-	-	-	1
Median ($)	$ 8,565	$4,597	$3,872	$4,049	$3,490	$3,679
Mean ($)	8,121	4,427	3,830	3,946	3,496	3,817
	Percent					
21 Trips & over:						
$2400-3399	-	-	-	6	1	1
3400-4399	-	-	3	6	8	6
4400-5399	-	8	28	6	27	23
5400-6399	-	31	24	38	15	18
6400-7399	-	16	18	6	21	18
7400-8399	6	15	9	19	10	10
8400-9999	19	15	9	13	14	14
10,000-11,999	12	15	9	6	4	6
12,000-14,999	19	-	-	-	-	1
15,000 & over	44	-	-	-	-	3
Median ($)	$13,252	$7,329	$6,149	$6,047	$6,333	$6,473
Mean ($)	14,890	7,713	6,667	6,587	6,447	7,104

Table E-13.--Proportion of total income of Boston offshore crewmen earned from Boston fishing by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	1/	33	19	10	36	32
6-12	39	46	48	40	79	69
13-20	100	94	100	95	90	94
21 & over	100	100	97	97	99	99
All groups	92	88	81	90	81	83

1/ Only one captain in this group.

Table E-14.--Proportion of Boston offshore fishermen who had income from nonfishing jobs by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	0	100	63	67	52	54
6-12	67	50	38	0	38	37
13-20	0	0	0	17	11	9
21 & over	0	0	6	25	5	6
All groups	8	10	17	22	24	22

Table E-15.--Proportion of income earned from other jobs by fishermen in the Boston offshore fleet by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	1/	67	49	60	40	42
6-12	12	29	15	0	15	14
13-20	0	0	0	4	1	1
21 & over	0	0	2	3	1	1
All groups (weighted)	1	7	10	8	13	11

1/ Only one captain in group.

Table E-16.--Proportion of total income earned by fishing from other ports by Boston offshore fishermen by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	0	0	2	0	18	17
6-12	0	6	0	0	2	4
13-20	0	2	0	0	2	2
21 & over	0	0	0	0	0	0
All groups (weighted)	0	1	*	0	5	4

* Less than 0.5 percent.

Table E-17.--Proportion of Boston offshore fishermen who had income from fishing out of other ports by number of trips and by job classsification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	0	0	13	0	28	25
6-12	0	50	25	0	5	7
13-20	0	25	0	0	7	8
21 & over	0	0	0	0	0	0
All groups	0	14	5	0	9	8

Table E-18.--Proportion of Boston offshore fishermen experiencing unemployment by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	-	-	5.1	-	14.4	11.3
6-12	4.3	3.4	10.2	12.9	12.1	11.2
13-20	-	10.4	10.2	16.1	7.5	8.1
21 & over	4.4	-	6.8	-	5.7	5.2
All groups:						
with unemployment	8.7	13.8	32.3	29.0	39.7	35.8
no unemployment	91.3	86.2	67.7	71.0	60.3	64.2

Table E-19.--Proportion of Boston offshore fishermen experiencing unemployment by number of trips and by job classification, 1964

Job classification	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Captain	-	1.0	-	.4	.3
Mate	-	1.0	2.6	-	.7
Engineer	2.5	6.2	5.2	1.6	3.3
Cook	-	4.1	4.3	-	1.5
Deckhand	51.6	54.7	28.4	10.1	29.9
All groups:					
With unemployment	54.1	67.0	40.5	12.1	35.7
No unemployment	45.9	33.0	59.5	87.9	64.3

Table E-20.--Proportion of unemployed Boston offshore fishermen receiving compensation during periods of unemployment by number of trips and by job classification, 1964

Number of trips	Job classification					All classes
	Capt.	Mate	Eng.	Cook	Deckhand	
	Percent					
1-5	-	-	33	-	62	64
6-12	-	100	50	100	87	83
13-20	-	67	67	100	73	74
21 & over	100	-	100	-	64	70
All groups	50	75	63	100	73	73

Table E-21.--Average number of weeks unemployed and average number of weeks with compensation experienced by crewmen of the Boston offshore fleet, who were unemployed, by number of trips and by job classification, 1964

Number of trips	Captain		Mate		Engineer		Cook		Deckhand		All classes	
	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.
	Percent											
1-5	-	-	-	-	14	9	-	-	17	9	16	9
6-12	2	-	4	2	13	7	13	13	20	12	18	11
13-20	-	-	14	6	14	7	10	5	10	5	11	5
21 & over	5	2	-	-	8	3	-	-	6	3	5	3
All groups	4	1	12	5	12	6	11	8	15	8	14	8

Table E-22.--Man weeks of unemployment and unemployment compensation in the Boston offshore labor force, by number of trips and by job classification, 1964

Number of trips	Captain		Mate		Engineer		Cook		Deckhand		All classes	
	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unempl.	Unempl. comp.	Unemp.	Unemp. comp.	Unempl.	Unempl. comp.
	Number of weeks											
1-5	-	-	-	-	37	24	-	-	1,038	554	1,075	578
6-12	2	-	4	2	81	46	50	50	1,044	625	1,181	723
13-20	-	-	48	21	86	43	55	25	324	183	513	272
21 & over	5	2	-	-	20	11	-	-	139	76	164	89
Total	7	2	52	23	224	124	105	75	2,545	1,438	2,933	1,662

Table E-23.--Man weeks lost due to illness or injury in the Boston offshore labor force, by number of trips made, 1964

Man weeks lost	Trip group				All groups
	1-5	6-12	13-20	21 & over	
	Number of weeks				
Man weeks lost due to illness or injury:					
Total	255	191	404	339	1,189
Job connected	67	92	222	159	540
Percent job connected of total	26.3%	48.2%	55.0%	46.9%	45.4%
Average number of weeks lost due to illness or injury:					
Total	11	12	10	5	8
Job connected	6	15	9	5	7

Table E-24.--Percentage of Boston offshore fishermen who lost work time due to illness and injury, by number of trips made, 1964

Illness/injury	Number of trips				All groups
	1-5	6-12	13-20	21 & over	
	Percent				
Lost work time	20	16	37	28	26
Illness/injury was work connected	9	6	22	13	13
Was hospitalized	11	12	30	17	17
Received some type welfare payment while out	12	10	27	23	19
Received union welfare payment while out	7	6	22	12	12

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