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Chairman—CHARLES E. JACKSON, General Manager, National Fisheries Institute, Washington, D. C.

Some Findings on Insurance Experience of Commercial Fishing Vessels in The Gulf of Mexico

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THIS PAPER is an early and brief report of an intensive survey of insurance experience of commercial fishing vessels in the Gulf of Mexico area.

The survey is part of a nation-wide study which, in addition to the Gulf of Mexico, covers the New England and California fisheries. It is sponsored by the Fish and Wildlife Service of the United States Department of the Interior. The major researchers and authors of this report are deeply indebted to Dr. Richard A. Kahn and his staff for their cooperation. Gratitude is also expressed to the three advisors of the study, Professor Ralph H. Blanchard, Insurance, Columbia University; Dean Donald J. White, College of Business Administration, Boston College; and Dr. James W. Kelley, Director of the Bureau of Business Research, Boston University, for their useful advice and constructive criticism on planning the project and reporting the findings. Finally, it is admitted that without the hard work done by the field supervisors, Professors David J. Ashton, Robert M. Campbell, Myles S. Delano, Francis S. Doody, and Albert A. Thompson; research staff; and field workers, the cooperation of the interviewed vessel owners, insurance agents, and firms, success could not have been secured.

The principal method of collecting information for this survey consisted of two steps. First, the vessel owners of a systematically selected sample of 225 vessels operating from ports located in the Gulf of Mexico were personally interviewed. Second, the insurance experience of these vessels was intensively and carefully studied for the five-year period, 1950-1954. A detailed account of the attempts to obtain reliable information on the subject appears in the Appendix.

Here we deal with three limited topics. First, we examine the overall situation between noninsured and insured vessels. In turn, we present a few significant differences between these two groups of vessels in relation to their physical and other characteristics. Finally, we attempt to give a bird's eye view of the insurance problem in terms of insurance cost and categories of accidents.

I. NONINSURABLE vs. INSURANCE.

With regard to the first topic of noninsured versus insured vessels, two basic questions may be raised. How many vessels have carried insurance and what kind of insurance has been carried on these vessels during the period from 1950

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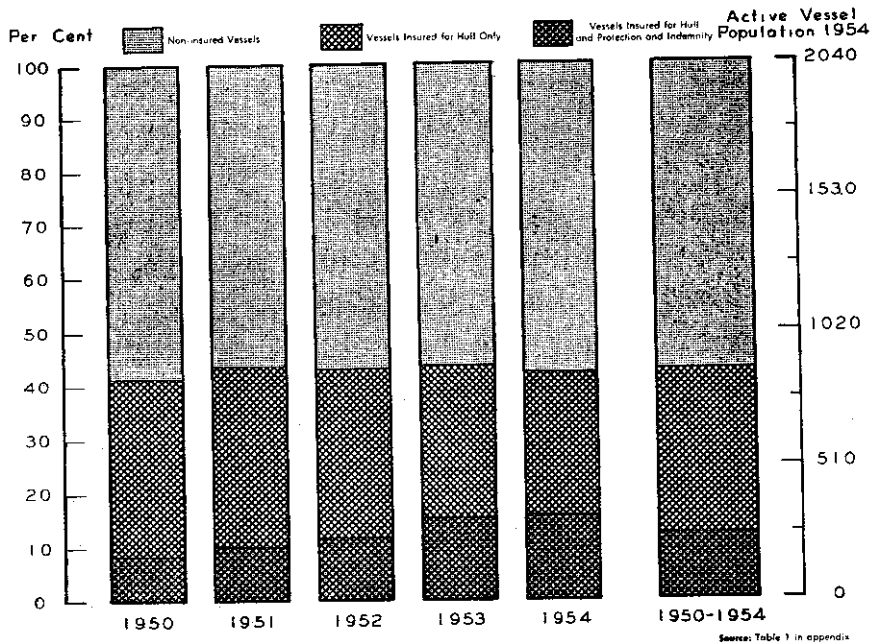


FIGURE 1. Noninsured and insured vessels, Gulf of Mexico fisheries, 1950-1954.

to 1954? What major observations can we make in connection with the findings on this subject?

1. **Proportion and Number of Noninsured and Insured Vessels.** The findings of the sample indicate that an average of 42.4 per cent of the active vessels were insured for Hull.² Reading from the left-hand side scale of Figure 1, you may notice that this percentage has changed little during the years 1950-1954. The percentage of vessels which carry Protection and Indemnity Insurance³ is much smaller than that for Hull Insurance. It averages only 12.2 per cent for the period in question, but this percentage increases steadily from as low as 8.3 per cent in 1950 to as high as 15.7 per cent in 1954.

According to our best statistical estimates, no more than half of all the commercial fishing vessels in the Gulf were likely to carry insurance on Hull. This percentage is about 18.0 per cent on Protection and Indemnity Insurance. Since at the end of 1954 the active vessel population in the Gulf was made up of about 2,040 vessels by applying the above-mentioned percentages and reading from the right-hand scale of Figure 1, you may be able to estimate that no more than 1,020 vessels were likely to carry insurance on Hull and no more than 367

²This kind of insurance protects the vessel owner against economic loss which may arise from damages to the hull, machinery, and equipment of the insured vessel under conditions, clauses, and limitations provided by the insurance contract.

³Protection afforded under this kind of insurance includes liabilities of the vessel owner arising from damages caused to other property (except collision with other vessels) by the operation of the insured vessel, liabilities arising from personal injuries, illness, or death of captain and crew, and unusual expenses to comply with Government regulations, fines, and penalties, arising because of violation of law under conditions, clauses, and limitations provided by the insurance contract.

vessels on Protection and Indemnity. Every vessel which carries Protection and Indemnity Insurance in the Gulf is likely to also carry Hull Insurance.

2. A Few Observations

How can one explain the situation which the figures indicate? Why do such a limited number of vessels have insurance coverage? Finally, how does this situation affect the insurance problem? So far, our inquiry has disclosed a number of important observations which will be itemized for the sake of brevity.

A. HULL INSURANCE

First, inability to pay insurance premiums, of course, is the most frequently mentioned reason for noninsurance by the interviewed owners. Actually, had it not been for the fact that banks and other creditors require Hull Insurance on the mortgaged vessels, the number of vessels which carry Hull Insurance in the Gulf may have been much smaller. More than two-thirds of the 63 mortgaged vessels in the sample are insured for Hull. In contrast, no more than one-third of the 162 nonmortgaged vessels are reported to carry the same kind of insurance.

Second, noninsurance is more extensively practiced among fleet operators than one-vessel owners. The former may be financially strong enough to carry part of the risk themselves. Assuming a fleet of 20 vessels with average replacement value of \$30,000 per vessel at a 5 per cent rate, the premium paid would be enough to meet the total loss of one vessel or partial losses amounting to \$30,000 per year. If such a fleet owner has no insurance on his vessels but puts these premiums aside in a reserve in order to meet total or partial losses against insurable risks on his vessel, this owner is self-insured. A self-insured owner would be able to reduce appreciably the cost of insurance, and may enjoy tax advantages as well.

Third, as far as we were able to determine, self-insurance does not seem to be widely practiced by fleet owners. Noninsurance does not necessarily mean self-insurance unless the owner sets up a reserve to meet damages to his vessel, other than the normal wear and tear, which could have been covered if he carried insurance with a risk carrier. Neither is a depreciation reserve actually a self-insurance plan unless it provides for meeting damages to vessels beyond the normal wear and tear of machinery, equipment, and replacement of old scrapped vessels. One serious limitation of a self-insurance plan is the fact that it does not offer overall coverage. The self-insurance plan in our example does not give protection to the owner of fleet beyond the average maximum of \$30,000 per year. Therefore, he should carry excess Hull Insurance with an independent risk carrier in order to have overall coverage. The owner who, for one reason or another, is unable to provide for a self-insurance plan should insure with as high a deductible as he thinks he can bear financially. Noninsurance, however, a practice which seems to be followed by many vessel owners in the Gulf, may sometimes spell economic disaster. Eight of the eighteen interviewed owners who sustained a total loss of their vessel reported that they had no insurance coverage.

B. PROTECTION AND INDEMNITY INSURANCE

First, the major reason that a very limited number of owners carry P.&I. Insurance can be attributed to the strong ties—family, national, or racial—which exist between vessel owners and crew. About one-third of the sampled owners are captain-owners and one-fourth of the sampled vessels have had

half or more of their officers and crew related to their vessel owner.

Second, for the period 1950-1954, no claims have been reported in the surveyed policy years. Reports of insurance companies and agents in the area indicate that the record has been very satisfactory. Lately, however, the situation seems to be changing. A number of suits are reported to have been filed recently against owners asking for awards for personal injuries of crew members, each representing substantial amounts. As long as provisions of the present legislation are likely to encourage claims by the crew for personal injuries, illness or death without limit, creation of a serious problem is always possible. Such claims are more likely to arise in situations where the crew members and captain have no family, national or racial ties with the vessel owner. Perhaps fear lest such a situation develop in the Gulf may account for the rise in number of vessels carrying Protection and Indemnity Insurance.

As a final observation for both kinds of insurance, the fact that no less than half of the vessels are likely to be noninsured for Hull and no less than 80 per cent to be noninsured for Protection and Indemnity does not diminish the insurance problem in the Gulf. It simply changes its nature, because the risk of economic loss from accidents is always present and the risk from a suit for personal injuries is always possible, irrespective of whether these risks are assumed by a risk carrier or shouldered by the vessel owner himself. Therefore, whether there is insurance or not the need is always present and imperative to find ways and means which will enable the commercial fishing industry to obtain adequate and less costly protection against losses from property damage or against crew claims.

II. SIGNIFICANT DIFFERENCES BETWEEN NONINSURED AND INSURED VESSELS

Are there any significant differences between noninsured and insured vessels? What does a typical noninsured or insured vessel look like?

1. Differences in Hull Characteristics and Crew. On the average, a noninsured vessel is likely to be an older and a smaller vessel in many respects than an insured one. Figure 2 shows that a vessel with no insurance is likely to be about five years older and smaller than an insured vessel by approximately 20 gross tons, 10 net tons, 6 feet in registered length, and 30 horsepower of main engine. On the average, the size of the crew of a noninsured vessel is likely to consist of 2.7 men as compared to 2.9 men of a vessel with insurance.

Other differences, not shown in Figure 2, might also be of interest. About 6 out of every 10 vessels reportedly built or classified under the rules of the American Bureau of Shipping or other classification society are likely to carry insurance. This ratio is less than 4 out of every 10 for noninsured vessels. Very few vessels with motor-gasoline engines were found to carry insurance, while 1 vessel out of every 2 with steam-oil burner was insured. The larger the turnover of captains and engineers employed during 1950-1954 on a vessel, the more likely it is that the vessel is insured.

2. Differences with Regard to Navigation, Communications and Safety Equipment and Value of Vessel. An insured vessel appears to be better equipped than a noninsured vessel. Approximately 2 out of every 3 insured vessels are reported as being equipped with radio-transmitter and/or radio direction finder. The ratio is about 1 out of every 3 for noninsured vessels.

Almost the same ratios prevail on life rings, fire pumps, and medical supplies

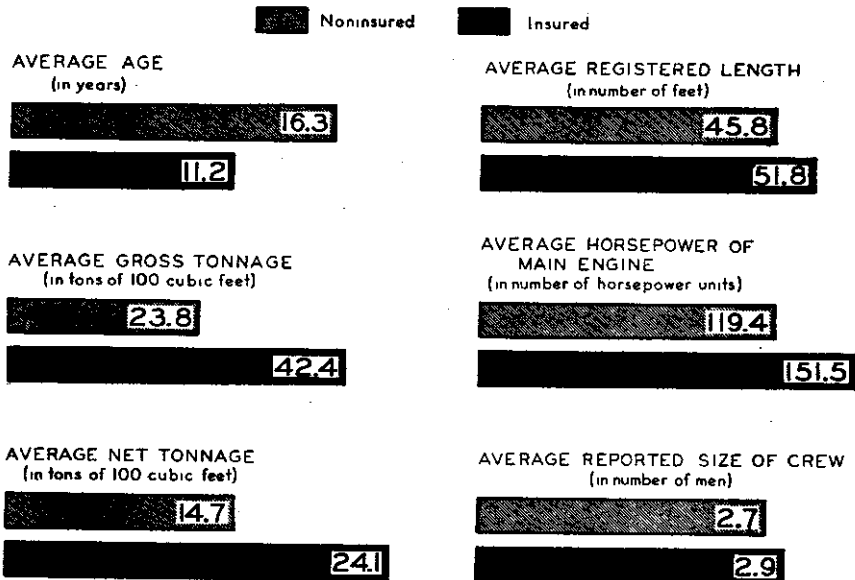


FIGURE 2. Physical characteristics of vessels, Gulf of Mexico fisheries, 1950-1954.
 Source: Table 2 in appendix.

reported by the interviewed owner as being on board the vessel. The exact percentages on these items are shown in Figure 3. More detailed information and additional differences appear in Tables 3 and 4 in the Appendix.

The same Figure 3 shows that the average dollar value of a noninsured vessel is likely to be about one-half of the average dollar value of an insured one. To be more specific, the average original cost of building and equipping a noninsured vessel appears to be 46.0 per cent of the same cost of insured vessels. Similar comparisons can be made of rebuilding cost and current market value relationships. In the former this ratio is 56.0 per cent, the latter 43.0 per cent. Furthermore, the average dollar value of a vessel insured for Protection and Indemnity Insurance was found to be almost three times as large as the average dollar value of a noninsured vessel. More information on this subject is shown in Table 5 in the Appendix.

3. A Few Observations

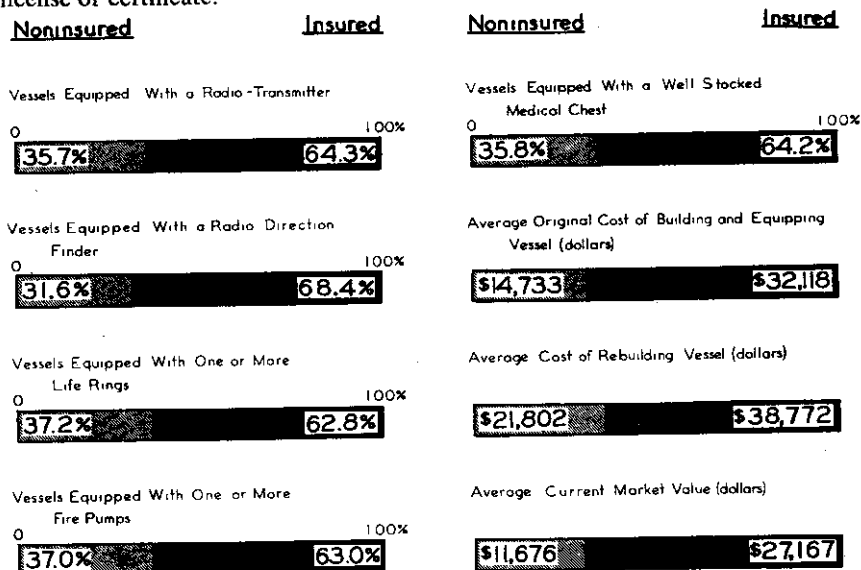
What do these differences between noninsured and insured vessels suggest? How important are these differences in the evaluation of a commercial fishing vessel as an insurable risk? Evaluation of risks constitutes the basis upon which insurance rates and other terms of the insurance contract are determined, i.e. the basis upon which the cost of insurance is largely based. In view of the importance of this subject, we present a number of observations at this early stage of our analysis.

First, the fact that an insured vessel is likely to be a larger and a better equipped vessel than a noninsured one does not necessarily mean favorable selection of risks on the part of insurance companies. A vessel itself may be a good risk yet noninsured because of financial inability on the part of the

owner to insure his vessel or because the owner is unable to see the need for insurance. On the other hand, a vessel may be insured despite the fact that it is a poor risk. Furthermore, insurance people consider a number of other factors besides the physical characteristics of a vessel in evaluating a risk.

Second, with regard to the physical condition of a vessel, the maintenance record, the fire extinguishing system, and the presence of an automatic pilot rank on top of the list in the underwriting of a vessel. In order to meet the current underwriting requirements of one leading insurance firm in the area a commercial fishing vessel must be hauled for bottom inspection and maintenance repairs twice a year and be inspected four times a year. The same firm would reduce rates to a vessel owner who is willing to install a fixed fire extinguishing system. The reduced premiums would be enough to pay for the expense involved over a two-year period. Since only 11 of the 225 sampled vessels reporting are equipped with such a system, 9 of them insured, one may be able to get some measure of the difference between existing and required safety standards against fire hazard. From the safety viewpoint installation of an automatic pilot constitutes an extra hazard, according to the insurance people in the Gulf. Vessels equipped with such a device may be charged with at least .25 per cent higher than the normal insurance rate.

Third, among the non-physical or qualitative characteristics of vessel operations, seamanship seems to be the outstanding consideration for underwriting purposes. This observation is well substantiated by our findings on the kinds of accidents which we present in the third part of this report. Here, it suffices to reveal that only 4 of the 225 sampled vessels, 2 insured and 2 noninsured, were manned with captains who were licensed to operate a steam or motor vessel of 200 gross tons or more. No engineers were reported having a similar license or certificate.



Source: Tables 3, 4, and 5 in appendix

FIGURE 3. Equipment on board and value of vessels, Gulf of Mexico fisheries, 1950-1954.

Fourth, it is the general consensus among insurance people that underwriting commercial fishing vessels nowadays is largely "companionate" or "accommodation" business. One may feel at liberty to question partly the validity of such an argument. However, whatever one's feelings are toward such a contention, the fact remains that, to the extent of this situation prevails, the commercial fishing industry is able to buy insurance which otherwise may not have been available or may have been available but at higher cost. No matter how much established and reputable insurance firms attempt to improve the accident record of the commercial fishing industry by setting up higher underwriting requirements for the prevention and minimization of accidents, their efforts must be confined to their profit consideration. Therefore, beyond establishing high underwriting requirements, risk carriers are apt to be helpness by-standers with the only alternatives to raise insurance rates and/or reduce insurance coverage.

III. COST OF INSURANCE AND ACCIDENT RECORD

Let us now examine the insurance problem from the viewpoint of insurance cost and kinds of accidents.

1. **Has the Cost of Insurance Increased Since 1950?** Cost of insurance is measured not only in terms of the premium, i.e. the amount paid by a vessel owner for a policy, but also the extent of the coverage he received. Coverage refers to the amount of insurance, the deductible, the franchise, and numerous other provisions of the insurance contract which specify the types of hazards against which the insured vessel owner is protected and the conditions or circumstances under which the insurer is liable. Both the premium paid by the insured vessel owner and the protection guaranteed by the insurer are necessary in order to determine with accuracy the cost of insurance. The numerous possible combinations of these provisions make the insurance contract a highly flexible, legal instrument which enables the insurer to tailor the insurance policy to fit the particulars of each risk. Although some uniformity prevails in practice, differences in the terms of insurance contracts make it difficult, if not impossible, to compare precisely the cost of insurance between risks over time.

Our study takes into consideration both monetary and non-monetary provisions of the insurance contract. However, in our limited analysis here we attempt to answer the question of cost of insurance by comparing the average of net premium with the amount of insurance and deductible for all claims of whatever nature for insured vessels in the sample for the period 1950-1954. This method may be considered as a reliable first approximation.

Averages of net premium, amount of insurance, and deductible for Hull Insurance appear in the left-hand side of Figure 4. Average net premium, i.e. premium paid minus returns, increased from \$968 in 1950-51 to \$1,161 in 1952-53 and fell to \$1,088 in 1954-55. At the same time, average amount of insurance also rose from \$19,720 in the first year to \$24,175 in 1954-55. The average rate of insurance, which is determined by dividing the net premium by the amount of insurance, rose from 4.9 per cent in 1950-51 to 5.8 per cent in 1952-53. In view of the fact that the average deductible amount also rose from \$337 to \$402 for the same years, it may be concluded that the cost of insurance was higher in 1952-53 than during the two earlier years. This conclusion coincides with the general experience reported by leading insurance firms in the Gulf. The accident record in the year 1951-52 was reported as unusually high and contributed to the rise in insurance cost in the following year 1952-53. Although the average insurance rate fell to 4.7 per cent in 1953-54 and 4.5 the following year, the average deductible rose to \$527 at the end of the period.

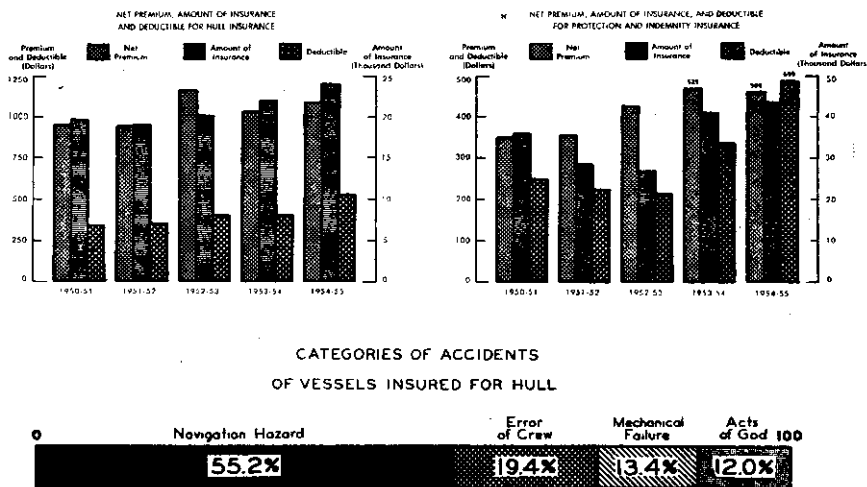


FIGURE 4. Cost of insurance and accident record, Gulf of Mexico fisheries, 1950-1954.

Therefore, it may be concluded that the cost of insurance is not likely to have fallen appreciably below the high level reached in 1952-53. General reports from insurance companies in the Gulf indicate that the cost of insurance is likely to have risen again in 1955-56 because of larger and more frequent claims.

The cost situation for Protection and Indemnity Insurance is shown in the right-hand side of Figure 4. The pattern seems to be similar to the one for Hull. Although the average deductible amount which applies to both personal injuries and property damage fell from \$250 at the beginning of the period to \$213 in 1952-53, the average insurance rate increased from about 1.0 per cent to 1.59 per cent. Later the average insurance rate fell to 1.17 per cent in 1954-55, but the average deductible increased more than three times to \$659. These observations lead to the conclusion that the cost for Protection and Indemnity Insurance apparently rose to a new higher level in 1952-53, which was at least maintained and probably increased in succeeding years. Recent general reports indicate that the cost for Protection and Indemnity Insurance apparently is higher now than in the period studied.

2. Categories of Accidents. Accidents of commercial fishing vessels may be examined with regard to their frequency of occurrence, amount claimed, and the type of hazard they represent. Because of numerous limitations, we are examining here only the general categories of accidents and their probable origin.

At the bottom of Figure 4, a per cent distribution is shown of the number of claims for Hull Insurance for which information has been collected. As much as 55.2 per cent of these accidents fall into the category of navigation hazard, 19.4 per cent are directly attributed to error or negligence of officer personnel and crew, 13.4 per cent to mechanical failure, and 12.0 per cent to weather conditions. It should be noted here that navigation hazard is a general category which seems to be used for accidents which, for one reason or another, are not easily classifiable into other categories. Unfortunately, the in-

insurance files examined rarely described in detail the circumstances of this type of accident beyond the typical phrase "struck submerged object," followed by a brief description of the damage to the vessel—usually damage to rudder, propeller, and shaft. In as many as half of the claims examined there is some indication that the reported accident is partly due to inadequate maintenance. General experience reports from insurance companies and agents with intimate knowledge of the situation in the Gulf suggest the conclusion that, barring bad luck which may be present sometimes, navigation hazard is due mainly to inadequate maintenance, poor seamanship, the misuse of an automatic pilot, or a combination of these factors.

3. A Few Observations

A discussion of insurance cost and accident records leads to a number of observations.

First, the available evidence indicates that cost of insuring a vessel for both Hull and Protection and Indemnity Insurance has increased since 1952. Recent reports indicate that the situation is more likely to get worse than better.

Second, long established insurance firms and agencies point out that there is a close relation between accidents and economic conditions in the fishing industry. In periods of slack business activity, maintenance standards are likely to be somewhat relaxed by some vessel owners, resulting in more frequent breakdowns and losses which may increase insurance claims. Their observations, whether accurate or not, will be the subject of further testing on the basis of the collected information. The fact remains that insurance costs may not depend upon accident records alone.

Third, generally speaking, those who insure their property are prone to be negligent and thus may contribute to higher insurance rates. In the case of commercial fishing vessels, therefore, a captain-owner or an owner who has close supervision over the officer personnel and crews of his vessels may have an advantage in self-insurance in addition to the others mentioned previously.

APPENDIX

A NOTE ON SAMPLING

A variety of sources were used for the collection of information about the subject. Qualitative data were secured through informal interviewing of leading vessel owners in selected ports, fishermen, mortgagee banks, and insurance people. A number of reports, statements, and correspondence related to the subject were consulted. Statistical and other information was collected from existing government and private publications. But the largest body of information was obtained by personal interviewing of a number of owners of a carefully selected sample of commercial fishing vessels and by studying the insurance files of these sampled vessels.

Sampling involved the following major steps.

1. From the annual lists of Merchant Vessels of the United States published by the Bureau of Customs, U. S. Treasury Department, and the records of Fish and Wildlife Service, U. S. Department of the Interior, the statistical universe was obtained of 2,197 commercial fishing vessels of 5 net tons or more which were active as of January 1, 1955, or were lost during the period from January 1, 1950 to January 1, 1955, or were lost during the period from January 1, 1950 to January 1, 1955, and which had as port of registration any port in the Gulf of Mexico (from Key West, Florida, to Brownsville, Texas).

2. This vessel population was stratified on the basis of four variables: (a) active or lost vessels; (b) material, i.e. wood or steel vessels; (c) age; and (d) gross tonnage. The percentages of the stratified universe were used to determine the stratifying quotas for the sample.

3. First-stage sampling involved the selection of the following six home ports with the largest vessel registration: Biloxi, Mississippi; Brownsville, Texas; Corpus Christi, Texas; New Orleans, Louisiana; and Tampa, Florida. Vessel registration in these ports represented 84.8 per cent of the statistical universe. While elimination of nine other ports of registration from final sampling reduced considerably the cost of field work, it was thought that the exclusion of these ports would not affect appreciably the representativeness of the sample. The findings substantiate this contention, since it was found that no less than 49 ports throughout the Gulf of Mexico area were used for fish landings by the 225 sampled vessels.

4. The second-stage or final sampling consisted of drawing a stratified random sample of 225 vessels from the first-stage sample. The size of the final sample was determined on the basis of a formula which provided for a minimum number of vessels, plus an additional number of vessels in the proportion of the vessel population in the Gulf of Mexico to the total vessel population in the continental United States.

5. Although high ownership turnover and mobility of vessel owners during the period under investigation, 1950-1954, made necessary substitution of a number of originally sampled vessels for other vessels from the statistical universe, the representativeness of the sample does not seem to have been impaired significantly. Substitution was done within each stratum and chi-square analysis of the final sample was the known universe by age and gross tonnage has yielded probability values. .50 P .30 and .70 P .50 respectively, which are satisfactory.

6. Sample design provided for the study of 50 per cent of the total number of years the sampled vessels were insured from 1950-1954. The study of insurance files was done on the basis of availability of insurance records among leading insurance agents and firms in the area. Further statistical tests on the reliability of the sample will be made as soon as the processing of the insurance information under progress will permit.

Ways and Means of Stabilizing the Shrimp Market

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FIGURE 1 SHOWS certain basic data on shrimp for the period January 1951 to April, 1956, including:

1. Shrimp landings and imports in pounds.
2. Cold storage holdings in pounds.
3. Wholesale prices of shrimp, heads-off (combined for New York, Chicago and Boston) in cents per pound.

This chart shows some relationships which are basic to the shrimp industry and which are basic for the development of our theme.

First, supplies (landings and imports) reach peaks during the months Sep-