



NOAA Technical Memorandum NMFS-SEFSC-584

The Annual Economic Survey of Federal Gulf Shrimp Permit Holders:
Report on the Design, Implementation, and Descriptive Results for 2006

By

Christopher Liese, Michael D. Travis, Diana Pina, and James R. Waters



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Miami Laboratory
75 Virginia Beach Drive
Miami, Florida 33149

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Social Science Research Group
Southeast Fisheries Science Center
NOAA Fisheries
75 Virginia Beach Drive
Miami, Florida 33149

U.S. DEPARTMENT OF COMMERCE
Otto J. Wolff, Acting Secretary

National Oceanic and Atmospheric Administration
Mary M. Glackin, Acting Under Secretary for Oceans and Atmosphere

National Marine Fisheries Service
James W. Balsiger, Acting Assistant Administrator for Fisheries

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Copies may be obtained by writing:

Christopher Liese
NOAA Fisheries
75 Virginia Beach Drive
Miami, Florida 33149
Christopher.Liese@noaa.gov

National Technical Information Center
5825 Port Royal Road
Springfield, VA 22161
(800) 553-6847 or
(703) 605-6000
<http://www.ntis.gov/numbers.htm>

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Executive Summary

This technical memorandum documents the design, implementation, data preparation, and descriptive results for the 2006 Annual Economic Survey of Federal Gulf Shrimp Permit Holders. The data collection was designed by the NOAA Fisheries Southeast Fisheries Science Center Social Science Research Group to track the financial and economic status and performance by vessels holding a federal moratorium permit for harvesting shrimp in the Gulf of Mexico. A two page, self-administered mail survey collected total annual costs broken out into seven categories and auxiliary economic data.

In May 2007, 580 vessels were randomly selected, stratified by state, from a preliminary population of 1,709 vessels with federal permits to shrimp in offshore waters of the Gulf of Mexico. The survey was implemented during the rest of 2007. After many reminder and verification phone calls, 509 surveys were deemed complete, for an ineligibility-adjusted response rate of 90.7%. The linking of each individual vessel's cost data to its revenue data from a different data collection was imperfect, and hence the final number of observations used in the analyses is 484. Based on various measures and tests of validity throughout the technical memorandum, the quality of the data is high.

The results are presented in a standardized table format, linking vessel characteristics and operations to simple balance sheet, cash flow, and income statements. In the text, results are discussed for the total fleet, the Gulf shrimp fleet, the active Gulf shrimp fleet, and the inactive Gulf shrimp fleet. Additional results for shrimp vessels grouped by state, by vessel characteristics, by landings volume, and by ownership structure are available in the appendices.

The general conclusion of this report is that the financial and economic situation is bleak for the average vessels in most of the categories that were evaluated. With few exceptions, cash flow for the average vessel is positive while the net revenue from operations and the "profit" are negative. With negative net revenue from operations, the economic return for average shrimp vessels is less than zero. Only with the help of government payments does the average owner just about break even. In the short-term, this will discourage any new investments in the industry. The financial situation in 2006, especially if it endures over multiple years, also is economically unsustainable for the average established business.

Vessels in the active and inactive Gulf shrimp fleet are, on average, 69 feet long, weigh 105 gross tons, are powered by 505 hp motor(s), and are 23 years old. Three-quarters of the vessels have steel hulls and 59% use a freezer for refrigeration. The average market value of these vessels was \$175,149 in 2006, about a hundred-thousand dollars less than the average original purchase price. The outstanding loans averaged \$91,955, leading to an average owner equity of \$83,194.

Based on the sample, 85% of the federally permitted Gulf shrimp fleet was actively shrimping in 2006. Of these 386 active Gulf shrimp vessels, just under half (46%) were owner-operated. On average, these vessels burned 52,931 gallons of fuel, landed 101,268

pounds of shrimp, and received \$2.47 per pound of shrimp. Non-shrimp landings added less than 1% to cash flow, indicating that the federal Gulf shrimp fishery is very specialized. The average total cash outflow was \$243,415 of which \$108,775 was due to fuel expenses alone. The expenses for hired crew and captains were on average \$54,866 which indicates the importance of the industry as a source of wage income. The resulting average net cash flow is \$16,225 but has a large standard deviation. For the population of active Gulf shrimp vessels we can state with 95% certainty that the average net cash flow was between \$9,500 and \$23,000 in 2006. The median net cash flow was \$11,843. Based on the income statement for active Gulf shrimp vessels, the average fixed costs accounted for just under a quarter of operating expenses (23.1%), labor costs for just over a quarter (25.3%), and the non-labor variable costs for just over half (51.6%). The fuel costs alone accounted for 42.9% of total operating expenses in 2006. It should be noted that the labor cost category in the income statement includes both the actual cash payments to hired labor and an estimate of the opportunity cost of owner-operators' time spent as captain. The average labor contribution (as captain) of an owner-operator is estimated at about \$19,800. The average net revenue from operations is negative \$7,429, and is statistically different and less than zero in spite of a large standard deviation. The economic return to Gulf shrimping is negative 4%. Including non-operating activities, foremost an average government payment of \$13,662, leads to an average loss before taxes of \$907 for the vessel owners. The confidence interval of this value straddles zero, so we cannot reject, with 95% certainty, that the population average is zero.

The average inactive Gulf shrimp vessel is generally of a smaller scale than the average active vessel. Inactive vessels are physically smaller, are valued much lower, and are less dependent on loans. Fixed costs account for nearly three quarters of the total operating expenses of \$11,926, and only 6% of these vessels have hull insurance. With an average net cash flow of negative \$7,537, the inactive Gulf shrimp fleet has a major liquidity problem. On average, net revenue from operations is negative \$11,396, which amounts to a negative 15% economic return, and owners lose \$9,381 on their vessels before taxes. To sustain such losses and especially to survive the negative cash flow, many of the owners must be subsidizing their shrimp vessels with the help of other income or wealth sources or are drawing down their equity.

Active Gulf shrimp vessels in all states but Texas exhibited negative returns. The Alabama and Mississippi fleets have the highest assets (vessel values), on average, yet they generate zero cash flow and negative \$32,224 net revenue from operations. Due to their high (loan) leverage ratio the negative 11% economic return is amplified into a negative 21% return on equity. In contrast, for Texas vessels, which actually have the highest leverage ratio among the states, a 1% economic return is amplified into a 13% return on equity. From a financial perspective, the average Florida and Louisiana vessels conform roughly to the overall average of the active Gulf shrimp fleet.

It should be noted that these results are averages and hence hide the variation that clearly exists within all fleets and all categories. Although the financial situation for the average vessel is bleak, some vessels are profitable.

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The authors accept responsibility for any remaining errors.

1. Introduction

This technical memorandum documents the design, implementation, and data preparation of the Annual Economic Survey of Federal Gulf Shrimp Permit Holders (OMB Control # 0648-0476). In addition, descriptive results are presented for the calendar year 2006, the first year this survey was conducted. The survey will be repeated annually, and this technical memorandum is intended as the central report describing the data collection methodology. The detailed background is reported to insure proper use and interpretation of the aggregate data and results.¹ Also, the reports for future years of this data collection will focus primarily on the results and reference this memorandum for details about its implementation.

The commercial penaeid shrimp fishery in the Gulf of Mexico is one of the most economically important fisheries in the Southeast Region. The fleet consists of: i) an inshore segment, mostly active in state waters and very diverse; and ii) an offshore segment, largely active in federal waters and almost always using trawl gear. The fishery is managed under the Gulf of Mexico Shrimp Fishery Management Plan, and a moratorium permit is required to harvest shrimp in federal waters.² The fishery is facing a range of difficulties that together are threatening the short-term and long-term viability of the industry. Existing regulation, higher fuel and input prices, and competition from foreign and aquacultured shrimp leading to lower domestic shrimp prices are squeezing the profit margin upon which Gulf shrimpers base their livelihood. Further, the devastating impact of the recent hurricane seasons has led to substantial upheaval in all commercial fisheries on the Gulf coast.

Previous attempts to collect economic data, in particular cost data, have been plagued by their limited duration, small geographic scope, and the industry's resistance to being surveyed. The size and relevance of the Gulf shrimp fishery and associated industry make the systematic and continuous collection of economic data critical and long overdue. Such data can serve many purposes. Foremost it is necessary to inform the fishery management process. By collecting such data annually, economic changes and trends through time can be identified and tracked. The start-up of other complementary data collections in this fishery further increases the value of the economic data (see next section).

This data collection program was designed by NOAA Fisheries (NMFS) Southeast Fisheries Science Center's Social Science Research Group in late 2006 to track the economic condition of the fishery. Because it is impossible to clearly delineate the inshore and offshore segments of the shrimp fishery, the data collection focuses on the federally permitted vessels, i.e. vessels that hold a federal moratorium permit for

¹ Data for individual respondents are confidential.

² Federal waters of the Gulf of Mexico, i.e. the U.S. exclusive economic zone, begin 3 miles off the coast of Alabama, Louisiana, and Mississippi, and 9 miles off the coasts of Florida and Texas. A moratorium on federal permits for catching Gulf shrimp became effective March 26, 2007.

harvesting Gulf shrimp.³ The results in this report apply roughly to the offshore segment of the shrimp fleet. Shrimp vessels operating offshore are usually larger, full-time, and more sophisticated from a business perspective, and hence more capable of providing financial data. Focusing the data collection on vessels with moratorium permits has the added advantage that the population is known and that recent contact information is available. Also, this group is of most direct interest from a federal fishery management perspective.

The guiding principle for the design of this data collection is to collect the minimum information necessary that still allows meaningful financial and economic analyses, and to collect this information in the least burdensome way for the shrimp industry.⁴ We opted for a survey approach, thereby burdening only a fraction of permit owners each year. Further, a self-administered mail survey was deemed to be more convenient, less intrusive, and less time-consuming than one based on in-person interviews. The outcome is a two page survey instrument limited to collecting “bread and butter” economic data, but comprehensive enough to produce a meaningful annual report for the Gulf shrimp harvesting industry.

The survey intends to collect all annual expenditures grouped into less than ten variable and fixed cost categories. When combined with revenue from other data collections, we can calculate various measures of the financial and economic status and performance of the industry. Random sampling, stratified by state, was used to ensure that the results are representative and can be extrapolated to the population of all federal permit holders and any large sub-population, such as active shrimp vessels in Texas. The survey was mostly implemented between May and December, 2007. Data cleaning and verification phone calls took place throughout 2007 and early 2008. The analyses and report writing were conducted during the second half of 2008.

The results are basic descriptive statistics---arithmetic means---of the financial and non-financial data.⁵ They are presented in a standardized table format, linking vessel characteristics and operations to simple balance sheet, cash flow, and income statements. Besides reporting the averages for the total fleet of all permitted vessels, results are presented for the *Gulf shrimp* fleet by excluding permitted vessels engaged in other fisheries, and for the *active* Gulf shrimp fleet by further excluding idle, broken, or otherwise inactive vessels. More results are reported in an appendix for various categories of shrimp vessels, including those grouped by state, by vessel characteristics, by landings volume, and by ownership structure. When the results are interpreted as applying to the (sub-) population, they must be thought of as approximations of the activities and values associated with the average or representative vessel of that (sub-)

³ The distinction between vessels and owners/people is important because the Gulf shrimp moratorium permit is a *vessel* permit and thus vessels, not owners, are the unit of analysis.

⁴ Given NMFS’ experiences with in-person interviews of Gulf shrimpers, a low burden approach was thought necessary to get shrimpers’ cooperation. Compliance with this data collection is a requirement for permit renewal. A large sample size and high levels of unbiased participation increase the validity and representativeness of the results.

⁵ Extrapolation of the results to the population and a look at the distributional results will follow in a future report.

population. In statistical terms, the results are mid-points of a confidence interval, within which the true, but unknown, population mean can be found 95% of the time.

The rest of this introduction briefly describes the purpose and history of economic data collections in the Gulf of Mexico shrimp fishery. Chapter 2 describes the overall survey design, including the accounting framework and the guiding principles, the survey instrument, the population and sampling frame, and the sampling design. Chapter 3 documents the implementation of the survey, focusing on the response rate, the validity of the data, and the data preparation. Chapter 4 starts with an in-depth explanation and discussion of the variables in the standardized tables used to present the results. The rest of the chapter discusses the results.

Purpose and History

The central goal of this survey is to collect up-to-date cost data for the commercial shrimp fishery in federal waters of the Gulf of Mexico in support of management by the Gulf of Mexico Fisheries Management Council and NOAA Fisheries (NMFS). A collection of economic information from fishermen affected by federal management is needed to ensure that national goals, objectives, and requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other laws are met.

Amendment 13 to the Fishery Management Plan for the Shrimp Fishery in the Gulf of Mexico, which was approved on February 21, 2006, introduced a moratorium on permits for shrimping in federal waters and provided for improved information collection programs. In the past, NOAA Fisheries has collected catch and (limited) effort data on a continuous basis in this fishery through port agents, dealer reports, and more recently through the various Gulf States' trip ticket systems. With the move to more active management implied by the introduction of the moratorium permits, more and timelier data collections have become necessary. Further, the tough economic conditions faced by the industry since 2000 have changed the industry to the point of making earlier economic data obsolete. It became imperative that new data be collected to accurately assess the economic and social conditions in the fishery and to predict the impacts of changes to the shrimp fishery management plans and regulations on individual shrimp fishing entities.

Economic surveys of the Gulf shrimp fishery have been conducted intermittently on an ad-hoc basis for at least half a century. These data collection efforts have usually focused on sub-regions or fleets, did not collect a standardized set of data, and were never systematically applied over any sustained period of time.⁶ As a result, there has never been a Gulf-wide, systematic, and continuous economic data collection in the shrimp fishery. Earlier this decade, an in-person interview-based data collection effort encountered difficulties. Gaining acceptance among reluctant shrimp fishermen proved problematic even in light of major outreach efforts. Outside of Texas, this survey had a

⁶ Noteworthy Gulf-wide efforts include various data collections that were performed by Texas A&M University during the 1970s-1980s; and data collections initiated by the NMFS Southeast Fisheries Science Center in the 1980s and early 1990s; among others.

very low response rate due in part to an imperfect sampling frame and further due to contact avoidance and outright refusal by the “respondents.”⁷ The central conclusion was that a fundamentally new approach was needed if this type of data was to be collected at all. As a result, NMFS made the submission of economic data a requirement for permit renewal for the fishermen who are sampled.

A variety of other non-economic data collections in this fishery are currently conducted by NOAA Fisheries. They include: 1) the moratorium permit applications, which collect certain vessel characteristics; 2) dealer reports and trip tickets, which collect trip level Gulf shrimp landings and revenue; 3) the Gulf shrimp vessel and gear characterization form, which collects detailed equipment information in addition to some effort data; 4) the “annual Gulf shrimp landings and revenue form” (officially titled the Gulf of Mexico shrimp federal permit reporting form), which collects annual landings and revenue directly from fishermen; 5) the electronic logbook program, which collects a sample of very detailed effort data; and 6) a limited onboard observer program, which jointly collects catch, effort, gear, and bycatch data. Vessel characteristics and revenue numbers generated from the first two data collections are used throughout this report.

⁷ In Texas, a sample of 359 led to 90 completed surveys. In the rest of the Gulf, only 57 surveys were completed out of a much larger sample.

2. Design

In late 2006, the Social Science Research Group at the NMFS Southeast Fisheries Science Center in Miami, Florida, in close cooperation with the Fisheries Social Science Branch at the NMFS Southeast Regional Office in St. Petersburg, Florida, began designing a program to collect annual socio-economic data for the Gulf shrimp fishery.⁸ Based on the experience with previous data collections in this fishery, we decided on a mail survey. Throughout the design stage, we contacted persons knowledgeable about the shrimp fishery. In an iterative fashion, experts both inside and outside the agency were consulted, including federal and state fishery managers, scientists, port agents, shrimp associations, and fishermen. We collected their views about the survey methodology, the data elements to be recorded, the availability of the requested data, the frequency of collection, the clarity of the instrument and instructions, and administrative aspects.

Financial Statements

The central approach taken by this data collection was to minimize the number of variables collected from each respondent, while maintaining the ability to answer meaningful economic questions. To guarantee comparability across a diverse set of operations, we focused on collecting data about the harvesting component only, i.e. data on the financial flows directly associated with owning and operating a fishing vessel. Thus the basic unit is a shrimp vessel, ignoring any processing, wholesale, or retail components. Shrimp operations are commercial, for-profit businesses, and, as such, we decided to collect only economic data, forsaking any demographic or social data tied more closely to the vessel operators and owners.

The type of economic data to be collected was based on an accounting framework of money flows and values associated with the productive activity of commercial shrimping---the “bread and butter” of economic data. With these data, three financial statements, the balance sheet, the cash flow statement, and the income statement, are prepared to give a comprehensive overview of the financial and economic situation of the offshore shrimp fishery. To keep the survey short and simple only broad cost categories are collected; their delineation guided by reporting requirements on tax forms to minimize the reporting burden for fishermen. By collecting data about revenue flows, cost flows, and asset values, statistically valid financial statements can be developed for a representative or “average” shrimp vessel and for the industry as a whole.⁹ The next paragraphs briefly illustrate the basic accounting framework used to identify the data that needed to be collected. More details about the financial statements specific to the data and to the shrimp fishery context are presented in the Results chapter of this report.

⁸ The focus on annual data precluded the collection of trip level economic data.

⁹ Chapter 4 provides the average results for the year 2006. Results extrapolated to the population will follow in a future report.

A balance sheet is a snapshot of a company's financial condition. A company's balance sheet has three parts: assets, liabilities, and the owner's equity. The asset side of a balance sheet lists all assets of a company and their value at a given point in time. The liability side lists the various sources of money invested to acquire these assets (the financial capital). Beyond investing their own capital (money), most company owners borrow financial capital from other sources, such as banks. The current equity, the net worth of the company to the owner, always equals the difference between the value of all assets and what is owed. Figure 1 illustrates this “balance.” By collecting data on the value of the assets (market value of vessel and gear in our case) and the outstanding loans, the vessel owner's equity stake can be calculated.

Balance Sheet (point in time)	
Assets	Liabilities
Vessel and gear (market value)	Loans (amount owed)
	<i>Equity</i>

Figure 1: Balance Sheet “Balance”

The balance sheet summarizes the financial condition at a single point in time. In contrast, the cash flow statement and the income statement summarize a company's financial transactions over an interval of time. In an annual report, these two financial statements present slightly different perspectives of the revenues earned during one accounting year and the expenses made in order to generate these revenues.

The cash flow statement is a financial statement that shows a company's flow of money (Figure 2). Money accruing to the company is called cash inflow. In this study, the most important cash inflow is revenue generated through the sale of shrimp harvested by the sampled vessel. Money leaving the company is called cash outflow, which includes the various costs of owning and operating the shrimp vessel. Transactions that do not directly create cash receipts and payments are excluded. The difference between inflow and outflow---the net cash flow---reflects the vessel owner's liquidity or solvency and is useful in determining the short-term viability of a company. For the Gulf shrimp industry, we decided that three inflows (shrimp revenue, other fishing revenue, and government payments) and seven cost categories (fuel, ice, other supplies, crew (hired) costs, vessel/gear related fixed costs, overhead costs, and loan payments) would suffice in detail.

Cash flow statement (period of time)	
Inflow/Receipts	Outflow/Payments
<u>From operations</u> - Shrimp revenue - Other commercial fishing revenue	<u>Variable costs</u> - Fuel - Ice - Other supplies - Crew (hired)
<u>Non-operating</u> - Government payments	<u>Fixed costs</u> - Vessel and gear - Overhead - Loan payments (interest and principal)
	<i>Net cash flow (+)</i>

Figure 2: Cash Flow “Balance”

An income statement is intended to help owners and investors determine the true economic performance of a company over a specified period of time. The income statement is sometimes called the profit and loss statement. The income statement begins with the revenue generated from operations (sale of product or service) and subtracts all operating costs (Figure 3). The result is the net revenue from operations. This is a measure of the true economic return to a productive activity. More relevant to the owners of a company is the net revenue before taxes, i.e. their actual profit or loss. This “bottom line” is calculated by subtracting financing costs (such as interest payments) and adding non-operating revenue, income, and costs to net revenue from operations.

Many variables are the same in the cash flow and income statements. The not-bold elements in Figure 3 indicate variables that are the same in the income statement and the cash flow statement. Text in bold signifies an element specific to the income statement. For the Gulf shrimp industry, revenue generated from operations includes revenue from the sale of shrimp and other fishing revenue, and excludes government payments. Operating costs include non-cash transactions such as depreciation and the value of the owner’s labor used to generate the year’s revenues.¹⁰ Depreciation and the value of the

¹⁰ In contrast to the cash flow statement, the income statement excludes cash payments that are not operating costs directly associated with generating *that year’s* revenues. This includes payments for new investments and principal repayments which both impact the balance sheet (assets and liabilities) but do not constitute economic income or costs.

owner's labor are not explicit costs (in contrast to variables in the cash flow statement) and thus need to be estimated.¹¹

Income statement (period of time)	
Revenue	Expenditures
<u>From operations</u> - Shrimp revenue - Other commercial fishing revenue	<u>From operations</u> - Fuel - Ice - Other supplies - Crew (hired) - Owner's labor - Vessel and gear (minus new invest) - Overhead - Depreciation <i>Net revenue from operations</i>
<u>Non-operating</u> - Government paym.	<u>Non-operating</u> - Interest payments <i>Net revenue (before taxes)</i> <i>("Profit")</i>

Figure 3: Income Statement "Balance"

Survey Instrument

Given the choice of the mail survey method and the objective to collect the minimum information necessary for a meaningful financial and economic analysis of the shrimp industry, we decided that the questionnaire must not exceed two regular pages. The accounting framework helped separate the "must have" economic data from the "nice to have" data every analyst and researcher would like to collect.¹² The survey instrument was designed in consultation with a variety of Gulf shrimp fishery experts. A near-final version of the survey instrument was sent for review to NMFS port agents throughout the Gulf. The port agents' proximity and familiarity with the Gulf fishery, especially their extensive contact with fishermen, made their recommendations very valuable.

¹¹ For an alternate way of visually illustrating these financial statements, see Appendix 3.

¹² We believe there is a substantial tradeoff between the length of a survey and the quality of the data collected.

The survey instrument and the detailed instructions are attached as Appendix 1 and 2 and can be consulted for an in-depth explanation of each question's intent. The final questionnaire is broken into three parts. On page 1, a pre-filled header section serves to identify the permit holder and the vessel. The second section, also on page 1, collects information about annual financial expenditures for the cash flow statement. These correspond to receipts and invoices and associated payments and should be readily available from regular business accounting for tax purposes. Since expenditures do not fully reflect the economic concepts of costs as required for the income statement, further information is necessary. This information is collected on page 2 of the questionnaire. For example, loan principal payments are real financial transfers but do not constitute a cost in the economic sense. Depreciation charges are an example of the reverse, where real economic costs produce no corresponding financial transaction.

The first 9 questions elicit total annual expenditures associated with the vessel. They are arranged into three blocks corresponding to variable costs (questions 1 to 5), fixed costs (questions 6 to 8), and a check for completeness (question 9). The variable cost questions ask for total annual expenditures for hired labor provided by crew and captain and non-labor inputs such as fuel, ice, and other trip expenditures.^{13,14} The categories were chosen as they each reflect a substantial part of the costs in this industry. Since these expenditures vary directly with the annual number of trips taken, they are variable costs in the economic sense. The questions about fixed costs ask for total annual expenditures related to physical capital (vessel, gear, and other equipment) and overhead (including all other expenditures). These costs do not vary according to the level of fishing activity and are referred to as fixed costs by economists.

On the second page of the survey instrument, question 10 collects qualitative data about the insurance status of the vessel. It also asks for the total amount of hull coverage which gauges each vessel's exposure to risk. Insurance *payments* are not collected separately and are instead subsumed in overhead expenditures. Question 11 elicits estimated vessel values (market, replacement) and a known vessel value (purchase price); question 12 inquires about the amount of any outstanding loans and loan payments, accounting for interest and principal payments separately. Question 13 asks for depreciation as claimed for tax purposes in 2006. While depreciation for tax purposes seldom reflects actual economic depreciation, we deemed it to be a reasonable proxy *on average* across the industry. Alternate ways of collecting data and deriving depreciation require strong assumptions and are prone to more subjective biases.¹⁵ At the request of vessel owners,

¹³ Because the average ice expense was less than 1% of total vessel expenses in 2006, we decided to stop asking for ice expenses separately with the 2007 survey (they are now subsumed into other trip expenses).

¹⁴ Two major problems with collecting these data characterize the survey instrument. The first is properly accounting for the real costs of the various labor inputs by the owner, hired captain(s), and crew, especially given the different share-systems used for compensation. The layout of question 1 was an attempt to collect this information. The second problem is also related to the crew compensation share-system as the footnote on page 1 of the survey instrument illustrates. In both cases, we found our approach too convoluted and confusing for the respondents, and the 2007 survey instrument was simplified in this regard.

¹⁵ In general, purchase price minus salvage value divided by total productive lifespan of the investment can be used as an estimate for annual depreciation. In the context of marine fisheries, this approach faces major hurdles. Most problematic is the variable lifespan of vessels, which is closely tied to the amount of

question 14 was added to collect the number of days a vessel did not fish due to a lack of crew. Questions 15 and 16 collect data about non-shrimp fishing revenue and shrimp-associated government payments received, respectively. Unlike shrimp revenue, these data were not always available from other data collections.

The survey instrument includes some intentional redundancies to enhance the data quality by allowing us to check the consistency of the data and catch data entry errors. Questions 2 and 3 collect annual fuel expenditures, the quantity of fuel used, and an estimate of the average price of fuel in 2006. Next to labor and the vessel itself, fuel is a major input for a trawl fishery, often the largest one. Two of these numbers can be used to (approximately) calculate the third. It was hoped that the respondents would “do the math” and so enhance the quality of the data. Similarly, question 9---total 2006 expenditures---is intended as a quality check by inducing the respondent to be comprehensive and yet avoid duplication while accounting for all expenses in questions 1 through 8. If the sum of questions 1 through 8 does not add up to the known or estimated total expenditures for the year, a conscientious respondent will look for and correct the problem.

In addition to the careful wording of questions on the survey instrument, detailed instructions were also prepared. The three pages of instructions spell out the exact intention behind each question. The instructions can be found in Appendix 2. Beyond cover letters, an information page clearly, concisely, and in large letters spelled out the intent, justification, and confidential nature of the survey.¹⁶ Finally, the survey instrument, instructions, and information material were professionally translated into Spanish and Vietnamese, and the translations were verified by NMFS employees familiar with the Gulf fisheries context.¹⁷

Population and Sampling Frame

The population of interest is all vessels fishing for penaeid shrimp during the 2006 calendar year in *federal waters* of the Gulf of Mexico, i.e. off the States of Texas, Louisiana, Mississippi, Alabama, and Florida. This population is approximated by ownership of a federal shrimp permit for vessels fishing in the Exclusive Economic Zone of the Gulf of Mexico.

As of December 5, 2002, vessels were required to possess a federal permit in order to fish for penaeid shrimp in federal waters of the Gulf of Mexico. This permit was available to all, i.e. the federal Gulf shrimp fishery was open access. A fishery management amendment, approved February 21, 2006, limited entry to the fishery, and a moratorium permit was introduced. A moratorium permit was required as of March 26, 2007 in order to harvest penaeid shrimp from federal waters, though shrimpers did have until October

maintenance conducted. The unknowable and difficult-to-estimate salvage value is the second major problem.

¹⁶ Appendix 3 contains these and some other survey materials.

¹⁷ Based on experiences with the 2006 survey, minor changes were made to the 2007 survey instrument. This included dropping the Spanish version since no Spanish survey was returned in 2006.

26, 2007 to apply for the permit. Since the purpose of this data collection is to inform management decisions in the future rather than to document activity in the past, we decided to include only vessels holding a moratorium permit in the sampling frame, as these vessels constitute the future federal Gulf shrimp fleet.¹⁸ A further benefit of this decision was exceptionally good contact information since it had just been updated as a result of the moratorium permit application process. This helped to significantly reduce the non-contact component of non-response as will be described later. The sampling frame was provided by the permit office of the NMFS Southeast Regional Office by querying their database. The sampling frame contains most of the information provided on the permit application, including vessel registration number, vessel characteristics, and permit and contact information.

The Gulf shrimp fishery can be roughly divided into an inshore and offshore fishery. While the inshore fleet is comprised of a diverse set of vessels and operators,¹⁹ the offshore fleet is (somewhat) more homogeneous. The offshore fleet consists of larger, otter-trawl vessels operated more frequently in federal waters on a full-time basis. Given the scale of these operations, a large majority maintain accounting records.

Based on 2006 shrimp landings and revenue data from the Gulf Shrimp System data collection (GSS),²⁰ which by definition includes only vessels active in this fishery, Table 1 compares vessels with and without a federal Gulf shrimp moratorium permit (columns 2 and 3). Over 70% of all 4,889 active Gulf shrimp vessels do not have federal permits (restricting them to shrimping in state waters), yet these vessels account for only 30% of total shrimp landings and only 22% of the total shrimp revenue.²¹ At the vessel level, non-federally permitted boats generate average annual revenue from Gulf shrimp of just \$25,192. This contrasts with an average of \$209,650 for federally permitted vessels. The higher revenue is due not only to more landings (on average more than five times as much), but also to a higher price per pound of shrimp. In offshore waters the shrimp are usually larger and hence command a higher price per pound.²² Clearly the permitted vessels substantially differ from the non-permitted vessels. Columns 3 and 4 compare all active federally permitted vessels and all active vessels used in the later analyses. The reason the in-analyses active vessels have higher average landings and revenue than all active federally permitted vessels is explained in the next chapter in the context of Table 2. The fact that the price per pound of shrimp is very similar is more meaningful in this case.

¹⁸ Some vessels may have fished in federal waters in 2006 but were forced to leave the industry by March 27, 2007 since they were not eligible a moratorium permit. There were 285 vessels that possessed an open access permit at one point in time but were not eligible for a moratorium permit. Yet of these, only 72 were thought to have shrimped in federal waters based on the best available data.

¹⁹ The inshore segment consists of recreational, artisanal, and commercial shrimpers using different gears to catch food shrimp, bait shrimp, and many other species.

²⁰ More information on this data collection is provided in the Implementation chapter in section Additional Data: Revenue.

²¹ Actually, 4,889 vessels is an underestimate of the total population due to problems with the GSS.

²² Two measures of average price per pound of shrimp are provided in Table 1. The first is the price the *average pound* of shrimp was sold for. The second is the price per pound of shrimp received by the *average vessel*, i.e. averaging across all vessels the average price each vessel receives.

Table 1: Average and Total Gulf Shrimp Landings, Revenue, and Price for Active Inshore Boats, Active Federally Permitted Vessels, and Active Vessels in Analyses

(in USD)	Total	No Federal Permit	Federal Permit	Surveys in Analyses
# of Vessels	4,889	3,436	1,453	386
Average revenue per vessel	80,012	25,192	209,650	238,910
Average landings per vessel	37,146	15,986	87,185	98,878
Average price per lb (lbs basis)	2.15	1.58	2.40	2.42
Average price per lb (vessel basis)	1.83	1.57	2.44	2.48
Total revenue (millions)	391 million	87 million	305 million	91 million
Total landings (millions)	182 million	55 million	127 million	37 million
% of Total revenue	100%	22.1%	77.9%	23.1%
% of Total landings	100%	30.2%	69.8%	20.6%

Note: All values are for Gulf shrimp only, i.e. excluding S. Atlantic shrimp. Gulf shrimp landings and prices are reported on a heads off basis.

A difficulty with our choice of sampling frame stemmed from the specific timing of the introduction of moratorium permits. Starting March 26, 2007, any shrimp vessel fishing in federal waters of the Gulf of Mexico needed to have a moratorium permit on board. Since the shrimp season was getting underway, most vessels had applied for a moratorium permit by the time we drew our sample in May 2007. This original sampling frame consisted of 1,709 vessels at the time. But the final deadline to apply for a moratorium permit was October 26, 2007, well after our survey implementation phase had concluded. As a result of this, the population we sampled from in May 2007 was not the “complete” population of all federal Gulf shrimp moratorium permit holders. An additional 210 permits were issued between May and October 2007, leading to a “true” population of 1,919 vessels.²³ While imperfect, it is probably more meaningful to extrapolate results to the total number of permitted vessels rather than the 1,709 vessels that had been granted a moratorium permit by May 2007.

Sampling Design

The sampling design for the 2006 survey was random sampling within strata defined by activity status and state. First, the sampling frame was separated into two subgroups, active and inactive vessels in the Gulf shrimp fishery. The groups were tentatively identified with the help of the GSS database, which is based on mandatory dealer reporting and hence should cover all shrimp transactions. In light of the fact that the GSS data for the 2006 calendar year was not fully finalized until after we developed the sampling frame and sample for the 2006 survey, these strata were considered tentative

²³ Actually, 1,936 permits were issued, but 17 were not linked to vessels as of November, 2007.

rather than definite.²⁴ Given that inactive vessels were not fishing for Gulf shrimp, we expected a larger segment of them to be permanently out of the industry and hence difficult to reach and motivate to participate in our survey. As a second step, due to the management and political importance attributed to delineation by state, we stratified each of the above groups based on the state of the mailing address associated with each vessel. Within each stratum, we then randomly sampled vessels in proportion to each stratum's weight in the population. The resulting sampling design is statistically equivalent to simple random sampling. A total of 580 vessels were sampled out of the 1,709 vessels in the sampling frame.

The first two columns in Table 2 provide average numbers about operations, vessel characteristics, and state of residence for the vessels in the sampling frame and sample at the time of the sampling process (May 2007). It should be noted that the average revenue numbers differ from Table 1 since Table 2 includes inactive vessels. As should be expected, the averages for the random sample are very close to those of the frame. In the course of 2007 and 2008, various data collections, and in particular the GSS, finalized their 2006 numbers. These sometimes differed from earlier numbers and are more relevant for the analyses. In light of this, column 3 of Table 2 reports the updated averages associated with the previously sampled vessels. Not surprisingly, average landings and revenue from Gulf shrimp increase, and the percentage of vessels not reporting any Gulf shrimp catch decreases from 21.9% to 17.9%.

The last column in Table 2 reports the averages for all 1,919 vessels among the 1,936 federal Gulf shrimp moratorium permit holders. As mentioned earlier, the final number of vessels was only determined in November 2007, half a year after the sample had been drawn and the survey implementation begun. Comparing the sample (column 3) with the "true" population (column 5), we note a slight bias toward more active vessels in the sample, 82.1% vs. 79.5%. Further, we note a large bias toward higher revenue numbers, a slight bias toward vessels using freezers, and very slight oversampling of Mississippi and Texas vessels at the expense of Florida and non-Gulf state vessels. We conclude that the sample is representative of the population in all but the revenue numbers. The revenue bias is mostly an artifact of the data cleaning and is explained further in the next chapter.

²⁴ Due to this problem and the delay in mailing out the survey this causes, starting with the 2007 survey, we dropped the active/inactive strata and only stratify by state.

Table 2: Average Vessel Operations, Characteristics, and State for the Sampling Frame, Sample, Surveys in Analyses, and Updated Population

	Sampling Frame (May 07) ¹	Sample (May 07) ¹	Sample (June 08) ²	Surveys in Analyses (June 08) ²	Population (June 08) ²
# of Vessels	1,709	580	580	484	1,919 ³
Actively shrimping (%)	78.5%	78.1%	82.1%	82.4%	79.5%
Gulf shrimp revenue (\$)	167,338	168,680	177,556	193,261	160,258
Gulf shrimp landed (pounds) ⁴	69,274	69,592	73,598	80,310	66,720
Gulf shrimp price per pound (per vessel) ⁴	2.43	2.43	2.44	2.43	2.44
Other shrimp revenue (\$) ⁵	-	-	7,434	8,909	7,869
Non-shrimp revenue (fishing) ⁶	-	-	20,555	16,385	16,049
Length	68	69	69	68	68
Gross tons	106	108	108	104	107
Horse power	512	510	509	502	505
Year built	1986	1985	1985	1985	1985
Hull material - Steel (%)	76.1%	74.8%	75.0%	74.8%	73.7%
Refrigeration - Freezer (%)	56.6%	57.1%	57.4%	58.7%	53.6%
State - Florida (%)	15.1%	15.2%	15.0%	15.3%	16.3%
State - Alabama (%)	7.4%	7.6%	7.3%	8.1%	7.2%
State - Mississippi (%)	7.9%	8.1%	8.2%	8.9%	7.7%
State - Louisiana (%)	25.1%	25.0%	25.4%	24.6%	25.1%
State - Texas (%)	41.7%	41.2%	41.2%	40.5%	39.6%
State - Other (%)	2.8%	2.9%	3.0%	2.7%	4.2%

¹ These columns report (preliminary) numbers available at the time of the sampling process (May 2007).

² These columns report the final numbers for the same set of vessels available only after the conclusion of the survey implementation. These numbers are more relevant for the analyses. See text for more details.

³ The total permit number is 1,936 but not every permit is linked to a vessel.

⁴ Gulf shrimp landings and prices are reported on a heads off basis.

⁵ Other shrimp landings and prices are not reported since the weight measures for different species and regions are not always standardized.

⁶ These averages are due to a few vessels with very high non-shrimp revenue.

3. Implementation

We began designing the survey effort in September 2006. A Federal Register notice was published on November 8, 2006, with the public comment period closing on January 8, 2007. In late January 2007, the full survey package was submitted to the Office of Management and Budget (OMB) for approval. We estimated the public reporting burden for this data collection to average 45 minutes per response including the time for reading the instructions, gathering the data from business records, and completing and mailing the survey instrument. All submitted data are strictly confidential. Approval for the survey was received on April 20, 2007. Table 3 gives the full timeline of the survey development and implementation. Numbers following a ‘#’ sign are the number of surveys in the category described. We had planned to time the mail-out of the survey to coincide with the low shrimp season and around tax time when business records are being consulted and financial concerns are “top of mind.” Due to our choice of sampling frame, which included identifying active and inactive vessels, which in turn required data only available in May, we were delayed until May.²⁵

Outreach

In April and May 2007, prior to sending out the survey, we held outreach meetings with shrimp fishermen at five locations in four states around the Gulf of Mexico. The locations included Port Isabel and Port Arthur, Texas, Belle Chasse (New Orleans), Louisiana, Biloxi, Mississippi, and Key West, Florida. We presented the survey effort and the need for such a data collection, in addition to explaining and discussing the survey instrument in more detail. Also in May, we produced and the NMFS Southeast Regional Office distributed a Southeast Fishery Bulletin to all federal Gulf shrimp moratorium permit holders notifying them of and describing the data collection.²⁶ More informally, we notified our port agents and talked to the press (though, besides the Bulletin, there was no official press release). For increased convenience, we set up a help telephone line dedicated specifically to this survey. Throughout the survey implementation, we answered well over one hundred inquiries from shrimpers.

²⁵ For the 2007 survey and beyond, we have slightly changed our sampling design, and future surveys will start mailing in March, with a deadline of April 30 (exceptions granted with phone call).

²⁶ The bulletin and other survey material are attached in Appendix 3.

Table 3: Timeline: Survey Design and Implementation

Timeline	
November, 2006	Published Federal Register Notice proposing data collection
December, 2006	Designed survey instrument
January, 2007	Sent Paperwork Reduction Act Submission to OMB
April, 2007	Received OMB approval
April/May, 2007	Outreach meetings around the Gulf
May, 2007	Sample (#580) drawn from stratified sampling frame (#1,709)
May, 2007	SE Fishery Bulletin announcing survey sent to permit holders
May, 2007	Sent out selection letters and first full survey package (#580)
June 22, 2007	Deadline for returning survey
June 30, 2007	~2/3 of surveys returned (#390)
July, 2007	Data processing and entry started
July, 2007	Sent out second full survey package (#147)
September, 2007	Calls to attempt to contact non-responders started
September, 2007	Sent out third and final, certified survey package (#74)
October, 2007	Check on data quality (preliminary analysis with #299)
October, 2007	Call-backs to clarify problem responses started
October, 2007	Send-backs of incomprehensible surveys (#57)
December, 2007	Stopped actively pursuing problem cases
January, 2008	Preliminary data cleaning and descriptive analysis (#459)
March, 2008	Final processing and entry of late arrivals (and more calls)
April, 2008	Data cleaning (#509) and descriptive analysis (#484) started
June, 2008	Final 2006 revenue data acquired

Implementation Process

The full survey implementation, including mail handling and processing, was conducted at and by the staff of the NMFS Southeast Fisheries Science Center. The main phase of the survey was implemented between May and September 2007, with follow-up calls and mailings continuing through December 2007, and a few data cleaning related calls occurring through April 2008. The owner of each selected vessel was contacted at least twice by mail (excluding the Bulletin mentioned above) and, if not responding, up to four times by mail (once certified) and by many attempts by telephone.

The first letter was a single page selection letter notifying the respondents that they had been randomly selected to participate in the 2006 survey. It was quickly followed by the full survey package containing a cover letter, the information material, the instructions, the two page survey instrument, and a prepaid, return envelope. In cases where the owner

(or any officer in the case of a company) had a Spanish or Vietnamese language-based name, we included, in addition to the English version, all the relevant translations. Respondents were asked to return the completed survey in the enclosed, prepaid envelope by June 22, 2007. Approximately two-thirds of the surveys were returned by this deadline. At the end of July and in September, second and third survey packages were mailed to non-responding permit owners. At around the time of the second mailing, we also attempted to contact all non-responders by telephone and urged them to return the survey. These calls had the further advantage of being a different mode of contact and, as a result, errors in the address information were discovered. The third mailing to 57 non-respondents was sent by certified mail.

We instituted a protocol to track and process returned surveys and to manage and document telephone contact with respondents. Incoming surveys were checked for completeness and internal consistency. Given the detailed, technical nature of the economic survey questions and this being the first year the survey was conducted, it was not altogether surprising that a majority of surveys had some type of missing entry, inconsistency, or other problem. Given the limited number of follow-up calls that we could reasonably conduct, we decided to make some basic assumptions that allowed us to solve more trivial problems without calling the respondent. The most prominent example of this is the occurrence of empty fields in otherwise good surveys. Respondents often did not differentiate between a response of zero dollars (i.e. no expenses in this category) and an item non-response (i.e. not applicable, refuse, or don't know). After a few test calls, we set up the rule that if a respondent did not enter zeros in any fields throughout the entire survey, if the number of blank fields was limited, and if overall the survey was carefully filled out, blank fields were to be interpreted as zeros.²⁷ This assumption, and some others like it, allowed us to concentrate our manpower on incomplete surveys with more serious problems. Another check involved verifying activity status or magnitude of activities by comparing the fuel and cost numbers with revenue numbers from the GSS database. For example, a vessel claiming to use only 1,000 gallons of fuel on our survey but reporting \$300,000 worth of shrimp landings was a prime candidate for a call-back.

Given the accounting framework of the survey, the hurdle for a returned questionnaire to be called complete is very high. No single blank field could be accepted on page 1 or on most questions on page 2. We did accept some non-response for individual questions deemed possibly too difficult to answer (such as vessel market value and depreciation) or less important to the overall survey effort's objective (such as vessel replacement value and days of fishing lost due to lack of crew). But all other fields had to either be a positive number or a zero for the application of the accounting framework to make any sense. As a result, well over a hundred telephone follow-up calls were necessary to clarify and collect additional data to complete the returned surveys. In addition, another

²⁷ This was a trivial assumption on page 1 of the questionnaire, where all costs had to add up to the total in question 9. If the total added up correctly, the respondent had implicitly assumed a zero value for any blank fields he might have left. On page 2 the assumption was somewhat less trivial. On the 2007 survey instruments we prominently added the statement "Enter '0' if you did not have any expenses in a category. Do not leave blank!"

57 surveys were deemed too problematic to solve over the phone and were sent back to the respondents for clarification.

Once a survey was complete, data entry became a fairly simple manual task using a form in MS Access. A local graduate student was hired to type in the data. Once entered, all numbers in the database were verified by the authors to the closest \$1,000. Further processing of the entire data set is described below in the section Data Cleaning. Finally, vessels that did not return a survey to us and did not offer any reason for not responding were deemed not compliant with the survey effort, and their registration numbers were reported to the permit office. Vessels with incomplete surveys or with an excuse were deemed compliant.²⁸

Response Rate and Data Validity

Response rates can be calculated in a variety of ways. In order to allow readers to calculate their preferred measure, Table 4 presents the absolute numbers in each response and non-response category. The sampling frame at the time of the sample draw included 1,709 vessels with federal Gulf shrimp moratorium permits. The final number of moratorium permit holders is 1,936, though 17 permits were not linked to vessels at the time the data were obtained, bringing the number of permitted vessels to 1,919. We sampled 580 vessels for the 2006 survey. Only 16 vessels could not be contacted at all, while 11 vessels never responded after we had telephone contact, i.e. they implicitly refused to participate. As we would expect for a survey that is a requirement for permit renewal, no sampled individual explicitly said they refused to participate, and only a handful of respondents were openly annoyed about having to complete the survey. If a permit was sold or transferred or a vessel repossessed in late 2006 or in 2007, as was the case for 19 sampled vessels, we labeled the vessel as ineligible to participate in the survey. The old owner has no incentive to participate in the survey (and might vehemently object having just left the industry), and the new owner is unlikely to have the necessary 2006 financial records. Further, despite our best efforts, we were unable to complete 25 surveys through call-backs or send-backs. These were labeled permanently incomplete.²⁹

²⁸ The 2006 survey was the first time this data collection was conducted, and hence we were still developing the process and protocols as we proceeded. Since then, we have written an internal manual to describe the basic administration and processing of the surveys. The purpose is to achieve as much consistency over time as possible. The database itself is also being moved onto a more secure and permanent Oracle platform. This opens the possibility of creating an online survey submission process in the future, if demand among shrimpers warrants.

²⁹ Three of these vessels were not fishing vessels, and it might be more appropriate to label these surveys as not applicable or ineligible.

Table 4: Counts for Response Rate Calculations and Reasons for Non-Response

	Count	Comments
Permits	1,936	Only 1,919 vessels (a few permits are currently not linked to vessels)
Sample	580	
No Contact	16	Addresses and telephone numbers incorrect and disconnected
"Refused"	11	Telephone contact established, but survey never received
Ineligible	19	4 vessels repossessed; 15 vessels transferred during late 2006 or in 2007
Incomplete	25	Call-back/send-back unsuccessful; incl. two oil sector vessels & one recreational craft
Complete	509	Raw response rate: 87.8%
Dropped	-25	Inconsistent or implausible numbers (across databases or within survey)
In Analysis	484	

The remaining 509 surveys were deemed complete, leading to a raw response rate of 87.8%.³⁰ Only 27 vessels, 4.7%, were uncooperative, and up to 16 of those probably never received the survey due to bad contact information. For the purpose of the financial analyses reported in the next chapter, another 25 complete surveys had to be dropped from the analyses.³¹ The final number of surveys used in the analyses is 484.

Among the 484 surveys used in the analyses,³² 386 are from vessels active in the Gulf shrimp fishery in 2006. Turning back to column 4 of Table 1, we can see that these 386 vessels accounted for 23.1% of the *total* 2006 Gulf shrimp revenues, and about 30% of the revenue generated by all federally permitted boats. This indicates that while the data are a sample, they do account for a very substantial fraction of the total industry, which in turn should reflect well on the validity of the results. The reason the in-analyses vessels have higher average landings and revenue than all federally permitted vessels is explained below in the context of Table 2. The fact that the price per pound of shrimp is very similar is more meaningful in this case.

Next, we look at how representative the surveys used in the analyses are of the sample and, in turn, how representative the sample is of the population of permit holders. Based on the most up-to-date numbers of revenue (June 2008), the final three columns in Table 2 present vessel averages and a break-up by state of i) the vessels in the sample (580), ii) the vessels in the analyses (484), and iii) the vessels in the actual population of

³⁰ Many other survey efforts would have counted the incomplete surveys as well, given that most but not all of their fields are filled. In this case, the raw response rate would be 92.1%. The authors' preferred measure of response, the number of completed surveys (509) divided by the eligible sample (561), is 90.7%

³¹ This issue is discussed further in the Data Cleaning section.

³² These surveys or vessels are referred to throughout the rest of this document and the tables as "in-analyses" surveys or vessels.

moratorium permit holders (1,919). Overall, we can state that the in-analyses vessels are representative of the sample and of the sampling frame. The average vessel characteristics are all very similar, as is the average price of shrimp received. The distributions across the state strata show very minor variation, with the possible exception of the non-Gulf state category (label: State - Other), which is underrepresented in the in-analyses data. Since the out-of-Gulf-state vessels are often not engaged in Gulf shrimping, or any shrimping for that matter, this slight bias is deemed inconsequential for current purposes.

Yet in Table 2, the average shrimp revenues and landings do not match particularly well for vessels in the sample and full population. While the average shrimp revenue is \$160,258 per vessel for the full population, it rises to \$177,556 among the sampled vessels and to \$193,261 for the vessels in the analyses. Landings behave similarly. As mentioned before, the sample was drawn from the incomplete population of 1,709 vessels that had received the moratorium permit by May 2007. As such, we do not expect a perfect fit between the sample and the final population of 1,919 vessels. The lower averages for landings and revenues per vessel in the final population are probably the result of a bias toward less active vessels among the 210 latecomers. Also, the averages for sampled vessels exceed the averages for the full population because inactive Gulf shrimpers are somewhat underrepresented in the sample (17.9% for the sample versus 20.5% for the final population). Less obvious, even the active vessels among the latecomers acquired their permits after May 2007 and thereby missed out on much of the 2007 shrimp season. It is reasonable to assume that at least some of these “part-time” vessels would have been part-timers in 2006, thereby lowering the average revenue generated per vessel in the population compared to the sampling frame.

The difference in average revenue between the sample and the in-analyses vessels in Table 2 is best explained by looking at Table 5. Vessels for which we do not have a complete survey averaged \$128,538 from shrimping whereas vessels in the analyses averaged \$202,170 from shrimping.³³ This leads to an upward bias of revenue for in-analyses vessels. Furthermore, we can see that 63.4% of the 71 sampled vessels for which we do not have a complete survey (labeled non-response in Table 5) are active. We found this to be unexpectedly high, since we thought inactive vessels would dominate our non-response categories. We also note the high average non-shrimp revenue among non-response vessels, indicating that many of these vessels are active in other fisheries. Similarly, non-response was much higher among vessels from states outside the Gulf. Finally, we note that by dropping the 25 surveys with questionable revenue or cost data we seem to be introducing a bias toward larger operations. The average shrimp revenue is \$34,660 for these dropped vessels versus \$202,170 among those included in the analyses. Even accounting for the different level of activity, the large discrepancy does not disappear. This correction explains most of the difference in shrimp revenue between non-response and in-analyses vessels.

³³ Note that Table 5 lists revenue from all shrimp while Table 2 lists Gulf and S. Atlantic shrimp separately.

Table 5: Average Vessel Operations, Characteristics, and State for Non-Response Vessels, Dropped Surveys (due to incomplete or questionable responses), and Surveys in Analyses

	Non-Response	Dropped Surveys	Surveys in Analyses
# of Vessels	71	25	484
Actively shrimping (%)	63.4%	52.0%	82.4%
Shrimp revenue (\$)	128,538	34,660	202,170
Shrimp landed (pounds)	51,557	15,098	84,763
Shrimp price per pound (per vessel)	2.49	2.27	2.43
Non-shrimp revenue (fishing)	47,155	34,677	16,385
Length	70	69	68
Gross tons	110	109	104
Horse power	554	538	502
Year built	1988	1985	1985
Hull material - Steel (%)	71.8%	72.0%	74.8%
Refrigeration - Freezer (%)	45.1%	56.0%	58.7%
State - Florida (%)	12.7%	12.0%	15.3%
State - Alabama (%)	4.2%	0.0%	8.1%
State - Mississippi (%)	4.2%	4.0%	8.9%
State - Louisiana (%)	31.0%	20.0%	24.6%
State - Texas (%)	39.4%	52.0%	40.5%
State - Other (%)	8.5%	12.0%	2.7%

Overall, we believe the data to be representative of the population of interest and proceed with the analyses without any adjustments or weighting of the observations. In other words, we maintain the assumption that each vessel in the population had the same probability of being included in the survey and, at the next step, to have the same probability of being included in the analyses.³⁴

Data Cleaning

After data entry and entry verification, the data set was tested in Excel and SAS for internal consistency and for consistency with external databases. Inconsistent records were given a closer look, including calling the respondent if necessary. If it was not possible to solve the problem (or have reasonable faith that there was no problem) the record was dropped from the data set used for the analyses. As mentioned in the last

³⁴ Only for extrapolations to the full population (across active and inactive boats) do we recommend taking account of the slight differences in activity levels between the final population of federal Gulf shrimp moratorium permit holders and the results from the analyses.

section, 25 completed surveys were dropped in this manner. The primary reason was major inconsistency between the cost numbers collected by the survey and the revenue numbers reported by the GSS, an issue more fully explored in the next section. In terms of shrimp revenue, the dropped vessels were on average not representative of the sample (Table 5). The rest of this section discusses the estimation of some missing values within the otherwise complete records.

Since financial statements must “add up” or “balance,” missing values could not be tolerated in any observation used in the analyses. If acquiring the missing value from the respondent was not possible, the record was not used in the financial analyses. Exceptions were made for the vessel market value and depreciation variables. In the absence of a vessel sales transaction, the former value is a theoretical estimate by the respondent, and as such, a non-response is a valid response (unlike, for instance, purchase price which is an existing fact, but for the rare occasion when a vessel is given as a gift). As for the latter, after repeated attempts, it was decided that depreciation is too technical a concept to explain over the phone. In both cases, the missing values were estimated with the help of regression analysis on the rest of the data set. A vessel’s market value was regressed on its purchase price, vessel characteristics (including age), and a “dummy” variable to differentiate vessels in the state of Texas from vessels in other states.³⁵ The 33 missing market values then were predicted using the regression results. An equivalent approach was used to predict the 98 missing values for depreciation.³⁶

During the survey design it was decided to ask a single simple question summing all dollar expenditures on vessel and gear maintenance, repair, replacement, and new investment. A follow-up question consisting of check-all-that-apply check boxes asked about the occurrence of particular categories of these activities, particularly major ones beyond maintenance such as repair or replacement, haul-out, repair due to hurricane, and new investment. By regressing the total dollar expenditures of each vessel on three dummy variables for maintenance (only), major repair or replacement (including haul-out and due to hurricane), and new investment, we were able to estimate the average percentage breakup of these costs across the three categories.³⁷

Finally, in order to compare vessels owned by owner-operators and those owned by absentee owners who hire captains to run their vessels, the value of the owner-operator’s labor as captain must be estimated and added as an additional crew expense. Otherwise, owner-operated vessels will seem too profitable since a substantial input into the production process, the captain’s labor time, would not be counted.³⁸ Since a substantial part of the owner-operated vessels reported paying their owner an explicit captain’s share, a regression approach could again be used to estimate the captain’s share for those owner-operated vessels that did not report this value. Given that labor compensation is

³⁵ OLS; $n=467$; $R^2=0.69$. More details on this and other regressions can be found in Appendix 5.

³⁶ OLS; $n=402$; $R^2=0.62$. More details on this and other regressions can be found in Appendix 5.

³⁷ OLS, $n=460$ (we had to exclude respondents with zero repair expenses, as these did not check any boxes); $R^2=0.069$. More details on this and other regressions can be found in Appendix 5. Once the parameters are estimated, a bit of math is needed to derive the average breakup of the cost.

³⁸ A similar problem occurs and cannot be corrected for the few, mostly Vietnamese-American owned vessels, where the wife (or other family member) works as unpaid crew.

usually tied closely to the time spent working, it is not surprising that the best predictor of the captain's share is the crew share, i.e. the amount paid to crew plus a constant.³⁹

Additional Data: Revenue

In general, the survey focused on the collection of annual cost data and did not collect shrimp revenue. As a result, the commercial fishing revenue data used in the analyses comes from a variety of other data collection efforts. Gulf shrimp revenues and pounds are from the Gulf Shrimp System (GSS) database as maintained by the Southeast Fisheries Science Center's laboratory in Galveston, Texas. The GSS database is a compilation of dealer reported data that comes from State trip tickets and dealer reports collected by port agents. It attempts to collect comprehensive trip level data on Gulf of Mexico shrimp landings and prices, by shrimp size and species. Most landings in this database, especially for the larger offshore vessels covered by this report, can be assigned to an individual vessel based on the vessel's U.S. Coast Guard or state registration number.⁴⁰

These vessel identifiers were used to query other commercial fishery databases throughout the southeast to find as many other revenue sources for these vessels as possible.⁴¹ Other databases include: i) the southeast fishery logbook system, which covers the majority of federally managed species in the southeast other than shrimp, including South Atlantic snapper-grouper, Gulf of Mexico reef fish, southeast coastal migratory pelagics (mackerels), Atlantic dolphin/wahoo, and sharks; ii) the trip ticket programs of the various Gulf and Atlantic States⁴²; and iii) the data collections by the NMFS Northeast Fisheries Science Center.⁴³ Question 15 on the survey also elicited the total revenue from commercial fishing other than shrimp, and simply adding the revenue from the other databases would probably lead to double counting. We decided to always keep the higher value of revenue reported in question 15 and the sum of revenue in non-shrimp databases for each vessel.

³⁹ OLS; $n=63$; $R^2=0.50$. More details on this and other regressions can be found in Appendix 5. The small sample size and limited R^2 raise questions about using these estimates. As will be shown later in the Results chapter, various consistency checks indicate that the general range of the estimates, especially averaged across a large number of vessels, appear to be reasonable. Estimating the "opportunity cost of time," which this exercise amounts to, is a complex and much discussed topic in the economic literature and goes well beyond this simple descriptive analysis.

⁴⁰ The exceptions are "consolidated records" within the GSS. Some dealers report minor landings from multiple boats consolidated into a single record. In these cases, the landings cannot be assigned to a specific boat.

⁴¹ Special thanks must be given to staff at the Southeast Regional Office for providing us with this *consolidated* revenue data.

⁴² Florida state trip tickets for food shrimp on the east coast (i.e., S. Atlantic) as well as bait shrimp and non-shrimp species on both coasts; and State trip tickets for Georgia, South Carolina, and North Carolina (as maintained by the Atlantic Coastal Cooperative Statistics Program (ACCSP)). The biggest known gap is revenue from the Texas bait shrimp fishery.

⁴³ As consolidated by ACCSP databases for the New England and Mid-Atlantic States (which contains State trip ticket data for States with such programs in those regions). Of particular importance is the Northeast scallop fishery, where some vessels with federal Gulf shrimp permits are active.

In the course of the survey implementation, due to a misunderstanding of question 15, a substantial minority of respondents revealed their total shrimp revenues to us. The respondent-supplied numbers were usually greater than the “equivalent” revenue numbers generated with the help of the GSS database. It was decided that the respondent’s numbers probably were a better reflection of reality. A similar issue arose from comparisons of GSS revenue with preliminary revenue data collected by the Gulf shrimp landings and revenue data collection.⁴⁴ As a result, shrimp revenues (and landings on a proportional basis) were adjusted upward for a group of vessels in the analyses, thereby introducing an upward bias in the average revenue numbers. This selective upward adjustment to the revenue and landing of some vessels *in the analyses* can at least partly explain the differences in these variables observed in Table 1 and Table 2 between averages for in-analyses vessels and all federally permitted vessels and for in-analyses vessels and sampled vessels, respectively.

⁴⁴ This data collection is officially titled: Gulf of Mexico shrimp federal permit reporting form. This effort was in-progress at the writing of this report.

4. Results for 2006

Financial information for individual respondents is confidential. Hence, data collected by the survey can be released only as summary statistics. There are many different ways of summarizing data and reporting it for different groups. In light of this, the report must strike a balance between reporting low level summary statistics, such as the means of the answers to the survey questions, and more advanced statistics derived from the raw data, such as a mean rate of return. With the hope of satisfying as many audiences as possible, this technical memorandum will concentrate on the former and report only a limited number of derived statistics. The detail provided in the appendices, together with the documentation throughout this report, should enable the readers to answer many questions by constructing the necessary measures themselves.

The results are basic descriptive statistics---mostly arithmetic means---of the financial and non-financial data. They are presented in a standardized table format, linking vessel characteristics and operations to simple balance sheet, cash flow, and income statements. Basic summary statistics are provided and discussed in the text for the total fleet (i.e. all permitted vessels), the *Gulf shrimp* fleet (i.e. excluding permitted vessels engaged solely in other fisheries), for the *active* Gulf shrimp fleet (i.e. further excluding idle, broken, or otherwise inactive vessels), and for the inactive Gulf shrimp fleet (i.e. those idle, broken, or otherwise inactive vessels). Further results (limited to means) are reported in an appendix for various categories of shrimp vessels, including those grouped by state, by vessel characteristics, by landings volume, by survey quality, and by ownership structure.

Standardized Data Presentation

This report standardizes the presentation of the financial and economic results, guided by the annual report format. The trio of financial statements discussed in the Design chapter gives a comprehensive overview of the financial and economic situation of a productive enterprise such as owning and operating a shrimp vessel. Here the basic design of the result-tables is explained, and quality, caveats, and idiosyncrasies associated with each data field are discussed. The general explanations and caveats discussed here apply to all equivalent data fields and variables throughout the report. They will not be repeated in the discussion of each table, unless especially and specifically relevant to the conclusion(s) drawn.

Due to the concerns about confidentiality mentioned above, this report generates financial statements based on the arithmetic mean (henceforth referred to simply as “average”) of the sampled vessels or a large specific subset thereof; e.g. Texas vessels. When these numbers are interpreted as applying to the representative “average vessel” of the population (or a large specific subset thereof) the numbers must be interpreted as being statistical in nature. They are estimates of the true (sub-) population average. In this case, the numbers are mid-points of a confidence interval which includes the true population mean with a given probability defined by the confidence level.

For example, the average fuel expenditure of the 484 sampled vessels included in the analyses is \$92,044 (to the extent that the survey question was correctly answered and the data correctly processed). When this number is used in the context of the average fuel expenditure for all federally permitted vessels, *it is an approximation or estimate* of the unknown true average for the full population of vessels. In particular, we estimate with 95% certainty that the true average fuel expenditure of all vessels lies somewhere between \$84,409 and \$99,678, with \$92,044 being the mid-point of this confidence interval (e.g. Table 8).

As mentioned, each result-table reports survey results for a particular category or categories of sampled vessels. The number of observations in each category is given at the top of each column and below its identifying label.⁴⁵ The number of observations is an important indicator of the validity of the averages reported in that a larger sample size tightens the confidence interval around the estimated average, while small sample sizes often lead to large confidence intervals that reflect more uncertainty about the true value of the estimated average. When the sample size is less than 50 observations, the authors advise caution when using the numbers. For example, when reporting by state, the responses for Alabama and Mississippi have been collapsed into a single group to maintain a reasonable sample size that is in the same ball-park as the sample sizes for the other states. Beyond this validity aspect, the number of observations is useful as an orientation point across tables throughout this report.

Most types of costs appear in both the cash flow and income statements. To avoid redundant reporting and provide further useful information, we report the average dollar value for each type of cost in the cash flow statement, and we report the percentage contribution of each type of cost to the total expenses in the income statement. The most appropriate “point in time” that the reported balance sheets reflect is probably the “end of calendar year 2006.” In contrast to the balance sheet, the cash flow statement and income statement summarize financial transactions over the whole calendar year 2006.

Vessel Characteristics

The first section of each result-table reports the average vessel characteristics and the distribution of the vessels across the states. The data underlying these numbers are collected on the permit application and were part of the initial sampling frame data set. They are reported as context for the financial statements. The first block of numbers reports average vessel length in feet, gross tons, horsepower of the engine(s), and the average year the vessels were built (equivalent to average age of the vessels). The second block lists the percentage of vessels with steel hulls (as opposed to fiberglass or wood hulls) and the percentage with onboard freezers (as opposed to those that purchase ice to preserve their catch) as well as the average fuel capacity. A third block of numbers gives the percentage distribution of vessels across the Gulf states. Note that these numbers do not always add up to 100% as the non-Gulf state category is not reported.

⁴⁵ Exceptions are Table 8 through Table 11 that apply to a single category each, and where the number of observations is given in the table title.

Balance Sheet

A balance sheet is a snapshot of the average vessel's financial condition. We wish to calculate the owner's equity, which is the *net* worth of the company and always equals the difference between the value of all assets and what is owed (the liabilities). The data collection and hence the financial statements focus exclusively on the harvesting component of any shrimping enterprise. In other words, we focus solely on the financial flows directly associated with owning and operating a fishing vessel. Hence we define the balance sheet's assets as the vessel including any fishing gear affixed to it. Land-based assets will sometimes comprise a substantial part of a fishing company's productive enterprise, but we purposefully exclude these assets in order to retain comparability across all permit holders. Generating consistent summary statistics for operations ranging from small owner operated catcher vessels to vertically integrated catcher-processor-wholesaler companies would be difficult.⁴⁶ Focusing solely on the fishing vessel is facilitated by the common practice, even among larger, complex companies, to legally treat each vessel as a single incorporated entity (such as an S-corporation). We use the current market value of the vessel as reported by the respondent as **Asset (market value of vessel)** in the tables.

The balance sheet's liabilities usually consist of loans from banks, ship builders, or individuals. Any amount owed is summarized as **Loan on vessel** in the tables. In a very few cases respondents reported business credit lines or homeowner debt. These are not included because these data were not consistently collected from all respondents, and because these liabilities are usually associated more with the land-based components of the fishing enterprise. In enabling a shrimper to "run his business," they represent critical financial capital. But since land-based assets are excluded from the asset side of the balance sheet, they need to be dropped from the liability side as well.

In conclusion, the balance sheets reported do not represent the average balance sheet of the actual companies involved in Gulf shrimping, but rather represent the value and liabilities associated with their harvesting components only. The total asset value reported in the balance sheets should be interpreted as a lower bound for the actual total asset value associated with the "shrimp related business" owned by the fishermen. **Owner's equity in the vessel**, or net-assets, was not asked for on the questionnaire, and hence is calculated by subtracting the loan amount from the vessel's market value.

For convenience, several more items from the questionnaire are reported, in italics, in the balance sheet section of the tables. **Original value of vessel (at purchase price)** comes directly from the survey questionnaire. Based on the phrasing of the question, it was not required that the vessel was purchased new, and the purchase price might reflect a recently purchased used vessel. Hence this variable reflects the capital invested by the current owner only. The question on the survey about the vessel's **Replacement value**

⁴⁶ A practical reason for excluding land-based assets is the fact that the necessary data was not, and in some cases cannot, be collected.

suffered from a variety of problems, and the underlying data contain many blanks.⁴⁷ Nonetheless, the average value for all vessels reporting a (reasonable) value is reported.⁴⁸ **% of vessels with loan** is self-explanatory. Finally, two percentages are given to inform the reader about the fleet's situation regarding **Insurance coverage**.⁴⁹ The first “% of vessels” is the percentage of vessels that have hull insurance, while the second, “% of assets,” reports the percentage of the fleet's vessel assets that are insured with hull insurance.⁵⁰ The two usually differ substantially since newer, more expensive vessels are much more likely to be insured as lenders often demand it as a condition of granting a loan.

Vessel Operation

Before the tables turn to the cash flow and income statements, some context about vessel operations is provided. The percentage of vessels actively fishing for shrimp (any shrimp, including in the S. Atlantic), the average pounds of shrimp landed (heads-off or tail weight), and the average price per pound of shrimp (averaged across vessels) are derived from the GSS with some adjustments as described in the Additional Data: Revenue section of the Implementation chapter. The rest of the numbers, including the percentage of owner-operated vessels, average annual fuel use and price (averaged across vessels), two measures of fuel efficiency, and the number of fishing days lost due to a lack of crew⁵¹ are either directly from our survey or derived thereof. The fuel efficiency measures are pounds of shrimp sold and shrimp revenue per gallon of fuel used, averaged on a vessel basis.

The price of shrimp, the price of fuel, and the fuel efficiency measures are ratios, and hence differ from the purely additive nature of most of the other entries in the result-table and the financial statements in particular. When we “average” a price, it matters quite a lot if we first derive the price at the vessel level by dividing the vessel's revenue by its quantity and *then* average across all vessels; *or* if we *first* add up all revenue and quantities across vessels, and then calculate the ratio of the aggregate numbers. In the latter case, we have the average price across all pounds of shrimp, i.e. the true average price of a pound of shrimp caught by the fleet. In the former case, we calculate the overall average price based on the average prices received by individual vessels regardless of the quantity each vessel produced. In this case, the importance of vessels that produce very little is equal to the importance of vessels that produce a lot when

⁴⁷ Though the instructions clearly stated that the replacement value was to be the amount necessary to purchase an equivalent new vessel, many respondents entered values less than the market or purchase values.

⁴⁸ As one of only two exceptions, the average replacement value of vessel can be based on fewer observations than the rest of the averages in the column.

⁴⁹ Only the first percentage is provided in Table 8, Table 9, Table 10, and Table 11.

⁵⁰ The question mistakenly asked for the coverage level without specifying hull insurance explicitly, although “coverage level of vessel” was usually understood as such. More problematic was the fact that many respondents entered insurance payments rather than coverage levels (easily identified due to the different magnitudes). This required many follow-up calls. P&I coverage levels could usually be identified since these often range far beyond the value of the vessel itself (telephone conversations indicated that crew injury lawsuits could “wipe out” a business).

⁵¹ As one of only two exceptions, the average number of days lost due to a lack of crew can be based on fewer observations than the rest of the averages in the column.

calculating the overall average price. Since the nature of the result-tables is the “average vessel,” these values are reported for the prices and fuel efficiency, even though the quantity-weighted measures are more useful for many applications. But unlike the quantity-weighted measures, the “per vessel” values cannot be derived from other numbers provided.⁵²

Cash Flow

The cash flow section in the tables shows the average inflows and outflows of money coming into and leaving the shrimp enterprises over the course of 2006. Three sources of cash inflow are listed separately. Under the heading **Shrimp landings** all revenue derived from selling shrimp is consolidated. Most of this revenue is generated by the catch and sale of Gulf of Mexico food shrimp, but minor contributions are also made by S. Atlantic food shrimp and by bait shrimp in the Gulf. Revenue from any seafood product other than shrimp is listed under **Non-shrimp landings**.⁵³ The third inflow, labeled **Government payments received (shrimp related)**, lists the government payments reported on the survey questionnaire. The most prominent transfers are the anti-dumping tariff disbursements to the shrimp harvesting and processing industry associated with the Byrd amendment.^{54,55}

The cash outflows are listed roughly according to their appearance on the survey questionnaire. The averages presented are the arithmetic means of the answers to the survey questions. The expenses for the variable factors **Fuel, Ice, and Other supplies** are self-explanatory.^{56,57} **Crew & captain (hired)** lists crew expenses exclusive of any captain’s share for an owner-operator. The cash outflows listed as i) **Regular maintenance (vessel and gear)**, ii) **Major repair, replacement and haul-out**, and iii) **New investments and upgrades (in vessel)** are values derived from questions 6 and 7 on the survey, and more details on this can be found in the Data cleaning section of the Implementation chapter. The remaining expenses for the fixed factors **Overhead (excluding loan payments)**, **Interest payments made (on vessel loans)**, and **Principal payments made (on vessel loans)** once again are self-explanatory. Finally, **Net Cash Flow** is calculated as the difference of the **Inflow - Total** and the **Outflow - Total**. The

⁵² It is easy to calculate the prices and fuel efficiency measures on a per-pound or per gallon basis. Simply divide the appropriate (average) cash flow amount by the (average) quantity listed in the tables.

⁵³ See earlier section Additional Data: Revenue in the Implementation chapter for the various data sources and caveats associated with the revenue numbers.

⁵⁴ Antidumping duties (tariffs) are assessed on the imports of certain farmed shrimp from a variety of foreign countries. The Continued Dumping and Subsidy Offset Act of 2000, commonly referred to as the “Byrd Amendment,” provides for the annual distribution of antidumping and countervailing duties assessed. The distribution is available to “affected domestic producers for qualifying expenditures.”

⁵⁵ A couple of vessels also reported being leased by NOAA or other government agencies for water quality and hurricane debris assessment work. This type of extra income source was not consistently collected by the survey instrument and was ignored throughout this report.

⁵⁶ Consult the survey instrument and instructions in Appendix 1 and 2 and the discussion in the Design chapter for more details on these data fields.

⁵⁷ Some vessels have arrangements with fish houses where they receive ice for free. To the extent that the fish houses implicitly reduce the amount they pay for the shrimp to cover their cost, these arrangements will have little effect on the net revenue numbers we calculate.

statement reflects the liquidity or solvency of the average shrimping enterprise and is useful in determining the short-term viability of the vessels in question.

Income Statement

The income statement in the tables presents the (estimated) average financial and economic performance of the vessel type in question over the course of 2006. The income statement first lists the revenue and expenses related to the **Operating Activities**, which for our purpose is commercial fishing. **Revenue (from commercial fishing)** lists the value of both shrimp and non-shrimp catch. Next, the total operating **Expenses** are given. These comprise most of the same expense categories making up the cash flow's Outflow - Total. Differences are the exclusion of expenses for Principal payments made and New investments and upgrades, and the inclusion of expenses for **Owner's vessel time** and **Depreciation**. Because the dollar values for each expense category have already been given in the cash flow, they are not repeated in the income statement. Rather, the values are expressed as the percentage contributions to total expenses. The expenses are grouped into variable costs for supplies (**Fuel, Ice** and **Other supplies**), variable costs for labor (**Crew and captain (hired)** and **Owner's vessel time**) and fixed costs (**Regular maintenance; Major repair, replacement and haul-out; Depreciation; and Overhead (excluding loan payments)**). The value of an owner-operator's time spent working as the vessel's captain is a derived value for the majority of (owner-operated) observations and was explained in more detail in the Data Cleaning section of the Implementation chapter. Depreciation comes from the questionnaire, but it too required some processing (also described in the Data cleaning section).

Net Revenue from Operations is calculated as the difference between **Revenue (from commercial fishing)** and total **Expenses**. This is a measure of the true economic return to a productive activity. More relevant to the owners of a company is the net revenue before taxes, i.e. their actual "profit" or "loss". This "bottom line" is calculated by adding or subtracting the revenue or costs associated with **Non-Operating Activities**, respectively. In particular, **Interest payments made (on vessel loans)** are subtracted and **Government payments received (shrimp related)** are added to net revenue from operations. This results in the final number, **Net Revenue (before taxes)**.

This standardized data presentation is adhered to in all result-tables. The general explanations and caveats will not be repeated in the discussion of each table, unless especially and specifically relevant to the conclusion(s) drawn. As a final note, below the income statement, two values *in dollars* are presented, **Owner's vessel time** and **Depreciation**. These two variables are not part of the cash flow statement where averages normally are presented. Because all the expense categories in the income statement itself are presented only as percentages of total expenses, the dollar values for these two variables are provided separately for readers who might wish to construct their own measures and calculations.

Categorizing Observations into Fleets by Fishery

The full set of observations in the analyses (484), labeled “total fleet” for the remainder of the report, includes vessels active solely or partly in other fisheries; vessels active solely or partly in the S. Atlantic shrimp fishery; vessels completely inactive; and of course vessels active in the Gulf shrimp fishery. As a reminder, surveys for vessels clearly not qualifying as commercial fishing vessels were marked as incomplete and are not included in the total fleet (see Table 4). The diversity can be partially explained by the lack of any vessel or income qualification for acquiring a moratorium permit. Yet to answer many questions it makes sense to look at more homogeneous sub-fleets or sub-groups among the observations. For this purpose, we assign each vessel in the total fleet to four *mutually exclusive* fisheries, even though some vessels clearly engaged in multiple fisheries in 2006 (Table 6).

Table 6: Vessel Count by Fleet and by Activity in Different Fisheries

Sub-Fleet	# of Vessels	Count of vessels reporting landings in:			
		Gulf Shrimp Fishery	S. Atlantic Shrimp Fishery	Gulf Non-Shrimp Fishery	Other Non-Shrimp Fishery
Active Gulf Shrimp Fleet	386	386	12	18	1
S. Atlantic Shrimp Fleet	13	-	13	-	7
Other Fish Fleet	15	-	-	4	13
Inactive Shrimp Fleet	70 ¹	-	-	-	-
Total Fleet	484	386	25	22	21

¹ A single vessel from North Carolina is considered “inactive S. Atlantic shrimp fleet”, while the rest are labeled “inactive Gulf shrimp fleet”.

Vessels that reported any non-trivial amount of Gulf shrimp landings in 2006 were assigned to the “active Gulf shrimp fleet” (386). Among these 386 vessels, 12 were also active in the S. Atlantic shrimp fishery and 19 in other non-shrimp fisheries (Table 6). The 13 vessels in the total fleet that did not fish for Gulf shrimp but reported non-trivial amounts of S. Atlantic shrimp landings were assigned to the (active) “S. Atlantic shrimp fleet.” More than half of these vessels were also active in non-shrimp fisheries in 2006. Of the total fleet, another 15 vessels were active solely in non-shrimp fisheries, both in the Gulf and beyond. These were assigned to the (active) “other fish fleet.” The remaining 70 vessels were inactive in 2006 to the best of our knowledge, and all but one were assigned to the idle or “inactive Gulf shrimp fleet.”⁵⁸ The “Gulf shrimp fleet” is defined as the sum of its active and inactive parts, and consists of 455 vessels (386 + 69).

⁵⁸ Based on statistical probability and some secondary sources, most of these idle vessels are commercial shrimping vessels. All but one were located in Gulf states, so that these 69 were assigned to the “inactive Gulf shrimp fleet”. The lone exception, registered in North Carolina, constitutes the “inactive S. Atlantic shrimp ‘fleet’.” When this survey is extended to the S. Atlantic shrimp fishery, our “sample size” for this “fleet” will increase.

Overview of Results Presented

Table 7 provides a systematic overview of all the different fleets, strata, and categories of vessels for which results are reported in this technical memorandum. Table 8 contains the (average) financial statements for all vessels whose surveys were judged complete and usable (the total fleet). Beyond the arithmetic mean for each variable, the table reports the standard deviation, the upper and lower bounds of the confidence interval (at a 95% certainty level), and the median. We also report these summary statistics for three other sub-fleets that are deemed important, the Gulf shrimp fleet (Table 9), the active Gulf shrimp fleet (Table 10), and the inactive Gulf shrimp fleet (Table 11). Note that unlike the four “primary” fishery fleets defined in the last section, the four fleets listed here are *not* mutually exclusive. The layout of the tables for these three sub-fleets mirror Table 8 and are discussed in the next section. The rest of the tables (Table 13 through Table 21) can be found in Appendix 6 and only major findings, as summarized in Table 12, will be discussed in a section below.

The relevance of each table depends on the question at hand. Table 8 presents data for the average vessel that holds a federal Gulf shrimp permit. Since these observations were drawn at random from the full population of vessels holding this permit,⁵⁹ any extrapolation or statement about *vessels with a federal Gulf shrimp moratorium permit* should begin with this table. In other words, while this sample includes, beyond active Gulf shrimp vessels, vessels fishing in the northeast scallop fishery, and broken and otherwise idle vessels, this is the best reflection of the actual status of all permit holding vessels.

Table 9 looks at the averages for Gulf shrimp vessels only, excluding vessels of the S. Atlantic shrimp and other fish fleets. By excluding these vessels, Table 9 better represents the economic situation that the federally permitted *Gulf shrimp vessels* are facing. For example, Gulf shrimpers exhibit lower net cash flow and net revenue than the numbers for the total fleet indicate, as the much more profitable vessels active in other fisheries do not bias the results. Questions pertaining to *Gulf shrimp vessels* (with federal permits) should probably use these numbers.

Table 10 reports results for Gulf shrimp vessels that were active in 2006, thereby excluding the vessels in the inactive Gulf shrimp fleet. By excluding idle and not operational vessels, these numbers better reflect the actual revenue, cost, and return to actual shrimping in the Gulf of Mexico. Questions concerning the *production process of trawling for shrimp* should probably be based on these numbers. An example might include a question about the amount of fuel required to harvest a pound of shrimp.⁶⁰

⁵⁹ With the caveats mentioned in the Design chapter.

⁶⁰ Any extrapolation of results in Table 9 and Table 10 should be done with care! The numbers can definitely not be multiplied by 1,919 (the permitted vessel universe), since many of these vessels are not active Gulf shrimp vessels or even Gulf shrimp vessels. The most appropriate equivalent “population” numbers *might* be 1,862 for Gulf shrimp vessels holding a federal permit (proportional scaling, based on

Table 7: Overview of Tables with 2006 Financial and Economic (F&E) Results

Table	Fleet	Stat.	Looks at by:	Category Levels
8	Total Fleet	yes	-	-
9	Gulf Shrimp Fleet	yes	-	-
10	Active Gulf Shrimp Fleet	yes	-	-
11	Inactive Gulf Shrimp Fleet	yes	-	-
13	Total Fleet	-	by Fleet by Fishery	Other Fishing Fleet, S. Atlantic Shrimp Fleet, Gulf Shrimp Fleet
14	Total Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas, Other
15	Gulf Shrimp Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas
15	Gulf Shrimp Fleet	-	by Activity Status	Inactive, Active
16	Active Gulf Shrimp Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas
17	Active Gulf Shrimp Fleet	-	by Refrigeration	Freezer, Ice
17	Active Gulf Shrimp Fleet	-	by Hull Material	Steel, Wood, Fiberglass
18	Active Gulf Shrimp Fleet	-	by Vessel Length	0-49 feet, 50-74 feet, 75-99 feet
19	Active Gulf Shrimp Fleet	-	by Vessel Age	Built: 1968-1979, 1980-1989, 1990-2000, 2000-2006
20	Active Gulf Shrimp Fleet	-	by Landings Volume	0-49,000 lbs, 50,000-99,000 lbs, 100,000-149,000 lbs, 150,000+ lbs
21	Active Gulf Shrimp Fleet	-	by Survey Quality	Medium Quality, High Quality
22	Active Gulf Shrimp Fleet	-	by Ownership Structure	Hired Captain, Owner-Operator
22	Owner-Operated Active Gulf Shrimp Fleet	-	by Captain's Share Structure	without Share, with Share (explicit)

Table 11 reports the averages for inactive Gulf shrimp vessels. The results apply to Gulf shrimp vessels that conducted no commercial fishing, anywhere, in 2006. Due to the limited sample size of this sub-fleet, caution is warranted when interpreting these numbers.

The result-tables in Appendix 6 report only the arithmetic mean for each variable. Table 13 reports averages for the total fleet by fishery. Results are also reported for each sub-fleet and by state in Table 14, Table 15, and Table 16.⁶¹ Even within the active Gulf shrimp fleet there is much diversity. To explore the impact this diversity might have on financial and economic performance, results are also reported for different categories of vessels within the active Gulf shrimp fleet. Results are reported by various vessel

the survey results) and 1,453 for active Gulf shrimp vessels holding a federal permit (based on GSS data). A future report will address the extrapolation from the survey numbers to the population in more detail.

⁶¹ The sample size of the inactive Gulf shrimp fleet is too small to justify further dividing it into four state strata.

characteristics (Table 17, Table 18, and Table 19), by landings volume (Table 20), by an indicator of survey quality (Table 21), by ownership structure (Table 22), and by captain's share structure (Table 22).⁶² Consult the overview in Table 7 for the reported categories and category levels and the table number of each result-table.

2006 Financial and Economic Results for the Sub-Fleets (Summary Statistics)

This section discusses summary statistics for the total fleet, i.e. for all 484 usable observations in the sample. Discussions for the other three sub-fleets are limited to those results that materially differ from results for the total fleet.

Total Fleet

We now turn to the summary statistics in Table 8 as reported for the total fleet. According to the sample, the average federal Gulf shrimp moratorium permit holder owns a vessel that is on average 68 feet long, weighs 104 gross tons, is powered by a 502 hp engine(s), and was built in 1985 (23 years old). According to the sampling frame (last column in Table 2), the average federal Gulf shrimp permit holder owns a vessel that is 68 feet long, weighs 107 gross tons, is powered by 505 hp engines, and was built in 1985. As we would expect, these true population values are within the estimated confidence intervals based on the sample. Approximately three-quarters of the vessels have steel hulls in both the sample and full population. We note only that freezer vessels are slightly overrepresented in the sample. Fifty-nine percent of boats in the sample had freezers compared to 54% in the full population. Approximately 17% of boats in the sample were from Alabama or Mississippi compared to 15% in the full population, while 15% of vessels in the sample were from Florida compared to slightly more than 16% in the full population.

The average market value in 2006 for a vessel in the total fleet is \$177,666, about \$100,000 less than the original purchase price. The outstanding loans average \$92,553, leading to an average equity of \$85,113 for the owner. This represents slightly less than half of the market value of the vessel. The confidence intervals are fairly broad at twenty-five-thousand dollars or more for the variables reported in the balance sheet. The reader is reminded that the total fleet encompasses a very diverse set of operations, so the overall variation should not come as a surprise. The median asset value and equity are slightly below the mean, suggesting the presence of a few large values, i.e. a distribution skewed to the left. In contrast, the difference between the mean and median of the vessel's purchase price is over a hundred-thousand dollars. This suggests the presence of a few very expensive vessels.

⁶² A survey quality indicator, low, medium, or high, was assigned during the survey processing and data entry based on the overall appearance and internal consistency of the returned survey. Most surveys were assigned to the high quality category (average and better). Surveys that appeared particularly sloppy, rushed, rounded to a high digit, or involving many corrections were assigned a medium quality. Low quality was reserved for a few special cases which were later processed as incomplete surveys.

Table 8: F&E Results: Summary Statistics for the Total Fleet (n=484)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<u>Vessel Characteristics</u>					
Length (feet)	68	14	67	70	70
Gross tons	104	47	100	108	111
Horse power	502	238	481	523	425
Year built	1985	11	1984	1986	1984
Hull material - Steel (%)	75%	-	71%	78%	-
Refrigeration - Freezer (%)	59%	-	55%	62%	-
Fuel capacity (gallons)	12,938	9,742	12,067	13,808	10,000
State - Florida (%)	15%	-	13%	18%	-
State - AL or MS (%)	17%	-	14%	20%	-
State - Louisiana (%)	25%	-	21%	28%	-
State - Texas (%)	40%	-	37%	44%	-
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	177,666	154,668	163,852	191,479	142,197
<i>Original value of vessel (at purchase price)</i>	271,812	257,375	248,825	294,799	168,423
<i>Replacement value</i>	459,497	311,627	431,664	487,329	450,000
Liabilities - Loan on vessel	92,553	177,294	76,718	108,387	0
<i>% of vessels with loan</i>	48%	-	44%	52%	-
Equity - Owner's equity in vessel	85,113	141,671	72,460	97,766	70,000
<i>Insurance coverage (% of vessels)</i>	42%	-	38%	46%	-
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	82%	-	79%	85%	-
Owner-operator (%)	47%	-	43%	51%	-
Shrimp landed (pounds)	84,763	72,706	78,270	91,257	77,810
Shrimp price per pound (vessels basis)	2.43	0.70	2.36	2.49	2.43
Annual fuel use (gallons)	44,670	41,808	40,936	48,404	38,668
Fuel price per gallon (vessels basis)	2.10	0.19	2.08	2.12	2.07
Fuel efficiency I (shrimp pounds/gallon)	2.5	2.4	2.3	2.7	1.9
Fuel efficiency II (shrimp revenue/gallon)	5.30	3.70	4.97	5.63	4.60
Days lost due to lack crew	36	53	31	40	15
<u>Cash Flow (2006)</u>					
Inflow - Total	230,113	208,028	211,533	248,692	211,446
Shrimp landings	202,170	174,088	186,621	217,718	184,355
Non-shrimp landings	16,385	124,907	5,229	27,541	0
Government payments received (shrimp related)	11,558	15,845	10,143	12,973	0
Outflow - Total	212,598	180,420	196,484	228,712	183,899
Fuel	92,044	85,482	84,409	99,678	79,647
Ice	2,084	3,951	1,731	2,436	0
Other supplies	17,871	26,074	15,542	20,199	10,864
Crew & captain (hired)	49,154	50,716	44,625	53,684	38,831
Regular maintenance (vessel and gear)	16,997	18,216	15,370	18,624	11,813
Major repair, replacement or haul-out	5,949	9,588	5,092	6,805	725
Overhead (excluding loan payments)	13,156	16,758	11,660	14,653	14,039
Interest payments made (on vessel loans)	6,317	13,344	5,125	7,509	0
Principal payments made (on vessel loans)	7,652	16,117	6,212	9,091	0
New investments and upgrades (in vessel)	1,375	3,665	1,048	1,702	0
Net Cash Flow	17,515	76,609	10,673	24,357	4,677

Table 8: F&E Results: Summary Statistics for the Total Fleet (n=484), cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	218,554	200,202	200,674	236,435	197,893
Expenses	221,141	181,794	204,905	237,378	196,836
<i>Variable costs - Supplies</i>	50.6%	-	-	-	-
Fuel	41.6%	-	-	-	-
Ice	0.9%	-	-	-	-
Other supplies	8.1%	-	-	-	-
<i>Variable costs - Labor</i>	25.8%	-	-	-	-
Crew & captain (hired)	22.2%	-	-	-	-
Owner's vessel time	3.6%	-	-	-	-
<i>Fixed costs</i>	23.5%	-	-	-	-
Regular maintenance (vessel and gear)	7.7%	-	-	-	-
Major repair, replacement and haul-out	2.7%	-	-	-	-
Depreciation	7.2%	-	-	-	-
Overhead (excluding loan payments)	5.9%	-	-	-	-
Net Revenue from Operations	(2,587)	76,132	(9,387)	4,213	(4,399)
Non-Operating Activities					
Interest payments made (on vessel loans)	6,317		(see above)		
Government payments received (shrimp related)	11,558		(see above)		
Net Revenue (before taxes)	2,654	76,047	(4,138)	9,446	(2,420)
<i>Owner's vessel time</i>	8,067	13,107	6,896	9,238	0
<i>Depreciation</i>	15,821	22,568	13,805	17,836	6,256

Turning to the average vessel operation in 2006, 82% of the total fleet is actively shrimping which is a little higher than among the population (79.5%; see Table 2). This does not seem like much, but could have an effect on the average revenue numbers and net revenue numbers in particular. Just under half (47%) of the vessels are owner-operated. The average vessel caught 84,763 lbs of shrimp (heads-off) and received \$2.43 for each pound it sold. Note that, not listed in the table but easily calculated, the *average pound* was sold for \$2.39, i.e. not averaged across vessels but across all shrimp landings of the total fleet. By the same token, the average gallon of fuel was purchased for \$2.06, while the average vessel paid \$2.10 per gallon. We are very confident in this latter mean as the confidence interval has a width of only 4 cents. The median fuel price is \$2.07. The average vessel used 44,670 gallons of fuel and generated revenue of \$5.30 for each gallon used. Analog to above, the fuel efficiency averaged across all gallons used rather than across vessels was \$4.53, significantly less, and signifying the almost trivial relationship that the inefficient vessels use more fuel. According to the respondents the average vessel lost 36 days of shrimping due to a lack of crew.

Having looked at the vessel operations, we now turn to the average cash flow and income statements for the total fleet during 2006 (still in Table 8). The average inflow from shrimp landings is \$202,170. On average, non-shrimp landings account for about 7.5% of inflow from commercial fishing. Note that the median for both non-shrimp landings and government payment inflows are zero, indicating that more than 50% of the fleet in each instance receives no cash inflow (the statement that more than 50% receive neither cannot be made based on the information given in the table). The average total outflow is \$212,598 of which a staggering \$92,044 is due to fuel expenses alone. The median fuel expense is lower at \$79,647. The expense for hired crew and captains is on average \$49,154 which indicates the importance of the industry as a source of wage income. The average net cash flow is \$17,515 but has a (very large) standard deviation of \$76,609. This leads to a broad confidence interval ranging from \$10,673 to \$24,357. The median net cash flow is \$4,677. In summary, we can state with 95% certainty that the average net cash flow is minimally positive given the scale of the revenue and the invested assets.

Turning to the income statement, the average total revenue from commercial fishing operations for the total fleet is \$218,554 with a confidence interval of +/- \$17,880. The median is just under \$200,000. Looking at the percentage break-up of costs, we note that fixed costs account for just under a quarter of operating expenses (23.5%); labor costs account for just over a quarter (25.8%);⁶³ and the non-labor variable costs for just over half (50.6%). The fuel costs alone accounted for 41.6% of total operating expenses in 2006 at an average price of \$2.10 per gallon. The average net revenue from operations is negative \$2,587, while the average net revenue before taxes (the profit) is positive at \$2,654 due mostly to an average government payment of \$11,558. Both measures of net revenue have very large standard deviations that produce confidence intervals that straddle zero. As a result, we cannot reject with 95% certainty the possibility that the true means are zero. The medians for both measures of net revenue are below zero, which indicates that economic costs in 2006 exceeded revenues for at least 50% of the sample. More general financial and economic conclusions for the total fleet will be drawn in the “Key Results” section below.

⁶³ As a reminder, this category includes both the actual cash costs for hired labor and, to a lesser degree (~14%), the estimated opportunity cost of owner’s captain’s labor input.

Table 9: F&E Results: Summary Statistics for the Gulf Shrimp Fleet (n=455)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<u>Vessel Characteristics</u>					
Length (feet)	69	14	67	70	70
Gross tons	105	47	100	109	111
Horse power	505	242	482	527	425
Year built	1985	12	1984	1986	1985
Hull material - Steel (%)	75%	-	72%	79%	-
Refrigeration - Freezer (%)	59%	-	55%	63%	-
Fuel capacity (gallons)	13,063	9,732	12,167	13,960	10,000
State - Florida (%)	14%	-	11%	16%	-
State - AL or MS (%)	18%	-	15%	21%	-
State - Louisiana (%)	25%	-	22%	29%	-
State - Texas (%)	43%	-	39%	47%	-
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	175,149	149,229	161,401	188,898	144,394
<i>Original value of vessel (at purchase price)</i>	<i>272,460</i>	<i>256,766</i>	<i>248,804</i>	<i>296,116</i>	<i>165,000</i>
<i>Replacement value</i>	<i>455,643</i>	<i>305,968</i>	<i>427,454</i>	<i>483,832</i>	<i>450,000</i>
Liabilities - Loan on vessel	91,955	173,227	75,996	107,915	0
<i>% of vessels with loan</i>	<i>49%</i>	<i>-</i>	<i>45%</i>	<i>53%</i>	<i>-</i>
Equity - Owner's equity in vessel	83,194	142,779	70,039	96,348	70,000
<i>Insurance coverage (% of vessels)</i>	<i>42%</i>	<i>-</i>	<i>38%</i>	<i>45%</i>	<i>-</i>
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	85%	-	82%	88%	-
Owner-operator (%)	47%	-	43%	51%	-
Shrimp landed (pounds)	85,948	69,092	79,583	92,314	80,081
Shrimp price per pound (vessels basis)	2.45	0.71	2.38	2.51	2.44
Annual fuel use (gallons)	45,030	41,901	41,170	48,890	38,950
Fuel price per gallon (vessels basis)	2.09	0.19	2.08	2.11	2.07
Fuel efficiency I (shrimp pounds/gallon)	2.5	2.3	2.3	2.7	1.9
Fuel efficiency II (shrimp revenue/gallon)	5.40	3.44	5.08	5.72	4.70
Days lost due to lack crew	37	54	32	42	15
<u>Cash Flow (2006)</u>					
Inflow - Total	220,824	180,586	204,186	237,461	210,918
Shrimp landings	207,174	170,539	191,462	222,886	191,843
Non-shrimp landings	1,582	16,184	91	3,073	0
Government payments received (shrimp related)	12,068	16,094	10,585	13,550	1,805
Outflow - Total	208,202	168,279	192,699	223,706	184,000
Fuel	92,542	85,348	84,679	100,405	80,828
Ice	1,960	3,753	1,614	2,306	0
Other supplies	16,793	19,714	14,977	18,609	10,891
Crew & captain (hired)	46,590	42,346	42,688	50,491	38,662
Regular maintenance (vessel and gear)	16,601	17,582	14,981	18,221	11,193
Major repair, replacement or haul-out	5,998	9,685	5,105	6,890	693
Overhead (excluding loan payments)	12,845	16,179	11,355	14,336	14,000
Interest payments made (on vessel loans)	6,229	13,104	5,022	7,437	0
Principal payments made (on vessel loans)	7,291	15,277	5,883	8,698	0
New investments and upgrades (in vessel)	1,353	3,672	1,015	1,692	0
Net Cash Flow	12,622	62,439	6,869	18,374	3,931

Table 9: F&E Results: Summary Statistics for the Gulf Shrimp Fleet (n=455), cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	208,756	170,349	193,062	224,451	195,470
Expenses	216,787	170,297	201,097	232,476	196,762
<i>Variable costs - Supplies</i>	51.3%	-	-	-	-
Fuel	42.7%	-	-	-	-
Ice	0.9%	-	-	-	-
Other supplies	7.7%	-	-	-	-
<i>Variable costs - Labor</i>	25.1%	-	-	-	-
Crew & captain (hired)	21.5%	-	-	-	-
Owner's vessel time	3.6%	-	-	-	-
<i>Fixed costs</i>	23.6%	-	-	-	-
Regular maintenance (vessel and gear)	7.7%	-	-	-	-
Major repair, replacement and haul-out	2.8%	-	-	-	-
Depreciation	7.2%	-	-	-	-
Overhead (excluding loan payments)	5.9%	-	-	-	-
Net Revenue from Operations	(8,031)	59,271	(13,491)	(2,570)	(5,009)
Non-Operating Activities					
Interest payments made (on vessel loans)	6,229		(see above)		
Government payments received (shrimp related)	12,068		(see above)		
Net Revenue (before taxes)	(2,192)	61,716	(7,878)	3,494	(2,726)
<i>Owner's vessel time</i>	7,813	12,488	6,663	8,964	0
<i>Depreciation</i>	15,644	22,258	13,594	17,695	5,912

Gulf Shrimp Fleet

Removing the 29 non-Gulf shrimp vessels from the 484 vessels in the total fleet has almost no relevant qualitative and minimal quantitative effect on the average financial and economic results just reported (Table 9).⁶⁴ Barely noticeable, the confidence intervals tighten up just a bit. The only significant differences are the much lower average cash inflow from non-shrimp landings and average net revenues that are about \$5,000 less each. The average cash inflow from non-shrimp landings (\$1,582) is less than 1% of the total revenue from commercial fishing for the Gulf shrimp fleet, much less than the 7.5% for the total fleet. The Gulf shrimp fleet of 455 vessels generates an average net cash flow of \$12,622, yet accounting for all the costs leads to average net revenue from operations of negative \$8,031. Government payments reduce the average loss somewhat to negative \$2,192. The confidence intervals for these net-values are each about \$3,000 tighter than those for the total fleet, which leads us to the only truly meaningful difference between the Gulf shrimp fleet and the total fleet. In the case of the Gulf shrimp fleet, we can state with 95% certainty that the average net revenue from operations is negative. The “profit”

⁶⁴ Table 13 in Appendix 6 also provides a side by side comparison of the means for the different sub-fleets, at the expense of the other summary statistics.

remains not statistically different from zero. The median net revenues barely differ for the two fleet definitions.

Active Gulf Shrimp Fleet

The active Gulf shrimp fleet of 386 vessels excludes about 20% of the 484 vessels that comprise the total fleet. In this case, it is somewhat more surprising than in the last section that the results are quite similar, definitely from a qualitative perspective. This finding indicates that the results are robust with respect to noise and outliers in the data, and confirms our belief in the overall validity of the numbers. Again, we will only point out the differences rather than discuss all results.

The average vessel in the active Gulf shrimp fleet is somewhat larger both physically and “economically” than the average vessel in the total fleet (Table 10). The average asset value is about \$15,000 larger, while the average liabilities are about \$12,000 larger. As a result, the average equity of \$88,340 is about \$3,000 larger than for the total fleet. Oddly, the confidence interval is wider for the more homogeneous active Gulf shrimp fleet, implying a higher variation in owner’s equity. Active Gulf shrimp vessels are slightly more likely to have a loan (53% vs. 48%) and insurance (48% vs. 42%). The shrimp landings for the average active Gulf shrimp vessel are 101,268 pounds, and the median is 92,912 pounds.⁶⁵ As would be expected after excluding inactive vessels, both measures of shrimp production are substantially higher than for the total fleet. Average annual fuel use among active Gulf shrimp vessels is 52,931 gallons; 8,261 gallons more than for the total fleet.

The average revenue from shrimp landings is \$244,136, and the median is \$230,389. Both measures are more than \$40,000 larger than for the total fleet. The medians for all cost categories are larger among the active Gulf shrimp fleet (except for where they remain zero). This is logical when we consider that the active Gulf shrimp fleet excludes 69 inactive vessels with no or low costs in many categories. The median government payment rises to \$6,588 compared to zero for the total fleet. Average fuel costs of \$108,775 are \$16,731 more than for the total fleet. The average net cash flow is essentially the same at \$16,225 for the active Gulf shrimp fleet vs. \$17,515 for the total fleet, and again we are 95% confident that it is greater than zero. The median net cash flow more than doubles to \$11,843 for the active Gulf shrimp fleet compared to \$4,677 for the total fleet.

⁶⁵ For those looking for inconsistencies, note that the minute 1 cent difference between the average shrimp price here and in Table 1 is due to the focus on just Gulf shrimp landings in that table.

Table 10: F&E Results: Summary Statistics for the Active Gulf Shrimp Fleet (n=386)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<u>Vessel Characteristics</u>					
Length (feet)	70	13	69	72	72
Gross tons	111	45	106	115	117
Horse power	531	247	507	556	450
Year built	1986	11	1985	1988	1987
Hull material - Steel (%)	80%	-	76%	83%	-
Refrigeration - Freezer (%)	63%	-	59%	67%	-
Fuel capacity (gallons)	14,184	9,836	13,200	15,169	12,000
State - Florida (%)	13%	-	10%	16%	-
State - AL or MS (%)	16%	-	13%	19%	-
State - Louisiana (%)	27%	-	23%	31%	-
State - Texas (%)	43%	-	39%	47%	-
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	192,938	151,382	177,788	208,087	150,000
<i>Original value of vessel (at purchase price)</i>	300,185	264,471	273,719	326,652	200,000
<i>Replacement value</i>	479,671	303,907	449,258	510,084	475,000
Liabilities - Loan on vessel	104,597	182,610	86,323	122,872	5,000
<i>% of vessels with loan</i>	53%	-	49%	57%	-
Equity - Owner's equity in vessel	88,340	152,903	73,039	103,642	77,339
<i>Insurance coverage (% of vessels)</i>	48%	-	44%	52%	-
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	100%	-	-	-	-
Owner-operator (%)	46%	-	42%	50%	-
Shrimp landed (pounds)	101,268	63,855	94,878	107,658	92,912
Shrimp price per pound (vessels basis)	2.47	0.70	2.40	2.54	2.46
Annual fuel use (gallons)	52,931	40,704	48,858	57,004	45,768
Fuel price per gallon (vessels basis)	2.09	0.19	2.07	2.11	2.07
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.3	2.4	2.9	1.9
Fuel efficiency II (shrimp revenue/gallon)	5.68	3.32	5.35	6.02	4.80
Days lost due to lack crew	35	46	30	39	20
<u>Cash Flow (2006)</u>					
Inflow - Total	259,640	168,776	242,750	276,530	244,357
Shrimp landings	244,136	158,946	228,229	260,042	230,389
Non-shrimp landings	1,842	17,558	85	3,599	0
Government payments received (shrimp related)	13,662	16,711	11,990	15,334	6,588
Outflow - Total	243,415	158,623	227,541	259,289	229,288
Fuel	108,775	82,731	100,496	117,054	92,236
Ice	2,287	3,985	1,888	2,686	0
Other supplies	19,699	20,051	17,692	21,705	13,972
Crew & captain (hired)	54,866	40,762	50,787	58,945	47,700
Regular maintenance (vessel and gear)	18,988	17,857	17,201	20,775	13,777
Major repair, replacement or haul-out	6,833	10,160	5,816	7,849	2,618
Overhead (excluding loan payments)	14,746	16,782	13,067	16,426	18,728
Interest payments made (on vessel loans)	7,140	13,936	5,746	8,535	0
Principal payments made (on vessel loans)	8,528	16,268	6,900	10,156	0
New investments and upgrades (in vessel)	1,552	3,919	1,160	1,945	0
Net Cash Flow	16,225	66,953	9,525	22,925	11,843

Table 10: F&E Results: Summary Statistics for the Active Gulf Shrimp Fleet , cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	245,978	158,302	230,136	261,820	230,842
Expenses	253,407	159,049	237,490	269,324	239,198
<u>Variable costs - Supplies</u>	<u>51.6%</u>	-	-	-	-
Fuel	42.9%	-	-	-	-
Ice	0.9%	-	-	-	-
Other supplies	7.8%	-	-	-	-
<u>Variable costs - Labor</u>	<u>25.3%</u>	-	-	-	-
Crew & captain (hired)	21.7%	-	-	-	-
Owner's vessel time	3.6%	-	-	-	-
<u>Fixed costs</u>	<u>23.1%</u>	-	-	-	-
Regular maintenance (vessel and gear)	7.5%	-	-	-	-
Major repair, replacement and haul-out	2.7%	-	-	-	-
Depreciation	7.1%	-	-	-	-
Overhead (excluding loan payments)	5.8%	-	-	-	-
Net Revenue from Operations	(7,429)	64,075	(13,841)	(1,017)	(3,843)
Non-Operating Activities					
Interest payments made (on vessel loans)	7,140		(see above)		
Government payments received (shrimp related)	13,662		(see above)		
Net Revenue (before taxes)	(907)	66,718	(7,584)	5,769	1,167
<i>Owner's vessel time</i>	9,138	13,113	7,825	10,450	0
<i>Depreciation</i>	18,076	23,225	15,751	20,400	9,250

Finally, turning to the income statement, the average revenue from commercial fishing mirrors the revenue from shrimp landings due to the minimal contribution to revenue by non-shrimp landings. We note that the percentages of total cost for variable costs, labor costs, and fixed costs are essentially the same as for the total fleet, but that total expenses are higher leading to a negative net cash flow from operations. Because the upper bound of the 95% confidence interval is negative, the mean of negative \$7,429 is statistically different and less than zero. A healthy \$13,662 average government payment results in a net loss before taxes of only \$907, a value that is not statistically different from zero (the median is actually positive at \$1,167). As a last remark, we mention that the average estimated value of the owner's vessel time is \$9,138 for the active Gulf shrimp fleet. Taking account of the fact that only 46% of these vessels are owner-operated, the average labor contribution (as captain) of an owner-operator is valued at about \$19,800.

Table 11: F&E Results: Summary Statistics for the Inactive Gulf Shrimp Fleet (n=69)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<u>Vessel Characteristics</u>					
Length (feet)	58	15	54	61	61
Gross tons	71	43	61	81	78
Horse power	356	140	322	389	365
Year built	1978	11	1976	1981	1978
Hull material - Steel (%)	49%	-	39%	60%	-
Refrigeration - Freezer (%)	39%	-	29%	49%	-
Fuel capacity (gallons)	6,791	6,124	5,320	8,263	5,000
State - Florida (%)	16%	-	8%	24%	-
State - AL or MS (%)	28%	-	18%	37%	-
State - Louisiana (%)	16%	-	8%	24%	-
State - Texas (%)	41%	-	30%	51%	-
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	75,635	84,182	55,412	95,858	60,000
<i>Original value of vessel (at purchase price)</i>	<i>117,358</i>	<i>124,040</i>	<i>87,561</i>	<i>147,156</i>	<i>80,000</i>
<i>Replacement value</i>	<i>306,294</i>	<i>277,528</i>	<i>239,625</i>	<i>372,964</i>	<i>175,000</i>
Liabilities - Loan on vessel	21,233	74,579	3,317	39,149	0
<i>% of vessels with loan</i>	<i>25%</i>	<i>-</i>	<i>16%</i>	<i>34%</i>	<i>-</i>
Equity - Owner's equity in vessel	54,402	52,413	41,811	66,993	45,000
<i>Insurance coverage (% of vessels)</i>	<i>6%</i>	<i>-</i>	<i>1%</i>	<i>11%</i>	<i>-</i>
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	0%	-	-	-	-
Owner-operator (%)	54%	-	43%	64%	-
Shrimp landed (pounds)	245	628	94	396	0
Shrimp price per pound (vessels basis)	1.73	0.67	1.57	1.89	1.61
Annual fuel use (gallons)	831	2,105	325	1,336	0
Fuel price per gallon (vessels basis)	2.14	0.17	2.10	2.18	2.14
Fuel efficiency I (shrimp pounds/gallon)	0.4	0.9	0.1	0.6	0.0
Fuel efficiency II (shrimp revenue/gallon)	0.44	0.89	0.23	0.65	0.00
Days lost due to lack crew	55	94	33	78	0
<u>Cash Flow (2006)</u>					
Inflow - Total	3,678	7,303	1,924	5,433	0
Shrimp landings	404	1,057	150	658	0
Non-shrimp landings	126	855	-79	332	0
Government payments received (shrimp related)	3,148	7,290	1,397	4,900	0
Outflow - Total	11,215	13,937	7,867	14,563	6,328
Fuel	1,734	4,265	709	2,758	0
Ice	131	344	48	213	0
Other supplies	537	1,565	161	913	0
Crew & captain (hired)	290	822	92	487	0
Regular maintenance (vessel and gear)	3,245	6,708	1,634	4,857	440
Major repair, replacement or haul-out	1,327	3,955	377	2,277	0
Overhead (excluding loan payments)	2,213	4,210	1,201	3,224	680
Interest payments made (on vessel loans)	1,133	3,989	175	2,091	0
Principal payments made (on vessel loans)	366	1,536	-3	735	0
New investments and upgrades (in vessel)	240	1,259	-63	542	0
Net Cash Flow	(7,537)	12,779	(10,607)	(4,467)	(3,695)

Table 11: F&E Results: Summary Statistics for the Inactive Gulf Shrimp Fleet , cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	530	1,477	175	885	0
Expenses	11,926	14,250	8,503	15,350	7,017
<i>Variable costs - Supplies</i>	<i>20.1%</i>	-	-	-	-
Fuel	14.5%	-	-	-	-
Ice	1.1%	-	-	-	-
Other supplies	4.5%	-	-	-	-
<i>Variable costs - Labor</i>	<i>5.8%</i>	-	-	-	-
Crew & captain (hired)	2.4%	-	-	-	-
Owner's vessel time	3.4%	-	-	-	-
<i>Fixed costs</i>	<i>74.0%</i>	-	-	-	-
Regular maintenance (vessel and gear)	27.2%	-	-	-	-
Major repair, replacement and haul-out	11.1%	-	-	-	-
Depreciation	17.1%	-	-	-	-
Overhead (excluding loan payments)	18.6%	-	-	-	-
Net Revenue from Operations	(11,396)	14,011	(14,762)	(8,031)	(7,017)
Non-Operating Activities					
Interest payments made (on vessel loans)	1,133		(see above)		
Government payments received (shrimp related)	3,148		(see above)		
Net Revenue (before taxes)	(9,381)	12,879	(12,475)	(6,287)	(5,192)
<i>Owner's vessel time</i>	406	1,413	67	746	0
<i>Depreciation</i>	2,044	5,697	675	3,413	0

Inactive Gulf Shrimp Fleet

Table 11 reports the averages for inactive Gulf shrimp vessels. The results apply to vessels that conducted no fishing in 2006, i.e. were idle or broken. Due to the limited sample size of this sub-fleet, caution interpreting the numbers is warranted. Instead of comparing the inactive fleet with the total fleet, we will compare the results of the inactive Gulf shrimp fleet with the active one.⁶⁶ In the next section, this comparison will be conducted for the key financial and economic results, and hence they will not be discussed here. We concentrate on the differences in the average vessel characteristics and among the individual cost categories in the financial statements.

The average inactive Gulf shrimp vessel is generally of a different scale than the average active vessel. The average inactive vessel is 22 feet shorter, weighs 40 gross tons less, and is 8 years older. Less than half have steel hulls compared to 80% with steel hulls among active vessels, and less than 39% use freezers compared to 63% among active vessels. Inactive Gulf shrimp vessels are more likely to be from Alabama and Mississippi

⁶⁶ Table 15 in Appendix 6 provides a side by side comparison of the means, at the expense of the other summary statistics.

than active vessels. Owner-operators are more frequent (54% for inactive vessels vs. 46% for active vessels). In the cash flow, the largest cash inflow is government payments at an average of \$3,148, while cash outflow averages \$11,215. The largest cost categories are maintenance (\$3,245), overhead (\$2,213), and fuel (\$1,734). Fixed costs account for nearly three quarters of the total operating costs compared to 23% for active Gulf shrimp vessels. Vessels in the inactive Gulf shrimp fleet have average net revenue from operations of negative \$11,396, with an average loss before taxes of \$9,381 (Table 11). With an average net cash flow of negative \$7,537, the inactive Gulf shrimp fleet has a major liquidity problem. The upper bounds of the confidence intervals for each of the net-values are negative, indicating that each mean is significantly lower than zero in spite of the small sample size. The medians are negative as well. To sustain such losses and especially to survive the negative cash flow---if that is what they are doing---many of the owners must be subsidizing their shrimp vessels with the help of other income or wealth sources or are drawing down their equity.

Comparison of Key Results across Fleets and Categories

Table 12 pulls together the key financial numbers broken down by various categories within each fleet. Each row presents results for one category of vessel within a specific fleet, with tabulated entries from the corresponding result-table. Table 12 lists the number of observations in each category, the estimated average total assets per vessel, average total equity, average net cash flow, average net revenue from operations, and average net revenue before taxes, further referred to as “profit” or “loss.” All numbers are expressed in thousands of dollars and rounded off to the nearest thousand.

The final two columns in Table 12 are simple measures of return. The economic return is calculated by dividing net revenue from operations by the value of total assets. Economic return quantifies the fundamental or primary productivity/economic efficiency of the shrimp production activity. In the abstract, from a societal perspective, an economic activity is only worth undertaking if its economic return exceeds the true cost of capital. In contrast, the return on equity is the primary concern of the individual owner. The return on equity is calculated by dividing the “profit” by the total equity currently invested by the owner.⁶⁷ This measure describes the actual profitability of the investment for the owner, and undertaking the economic activity is reasonable only if the return on equity exceeds the return his financial capital could have generated elsewhere.⁶⁸ Both measures of return are expressed as percentages. Negative values are enclosed in parentheses.

⁶⁷ An alternative measure of return on equity could compare the profit to the total equity *actually* invested at the time of the vessel purchase. In a setting of irreversible investments and ill-functioning capital markets this measure might be more meaningful than the one reported, which is more analytically pure, but presents its own problems and biases. The reader is encouraged to calculate his preferred measure.

⁶⁸ It should be noted that, for owner-operators, the investment in a vessel might function more like an investment in education, enabling an employment opportunity that pays a higher wage than could otherwise be gotten. In this case, the return on equity might be a less important measure than the captain’s compensation.

Table 12: Overview of 2006 Financial and Economic (F&E) Results (thousand dollars)

	Table #	# of Obs.	Assets	Equity	Net Cash Flow	Net Rev. from Operations "Profit" - Net Revenue	(before taxes)	Economic Return	Return on Equity
Total Fleet	8	484	178	85	18	(3)	3	(1%)	3%
by Other Fish	13	15	263	115	130	120	111	46%	97%
S. Atlantic Shrimp	"	14	168	116	56	43	44	25%	38%
Gulf Shrimp	"	455	175	83	13	(8)	(2)	(5%)	(3%)
by Florida	14	74	131	68	7	(6)	(2)	(5%)	(4%)
Alabama and Mississippi	"	82	236	107	(4)	(28)	(22)	(12%)	(21%)
Louisiana	"	119	170	105	24	(6)	0	(3%)	0%
Texas	"	196	160	62	16	0	6	0%	9%
Other	"	13	408	209	173	171	160	42%	76%
Gulf Shrimp Fleet	9	455	175	83	13	(8)	(2)	(5%)	(3%)
by Florida	15	62	129	60	3	(9)	(5)	(7%)	(8%)
Alabama and Mississippi	"	80	241	108	(3)	(28)	(22)	(12%)	(20%)
Louisiana	"	116	172	105	21	(9)	(2)	(5%)	(2%)
Texas	"	194	161	63	16	0	6	0%	9%
by Inactive	15	69	76	54	(8)	(11)	(9)	(15%)	(17%)
Active	"	386	193	88	16	(7)	(1)	(4%)	(1%)
Active Gulf Shrimp Fleet	10	386	193	88	16	(7)	(1)	(4%)	(1%)
by Florida	16	51	142	64	3	(9)	(5)	(6%)	(8%)
Alabama and Mississippi	"	61	292	118	0	(32)	(25)	(11%)	(21%)
Louisiana	"	105	182	108	24	(9)	(2)	(5%)	(2%)
Texas	"	166	176	67	20	2	9	1%	13%
by Freezer	17	242	243	88	14	(11)	(4)	(5%)	(5%)
Ice	"	139	112	92	21	(1)	4	(1%)	5%
by Steel	17	308	222	95	16	(10)	(3)	(5%)	(4%)
Wood	"	34	75	53	16	2	5	2%	10%
Fiberglass	"	43	79	72	20	6	14	7%	19%
by <50 feet	18	34	56	48	17	8	9	14%	19%
<75 feet	"	195	125	86	17	(2)	7	(2%)	8%
<100 feet	"	157	307	100	15	(17)	(12)	(6%)	(12%)
by 1968+	19	116	108	73	15	(1)	9	(1%)	12%
1980+	"	109	122	91	21	1	8	1%	9%
1990+	"	83	264	157	6	(23)	(16)	(9%)	(10%)
2000+	"	67	393	34	21	(17)	(17)	(4%)	(49%)
by <50k lbs	20	90	105	80	(14)	(22)	(20)	(20%)	(25%)
<100k lbs	"	122	145	97	11	(9)	0	(6%)	(0%)
<150k lbs	"	102	235	108	21	(6)	0	(3%)	(0%)
>150k lbs	"	72	323	56	57	11	22	3%	39%
by Hired Captain	22	208	217	96	8	(8)	1	(3%)	1%
Owner-Operator	"	178	165	79	26	(7)	(3)	(4%)	(3%)

The general conclusion of Table 12 is that the financial and economic situation is bleak for the average vessels in the total fleet, the Gulf shrimp fleet, and the active Gulf shrimp fleet, as well as for the average vessels in most of the various categories within these fleets. With few exceptions, the average cash flow is positive and the net revenue from operations and the profit are negative. We would generally expect to find a positive cash flow. Commercial operations with a negative cash flow face an imminent liquidity problem. Unless they have access to some outside sources of cash, they will be unable to pay their bills, become insolvent and forced into bankruptcy, eventually to sell or lose their vessel and permit, and generally would not be expected to participate in our survey. Finding positive cash flows for nearly all groups, even in a tough economic environment, reflects well on the quality of the data.

The average net revenue from operations is negative in most cases. Hence, the economic return to shrimping is also less than zero and the fundamentals of the industry are in doubt. Only with the help of government payments did the owners of active Gulf shrimp vessels just about break even, i.e. no “profit” and no “loss” in 2006. This implies an average return on equity of around zero on the substantial financial (and entrepreneurial) capital invested in the average shrimping enterprise. In the short-term, this will discourage new investments in the industry. The situation also is economically unsustainable for the established businesses, especially if it endures over multiple years.

Looking more closely at the rows in Table 12 for the total fleet, we note the higher average asset value for the other fish fleet compared to the shrimp fleets. Yet the owners’ average equity is only marginally higher, indicating larger loans and more leveraged investments in the fishery.⁶⁹ The opposite is true for the S. Atlantic shrimp fleet where the leverage is less than for the Gulf fleet. The average net cash flow, the net revenue from operations, and the profit are well over a hundred-thousand dollars for the other fish fleet. Hence it is not surprising that both measures of return are very---possibly unreasonably---high given the fact that we only sampled vessels with Gulf shrimp permits within these fisheries. On the other hand, some of these vessels are active in the currently very lucrative Atlantic scallop fishery.⁷⁰ The S. Atlantic shrimp fleet is somewhat less profitable but still generates an economic return of 25%. This contrasts with the negative return of 5% in the Gulf shrimp fleet. A possible explanation is that the S. Atlantic fleet derives about 10% of its revenue from more profitable non-shrimp landings. In comparison, the Gulf fleet generates less than 1% from non-shrimp landings.⁷¹ It should be noted that the small sample sizes of the other fish and S. Atlantic shrimp fleets argues for interpreting their numbers as very rough “ballpark” indicators

⁶⁹ Leverage with respect to businesses is usually defined as the ratio of loans to equity (or assets).

⁷⁰ See Amendment 11 to the Atlantic Sea Scallop Fishery Management Plan at <http://www.nefmc.org/scallops/index.html> for more information on this topic.

⁷¹ Consulting Table 13, the S. Atlantic shrimp fleet spends on average \$14,610 less on fuel than the Gulf shrimp fleet, while generating \$45,821 and \$31,234 more revenue from shrimp and non-shrimp landings, respectively (in spite of a lower price per pound of shrimp). This allows the S. Atlantic fleet to spend more on maintenance, crew costs, and overhead and still come out ahead. A satisfying resolution to the question of if and why the S. Atlantic shrimp fishery is generating much higher returns than the Gulf one will have to wait until this survey is expanded to properly include the S. Atlantic shrimp fishery.

rather than exact numbers. Our sample is not representative of all vessels that participated in these other fisheries.

Looking at the rows in Table 12 for the Gulf shrimp fleet, we compare the active and inactive Gulf shrimp vessels. We immediately notice the much smaller assets among the inactive fleet and the lower dependence on loans. The inactive vessels generate an average negative cash flow of about \$8,000 compared to a positive cash flow of about \$16,000 among the active vessels. Once all costs are included, both fleets incur substantial losses from operations, negative \$11,000 for the average inactive vessel and negative \$7,000 for the average active vessel. Government payments that are tied to production help the active vessels, but not inactive ones, nearly break even from a profit or return on equity perspective. The average inactive vessel incurs a loss before taxes of about \$9,000, which amounts to a negative 17% return on equity. To sustain such losses and especially to survive the negative cash flow, the owners of these vessels must be subsidizing their shrimp vessels with the help of other income sources or else face an uncertain economic future.

When looking at differences among states for active Gulf shrimp vessels, Table 12 indicates that all states but Texas exhibited negative returns in 2006. The Alabama and Mississippi fleets (which are reported jointly due to small sample sizes) have the highest assets on average. Yet they generate zero cash flow and negative \$32,000 net revenue from operations. Due to their high leverage ratio, the negative 11% economic return is amplified into a negative 21% return on equity. In contrast, for Texas vessels, which actually have the highest leverage ratio among the states, a 1% economic return is amplified into a 13% return on equity. From a financial perspective, the average Florida and Louisiana vessels conform roughly to the overall average of the active Gulf shrimp fleet.

The categories in Table 12 based on vessel characteristics among the active Gulf shrimp fleet show a somewhat counterintuitive picture. On average, less modern vessels using ice; vessels with hulls made of wood or fiberglass; vessels smaller than 75 feet; and vessels older than 18 years generally, on average, break even from the economic perspective and generate a positive return on equity that ranges from 5% to 19%. In contrast, their more modern, ferrous, larger, and younger counterparts do not. A common hypothesis for the underlying reason is that the latter vessels are less fuel efficient than the former and usually compensate with a high volume of landings. In fact, reference to the more detailed standardized information in Table 17 about hull construction and refrigeration, in Table 18 about vessel size, and in Table 19 about age of vessel indicates that newer, larger vessels with steel hulls on average exhibited lower rates of fuel efficiency than older, less modern vessels. As a result, they are less profitable in an economic environment characterized by higher fuel costs and low shrimp prices. They might also be more specialized and hence less flexible in the various aspects of production, such as where they can fish and the ability to customize gear configuration and use to specific conditions.

Vessels were categorized by volume of shrimp landed in 2006 as follows: less than 50 thousand pounds, from 50 thousand to 100 thousand pounds, from 100 thousand to 150 thousand pounds, and more than 150 thousand pounds. The average financial results for vessels landing between 50 and 150 thousand pounds of shrimp conform to the overall average of the active Gulf shrimp fleet (Table 12). Active vessels landing less than 50 thousand pounds have an average negative cash flow of \$14,000 which results in an average negative 20% economic return and an average negative 25% return on equity. Since these vessels are on average more likely to use ice, less likely to be made of steel, shorter and older---which we showed earlier raises profitability (other things being equal)---it is somewhat surprising that they are so unprofitable. The possible explanation is the high fixed cost nature of the fishing enterprise, whereby a year of low landings translates into a very bad year financially. Fixed costs as a percentage of total annual expenses were highest for the low-volume vessels and were lowest for the high-volume vessels, whereas variable costs as a percentage of total annual expenses were lowest for the low-volume vessels and highest for high-volume vessels Table 20. Also, vessels in the high-volume category received the largest government payments, on average. The vessels landing more than 150 thousand pounds have the highest average assets and the lowest equity, i.e. they are among the most leveraged vessels. The low, but positive economic return of 3% is thus amplified into a 39% return on equity.

Table 12 also reports financial results for vessels operated by the owner (representing 46% of the sample) and those operated by hired captains (54% of the sample). Reference to the more detailed standardized information in Table 22 reveals that vessels with hired captains are somewhat larger and more powerful, more expensive and valuable, generate more revenue and costs, and occur much more frequently in Texas.

Owner-operators exhibit substantially higher net cash flow since they have crew costs of only \$38,862 compared to \$68,562 by vessels with hired captains. This is not surprising as the latter payments include the compensation of the captain, while the former does not. Yet we estimated that the owner contributes \$19,815 worth of his time as captain. Or, expressed differently, the owner-operators probably need to use about \$20,000 from their cash flow to pay their “salary” working as the captain. Once this is taken into account, the net revenues from operations are nearly identical for each group, with both losing over \$7,000 in 2006. However, the larger government payment allows the vessels with hired captains to just break even in terms of net revenues before taxes, while the owner-operators incur a slight loss.

The last two columns of Table 22 consider the financial results for owner-operated vessels where the owner is not explicitly compensated for working as the captain and vessels that reported paying a captain’s share to the owner. Overall, the two groups exhibit similar operations and vessel characteristics and are in roughly similar financial situations. But vessels that explicitly paid a captain’s share to the owner-operator incurred larger losses by about \$9,000, which might be an indication that we underestimated the value of the owner-operator’s time spent as captain for those not explicitly being paid a share. We estimated an average salary of \$18,199 for vessels that did not explicitly pay a captain’s share, whereas vessels that paid a captain’s share to the

owner-operator reported an average payment of \$23,159. If we had simply used the average from the vessels with an explicit share, the difference between the losses for the two groups would close by about half.

Throughout, the importance of government payments in keeping the industry afloat should not be underestimated. The reader is encouraged to explore the above mentioned differences in more detail by going to the respective result-table (see the overview in Table 7 for the appropriate result-table). It should be noted that the tabulated results are averages and hence hide the variation that clearly exists within all fleets. The large standard errors in the tables with summary statistics make this clear. Many vessels are profitable, but many others are not.

Comments by Respondents

Many written comments were received together with the survey instrument. Of the comments about the status and future of the Gulf shrimp industry the large majority communicate a very negative situation and outlook. Many indicate that they recovered from the hurricanes of 2005 only late in 2006, and quite a few still had damaged and inoperable vessels at the time of the survey (March through July 2007). Others mentioned the hurricane induced loss of ice docks and other shrimping infrastructure, and the negative effect this had on their shrimping activities.

The foremost concern among all comments about the fishery was the low price of shrimp, frequently blamed on imports. This was followed closely by the concern about the high price of fuel. Many respondents commented that they had never seen such a squeeze on their profit margin. “The prices are killing us”, “all profits are used to buy fuel”, and “at these prices, we leave the boat docked” indicate the general flavor of many of these comments. Concern about regulation was much less frequent, indicating the preeminence of the current economic problems.

A number of respondents indicated they left the shrimp fishery to work in the oil sector (with and without their vessels), and a few indicated they supplemented their income by fishing for other species such as crabs, sharks, or oysters. Finally, a reappearing comment concerns the availability of qualified crew and captains for hire. The limited number of work visas for foreigners was a particular concern for vessels in Texas. Others commented on the poor training and substance abuse among individuals for hire as crew, and the potential for dangerous accidents this causes.

5. Conclusion

The general conclusion of this report is that the financial and economic situation is bleak for the average vessels in most of the categories that were evaluated. With few exceptions, cash flow for the average vessel is positive while the net revenue from operations and the “profit” are negative. With negative net revenue from operations, the economic return for average shrimp vessels is less than zero. Only with the help of government payments does the average owner just about break even. In the short-term, this will discourage any new investments in the industry. The financial situation in 2006, especially if it endures over multiple years, also is economically unsustainable for the average established business.

Vessels in the active and inactive Gulf shrimp fleet are, on average, 69 feet long, weigh 105 gross tons, are powered by 505 hp motor(s), and are 23 years old. Three-quarters of the vessels have steel hulls and 59% use a freezer for refrigeration. The average market value of these vessels was \$175,149 in 2006, about a hundred-thousand dollars less than the average original purchase price. The outstanding loans averaged \$91,955, leading to average owner equity of \$83,194.

Based on the sample, 85% of the federally permitted Gulf shrimp fleet was actively shrimping in 2006. Of these 386 active Gulf shrimp vessels, just under half (46%) were owner-operated. On average, these vessels burned 52,931 gallons of fuel, landed 101,268 lbs of shrimp, and received \$2.47 per pound of shrimp. Non-shrimp landings added less than 1% to cash flow, indicating that the federal Gulf shrimp fishery is very specialized. The average total cash outflow was \$243,415 of which a staggering \$108,775 was due to fuel expenses alone. The expenses for hired crew and captains were on average \$54,866 which indicates the importance of the industry as a source of wage income. The resulting average net cash flow is \$16,225 but has a large standard deviation. For the population of active Gulf shrimp vessels we can state with 95% certainty that the average net cash flow was between \$9,500 and \$23,000 in 2006. The median net cash flow was \$11,843.

Based on the income statement for active Gulf shrimp vessels, the average fixed costs accounted for just under a quarter of operating expenses (23.1%), labor costs for just over a quarter (25.3%), and the non-labor variable costs for just over half (51.6%). The fuel costs alone accounted for 42.9% of total operating expenses in 2006. It should be noted that the labor cost category in the income statement includes both the actual cash payments to hired labor and an estimate of the opportunity cost of owner-operators’ time spent as captain. Taking account of the fact that only 46% of these vessels are owner-operated, the average labor contribution (as captain) of an owner-operator is valued at about \$19,800. The average net revenue from operations is negative \$7,429, and is statistically different and less than zero in spite of a large standard deviation. The economic return to Gulf shrimping is negative 4%. Including non-operating activities, foremost an average government payment of \$13,662, leads to an average loss before

taxes of \$907 for the vessel owners. The confidence interval of this value straddles zero, so we cannot reject, with 95% certainty, that the population average is zero.

The average inactive Gulf shrimp vessel is generally of a smaller scale than the average active vessel. Inactive vessels are physically smaller, are valued much lower, and are less dependent on loans. Fixed costs account for nearly three quarters of the total operating expenses of \$11,926, and only 6% of these vessels have hull insurance. With an average net cash flow of negative \$7,537, the inactive Gulf shrimp fleet has a major liquidity problem. On average, net revenue from operations is negative \$11,396, which amounts to a negative 15% economic return, and owners lose \$9,381 on their vessels before taxes. To sustain such losses and especially to survive the negative cash flow---if that is what they are doing--- many of the owners must be subsidizing their shrimp vessels with the help of other income or wealth sources or are drawing down their equity.

When looking at the differences among the state strata for active Gulf shrimp vessels, all states but Texas exhibit negative returns. The Alabama and Mississippi fleets have the highest assets (vessel values), on average, yet they generate zero cash flow and negative \$32,224 net revenue from operations. Due to their high (loan) leverage ratio the negative 11% economic return is amplified into a negative 21% return on equity. In contrast, for Texas vessels, which actually have the highest leverage ratio among the states, a 1% economic return is amplified into a 13% return on equity. From a financial perspective, the average Florida and Louisiana vessels conform roughly to the overall average of the active Gulf shrimp fleet.

It should be noted that these results are averages and hence hide the variation that clearly exists within all fleets and all categories. Although the financial situation for the average vessel is bleak, some vessels are profitable.

Appendix 1: 2006 Survey Instrument

2006 Annual Economic Survey of Federal Gulf Shrimp Permit Holders

Permit owner name: «Primary_Mailing_Recipient»

Permit #: «Permit»

Vessel name: «Vessel»

Vessel ID: «VESID»

Total 2006 Expenses:

- On this page we would like you to enter the total **financial expenses** (actual dollar payments) you incurred during 2006 for the operation and keeping of the vessel registered as «VESID».
- For each question enter the **sum of all 2006 expenses**.
- Please **consult the detailed instructions** if you are unsure about any question!

1. Is the owner also the captain of this vessel?

☐ Yes → If YES: a) Total amount paid to crew:* \$ __, __, __.00b) Is the owner paid a captain's share? ☐ Yes ☐ No

If Yes, total amount of captain's shares:* \$ __, __, __.00

☐ No → If NO: Total amount paid to crew and captain(s):* \$ __, __, __.00

2. Total amount paid for fuel (including amounts paid by crew & captain): \$ __, __, __.00

3. a) Average price of fuel in 2006:

\$ __. __ per gallon

b) Total amount of fuel purchased:

__, __, __ gallons

4. Total amount paid for **purchased** ice (including amounts paid by crew & captain): \$ __, __, __.005. Total amount paid for all **other trip related** supplies or expenses

(excluding expenses reported above; including amounts paid by crew & captain): \$ __, __, __.00

6. Total amount paid for any vessel, engine, gear or other equipment (including electronics) maintenance, repair, replacement, upgrade or new purchase: \$ __, __, __.00

7. Does this (6.) include any **major**, infrequent or irregular expenses (check all that apply):
☐ None ☐ Haul-out/dry dock ☐ New purchase or upgrade
☐ Repair/replacement due to Hurricane ☐ Other repair/replacement ☐ Other
8. Overhead applicable to this vessel (**including** loan payments and vessel insurance; **excluding** depreciation and income taxes): \$ __, __, __.009. **Total 2006 Expenses** (the above entries should sum to this value): \$ __, __, __.00

* If your share system is calculated based on a gross basis, please enter only the **net** amount paid to crew or captain after contributions to trip costs have been subtracted (i.e. **excluding** payments for groceries, ice or fuel). For fuel (2.), ice (4.) and other trip expenses (5.) please **include** the amounts paid from the crew's and captain's share. In this way, we can avoid double counting these expenses.

Other Important Economic Information:10. Type of vessel insurance (check all that apply): ☐ None ☐ Hull ☐ P&I ☐ Other

Total amount vessel is insured for (2006): \$ ____, ____, ____ .00

11. Appraised value of this vessel (if insured) or best estimate of this value (if not insured):

a) Market value of vessel (anytime in 2006): \$ ____, ____, ____ .00

b) Replacement value of vessel: \$ ____, ____, ____ .00

c) Original purchase price of vessel: \$ ____, ____, ____ .00

12. Did you have any loan(s) on your vessel at any time during 2006: ☐ Yes ☐ No**If Yes:** a) Total amount you still owe at *end of* 2006: \$ ____, ____, ____ .00

b) Total loan payments in 2006: \$ ____, ____, ____ .00

Please split b) into: c) Interest paid in 2006: \$ ____, ____, ____ .00

d) Principal repaid in 2006: \$ ____, ____, ____ .00

13. Depreciation of vessel as claimed for tax purposes (2006): \$ ____, ____, ____ .00

14. Total days of fishing lost by this vessel due to a lack of crew: ____ days

15. Total gross revenue generated by this vessel in commercial fisheries *other than shrimp* in 2006: \$ ____, ____, ____ .00

16. Government payments received for this vessel in 2006; for example due to imports and low shrimp prices (tariff money; trade assistance adjustment payments) or disaster relief (hurricanes): \$ ____, ____, ____ .00

I certify that the information contained on this form is accurate and complete to the best of my knowledge:

Signature of person completing report_____
Date_____
Printed name of person signing report

(____)

Phone number**Please return this completed form in the enclosed prepaid envelope!**

[Mail to: NMFS; Miami Lab; P.O. Box 491500; Key Biscayne, FL 33149-9916]

Thank You!**Other Questions (voluntary)**

1. Would you like to receive future economic surveys in a language other than English?

☐ No (default)☐ Spanish☐ Vietnamese

2. Please use the reverse side or a separate piece of paper for any comments. We appreciate any comments concerning this survey effort and any ideas on how to improve or simplify it.

Appendix 2: 2006 Survey Instructions

Detailed Instructions

Please check that your information at the top of Page 1 is correct. If not, please clearly print the correct information in the white space.

Page 1 – Total 2006 Expenses

On **Page 1** we would like you to enter the total financial expenses you incurred during 2006 for the operation and keeping **of your vessel** with the registration number listed at the top of the page. This should correspond to actual dollar payments made. For each question enter the sum of all 2006 expenses in that category.

- Please be comprehensive: **Account for the all expenses** incurred by this boat in 2006 on **Page 1**.
- Please **avoid double counting**: Any expense should appear only a single time on **Page 1**.
- If an expense benefits this vessel as well as other vessel(s) and/or business operations (such as processing), **only list the share of the expense** that can be assigned to this vessel.
- Feel free to round numbers to the nearest \$100, such as entering \$ 3,600.00 rather than \$ 3,643.00.

Question 1: Check the **YES** box, if you (the owner) also act as captain for this vessel and then enter the sum of all crew shares paid during 2006 on the first line labeled **a)**. This should reflect the amount the crew actually received, including any bonuses, but excluding any contributions they made to cover operating costs. If you separately account for your income **as captain** (as opposed to *as owner*, i.e. business profit), please check the Yes box on line **b)** and enter the total amount you paid yourself on the following line; then continue with question 2. If you do not pay yourself a captain's share, simply check the *No* box on line **b)** and continue with question 2.

Check the **NO** box if you hired captains to operate this vessel. On this line, enter the sum of all crew and captains' shares paid during 2006. This should reflect the amount the crew and captain(s) actually received, including any bonuses, but excluding any contributions s/he made to cover operating costs.

Question 2: Enter the total amount spent on fuel in 2006. The total amount should reflect the actual amount paid for the fuel used by this vessel; including those portions "paid" out of the crew's or captain's shares.

Question 3: **a)** Please estimate the average price per gallon you paid for fuel in 2006 (in dollars and cents per gallon, as best you can). **b)** Enter the total number of gallons of fuel you purchased in 2006 in order to operate this vessel and all its equipment (such as generators and freezers). If this number is not available, then divide the amount entered in Question 2 by the estimated price per gallon entered in a) and enter this amount in the space provided.

Question 4: Enter the total amount you spent in 2006 purchasing ice used by this vessel. Do not enter expenditures incurred for freezing or the making of ice on the vessel (add these expenses to Question 5 instead). The total amount should reflect the actual amount paid for ice used; including those portions "paid" out of the crew's or captain's shares.

Question 5: Enter the sum of all remaining expenses incurred on a 'per fishing trip' basis in 2006. This should exclude all amounts already listed in the above questions, i.e. amounts paid to crew, captain, fuel or ice. Please sum all your expenses for: Groceries, oil and lubricants, freezing and packaging supplies, gloves, processing, storage, cleaning supplies or services, and any other trip related expense.

Question 6: Enter the total 2006 expenses, not already listed above, related to the vessel (hull and all) and associated equipment, such as fishing gear (nets, trawl doors, etc), engine(s), freezers and electronics. Include all expenses for maintenance, repair, replacement, upgrades and new purchases. Also include haul-outs, rebuilds, retrofits, etc.

Question 7: If the total you entered in Question 6 includes infrequent or unusual expenses or if it includes expenses for upgrades and new purchases (beyond regular replacements), please check all the boxes that apply. Yet check a box only if the expenses amount to more than \$1,000 in that category. Infrequent expenses would be those that occur less than annually, include haul-outs, repairs during haul-outs, and other major repairs or replacement. Unusual expenses would result from unexpected events such as hurricanes, accidents or theft. Upgrades or new purchases are investments into the vessel that extend its functionality, such as increases in engine power, new electronic systems, increases or improvements to fishing gear, etc.

Question 8: Enter the total amount of overhead applicable to this vessel. Typical overhead expenses include: Dockage/mooring, rent, utilities, insurance, loan payments, commercial fishing licenses and permits, property taxes and other fees, (share of) car or truck expenses, (share of) office expenses, (share of) accountant, lawyer, other professional services fees, and any other annual expenditure paid by the vessel (not already included in Questions 1 through 7). **Very Important on Question 8:**

- **Include:** **Loan Payments** (interest and principal) and **Insurance** premiums for the vessel!
- **Exclude:** **Depreciation** and **Income Tax**!
- If an overhead expense benefits this vessel AND other vessel(s) and/or business operations (such as processing), then only list the **share of the expense** that can be assigned to this vessel.

End of Page 1: Please make sure you have accounted for all expenses associated with the operation and keeping of this vessel in 2006. **If there are expenses not yet accounted for, please add them to the category they fit best:**

- If they are trip-related, add them to Question 5.
- If they relate to the vessel, gear and equipment, add them to Question 6.
- If they fit in neither of the above categories, add them to Question 8 (overhead or business related costs).

Question 9: Enter the total financial expenses you incurred during 2006 for the operation and keeping of this vessel. This number should equal the sum of all \$ dollar expenses entered on Page 1.

Page 2 – Other Important Economic Information

Question 10: First check the boxes for how your vessel was insured in 2006. Check all that apply or 'None' if your vessel was not insured. If the vessel was insured, then enter the total amount the vessel was insured for, i.e. the maximum dollar amount the insurance would have paid in case of a total loss of the vessel.

Question 11: Enter the market **(a)** and replacement **(b)** values of your vessel in 2006. Please enter the most accurate number you have. If the vessel is insured, please consult your insurance records for these values. Otherwise, please give us your best estimate. For market value, please enter the approximate amount you would expect to receive if you had sold your vessel during 2006 (without any fishing permits). For replacement value, please enter the amount required to purchase a new vessel comparable to yours. **c)** Enter your purchase price of the vessel.

Question 12: Check Yes if you had any outstanding loans on your vessel **at any time during 2006**. If yes, enter: **a)** the amount of principal still needing to be paid back **at the end of 2006**; and **b)** your total loan payments for this vessel in 2006. If possible, please split your total loan payments entered under **b)** into: **c)** the total sum of interest paid in 2006; and **d)** the total amount of principal repaid in 2006.

Question 13: Enter the amount of depreciation you claimed for your vessel on your 2006 tax return.

Question 14: Please enter a rough estimate of the total number of additional days this vessel could have operated (caught shrimp) in 2006 if the appropriate crew (incl. captain) was available for hire.

Question 15: Enter the total sum of all revenue generated by this vessel in 2006 in commercial fisheries other than shrimp. This can include revenue generated in the Gulf of Mexico as well as the rest of the Atlantic Ocean and elsewhere; from State, Federal or international waters; offshore or inshore; etc. It should not include any revenue generated by the sale of shrimp (caught anywhere).

Question 16: Enter the sum of all payments received by this vessel in 2006 from federal, state, and local governments. Such as payments resulting from low shrimp prices and the dumping of imports (for example, tariff monies received from U.S. Customs, trade assistance adjustment payments received from the U.S. Department of Agriculture, "kickbacks", incentives, etc.) and disaster relief (monies received for hurricane recovery).

If you have any questions, please call Christopher Liese at (305) 361-4263.

PAPERWORK REDUCTION ACT STATEMENT:

Public reporting burden for this collection of information is estimated to average 45 minutes per response, including the time for reviewing the instructions, searching the existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Christopher Liese, National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, Florida 33149. Information submitted will be treated as confidential in accordance with NOAA Administrative Order 216-100. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection displays a currently valid OMB Control Number. This reporting is required for permit renewal. NMFS requires this information for the conservation and management of marine fishery resources. These data will be used to evaluate the economic effects of proposed regulations in the fishery.

Appendix 3: 2006 Survey Other Materials

Fishery Bulletin:



Southeast Fishery Bulletin

National Marine Fisheries Service, Southeast Regional Office, 263 13th Avenue South, St. Petersburg, Florida 33701

FOR INFORMATION CONTACT:

Christopher Liese

E-mail: christopher.liese@noaa.gov

Telephone: (305) 361-4263

May 23, 2007

FB07-024

Annual Economic Survey of Federal Gulf Shrimp Permit Holders

NOAA Fisheries Service is working to improve its ability to determine the economic and social effects of regulations and other factors that impact the profitability and value of the Gulf shrimp fishery. For this, we need to collect data about operating expenses and the costs of owning and maintaining shrimp vessels. Together with the introduction of the permit moratorium, we are starting an **Annual Economic Survey of Federal Gulf Shrimp Permit Holders**. Each year we will sample approximately 20% of permitted vessels rather than the entire fleet in order to minimize the overall reporting burden on shrimp fishermen.

We will randomly determine which vessels will be required to participate in the survey this year. In the near future, the owners of the selected vessels will receive notification and the survey material in the mail. We will be asking for total 2006 expenditures *by the selected vessel* for crew, fuel, ice and other trip supplies; for total vessel maintenance, investment, and overhead;

and for payments to the owner. Some further questions are necessary, including information about insurance, vessel value, loans, and depreciation. We have tried hard to limit the collection to a minimum of readily available information from tax or similar forms.

In the interest of fairness and data quality, this data collection effort is **required for permit renewal if you are selected**. Each year a new random sample of vessels (~ 20%) will be drawn, but no vessel will be required to complete a survey two years in a row.

All individual information will be treated as strictly confidential, and will be combined with information from other fishermen to present an overall view of the economic health of the industry or a particular component of the industry (such as average fuel costs for Texas shrimp vessels). This information will help NOAA Fisheries Service conduct economic and statistical analyses on the Gulf shrimp fishery.

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PERMIT NO. G-19

National Marine Fisheries Service
Southeast Regional Office, F/SER27
263 13th Avenue South
St. Petersburg, FL 33701
Official Business
Penalty for Private Use - \$ 300
FB07-024

Cover Letter:



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Southeast Fisheries Science Center
75 Virginia Beach Dr.
Miami, Florida 33149

May 17, 2007

«Primary_Mailing_Recipient»
«Street_Address»
«City», «State» «Zipcode»

Dear Permit Owner:

Together with the introduction of the permit moratorium, the NOAA Fisheries Service is starting an **Annual Economic Survey of Federal Gulf Shrimp Permit Holders**. Each year we will randomly select about 20% of permitted vessels in order to collect data about operating expenses and the costs of owning and maintaining shrimp vessels.

You have been randomly selected to participate in this year's survey. Enclosed is a form asking about expenditures you made in 2006 for your vessel with the registration number «VESID». **You must complete and submit this survey in order to be eligible for permit renewal.** We have tried hard to reduce the collection of information to the minimum necessary. Please look at the enclosed material for more details on this survey effort and why we need to collect this data. No vessel will be selected two years in a row.

Please complete the enclosed survey form and return it to us by June 22, 2007. A pre-addressed, postage-paid envelope is enclosed. All information you supply is strictly confidential and will be combined with information from other fishermen to present an overall view of the economic status of the fishery and the problems it faces. A summary of these results will be sent to you once the survey data has been analyzed.

By accurately completing this survey, you will ensure that management decisions are based on correct information about the economic effects of regulations on fishermen. Please print all requested information clearly. A form with incomplete or unclear information cannot be entered into the database and will be returned for clarification. If you have any questions or require help filling out the survey, please contact Christopher Liese at (305) 361-4263.

Thank you very much for your cooperation with this data collection and Good Luck this shrimping season.

Sincerely yours,

Christopher Liese
Resource Economist

A handwritten signature in black ink, appearing to read "A. Chester".

Alex Chester
Science & Research Director

Your information is treated as confidential.

Your information will not be released.

We are interested only in industry-wide economic indicators.

Your information will be combined with the information from other fishermen.

With statistical methods we will estimate industry averages and industry totals.

The results of this research will be made available to you.

Why we need to Know

Fishery Managers need up-to-date information about the economic health of the Gulf shrimp fishery in order to make sound decisions, such as producing Fishery Management Plan Amendments that take account of the economic situation and contribution of this important industry.

Most importantly, we, the scientists collecting and analyzing this data, need to know the total profit (or loss) generated by the industry. This information enables us to calculate the value of the shrimp fishery to fishermen and to the nation. Other things we report to the Council, decision makers, fishermen and the public include:

- Income shares of owners and crew in the industry
- Overall capital invested and total debt in the industry
- Financial risk the industry is exposed to
- The impact of fluctuating fuel and ice prices on the industry

**Information about the Annual Economic Survey
of Federal Gulf Shrimp Permit Holders**

NOAA Fisheries Service is working to improve its ability to determine the economic and social effects of regulations and other factors that impact the profitability and value of the Gulf shrimp fishery. For this, we need to collect data about operating expenses and the costs of owning and maintaining shrimp vessels. Together with the introduction of the permit moratorium, we are starting an Annual Economic Survey of Federal Gulf Shrimp Permit Holders. Each year we will sample approximately 20% of permitted vessels rather than the entire fleet in order to minimize the overall reporting burden on shrimp fishermen.

We have randomly determined who will be required to participate in the survey this year. We will be asking for total 2006 expenditures by the selected vessel for crew, fuel, ice and other trip supplies, for total vessel maintenance, investment, and overhead, and for payments to the owner. Some further questions are necessary, including information about insurance, vessel value, loans, and depreciation. We have tried hard to limit the collection to a minimum of readily available information from tax or similar forms.

In the interest of fairness and data quality, this data collection effort is required for permit renewal if you are selected. Each year a new random sample of vessels (~ 20%) will be drawn, but no vessel will be required to complete a survey two years in a row.

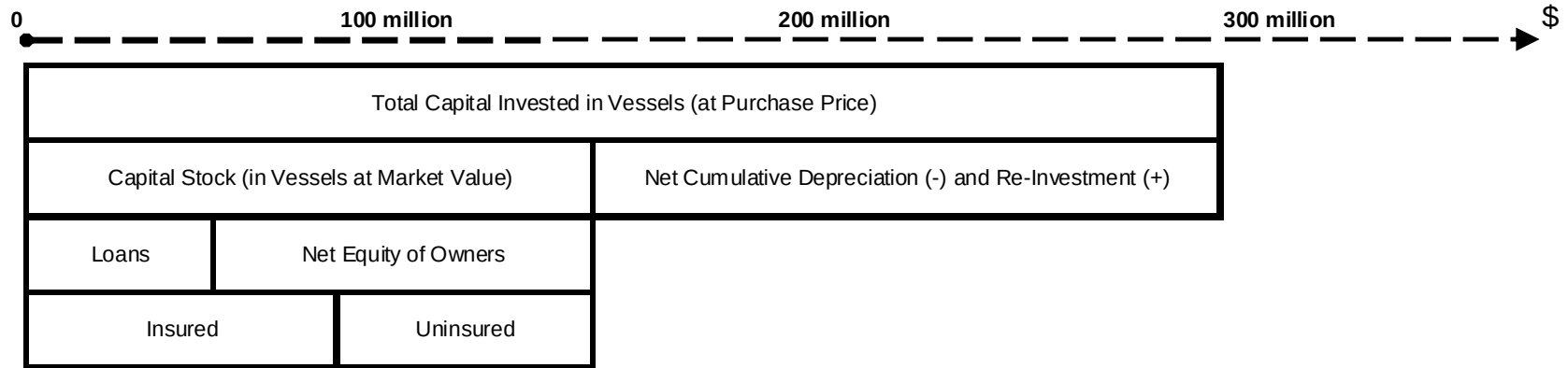
All individual information will be treated as strictly confidential, and will be combined with information from other fishermen to present an overall view of the economic health of the industry or a particular component of the industry (such as average fuel costs for Texas shrimp vessels).

This information will help our researchers conduct economic and statistical analyses on the Gulf shrimp fishery and deliver timely results to resource managers. Knowing the industry's profitability and hence economic value is especially important when benefits and costs of new regulations are discussed by policy makers. The information is also important when determining the economic effects of other external forces, such as shrimp imports, fuel prices, hurricanes and other natural disasters, and the availability and affordability of insurance. Such information is commonly requested by high level decision makers in Washington, D.C., and by media persons interested in publicizing the industry's economic situation.

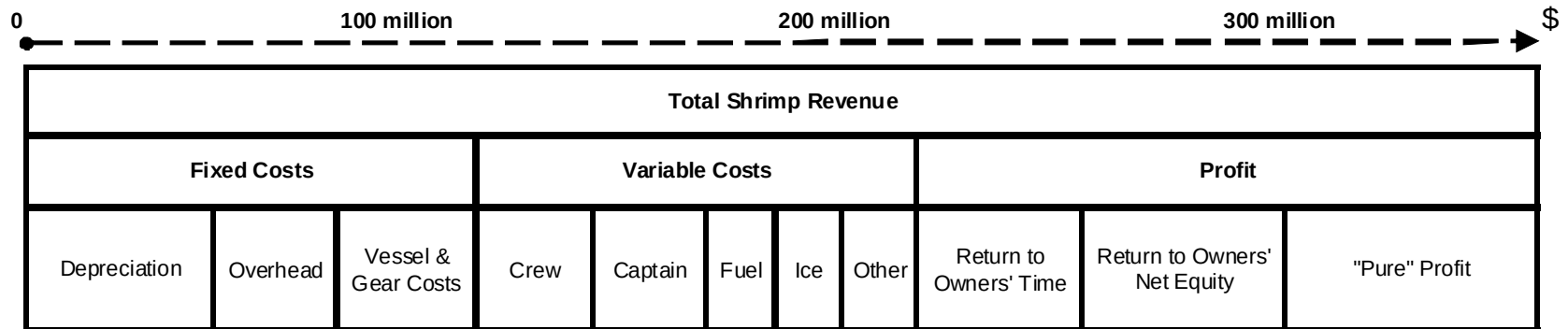
Appendix 4:
Alternate Illustration of the Annual Financial Statements

Figure 4: Illustration of the Balance Sheet and Income Statement

Industry Balance Sheet



Industry Income Statement:



Appendix 5: Data Cleaning Regressions

<u>Regression to estimate missing market values of vessels</u>				<u>Regression to estimate missing depreciation of vessels</u>			
Dependent variable: Market value (log)				Dependent variable: Depreciation			
Number of observations: 467				Number of observations: 402			
F Value (Pr > F)): 207.48 (<.0001)				F Value (Pr > F)): 129.06 (<.0001)			
R-Squared: 0.6923				R-Squared: 0.6197			
Variable	Parameter	Standard Error	t Value	Variable	Parameter	Standard Error	t Value
Intercept	3.968	0.527	7.53	Intercept	4,477.679	4,482.144	1.00
Value bought (log)	0.452	0.037	12.34	Value bought	0.041	0.005	9.12
Horse power (log)	0.470	0.075	6.26	Horse power (log)	16.903	5.358	3.15
Age (log)	-0.182	0.054	-3.35	Length	-232.075	85.214	-2.72
Hull insurance (dummy)	0.217	0.064	3.39	Fuel use	0.208	0.030	7.01
Texas (dummy)	-0.288	0.055	-5.25	Texas (dummy)	-4,485.300	1,473.959	-3.04
<u>Regression to estimate value of owner's captain labor</u>				<u>Regression to estimate equipment cost breakup</u>			
Dependent variable: Captain's share (log)				Dependent variable: Equipment expenses			
Number of observations: 63				Number of observations: 460			
F Value (Pr > F)): 60.22 (<.0001)				F Value (Pr > F)): 17.05 (<.0001)			
R-Squared: 0.4968				R-Squared: 0.0694			
Variable	Parameter	Standard Error	t Value	Variable	Parameter	Standard Error	t Value
Intercept	4.466	0.695	6.42	Intercept	18,650	1,870	9.97
Crew share (log)	0.520	0.067	7.76	Major repair (dummy)	11,565	2,550	4.54
				New investment (dummy)	6,949	3,020	2.3

Appendix 6:
Tables with 2006 Financial and Economic Results (Averages)

Table 13: F&E Results: Averages for the Total Fleet by Fishery

(in USD unless otherwise noted) # of Observations	Total Fleet 484	Total Fleet		
		Other Fish 15	S. Atlantic Shrimp 14	Gulf Shrimp 455
<u>Vessel Characteristics</u>				
Length (feet)	68	60	73	69
Gross tons	104	74	120	105
Horse power	502	425	486	505
Year built	1985	1986	1982	1985
Hull material - Steel (%)	75%	80%	57%	75%
Refrigeration - Freezer (%)	59%	20%	86%	59%
Fuel capacity (gallons)	12,938	10,037	11,964	13,063
State - Florida (%)	15%	13%	71%	14%
State - Alabama or Mississippi (%)	17%	13%	0%	18%
State - Louisiana (%)	25%	20%	0%	25%
State - Texas (%)	40%	13%	0%	43%
<u>Balance Sheet (end of 2006)</u>				
Assets - Market value of vessel	177,666	262,667	168,381	175,149
<i>Original value of vessel (at purchase price)</i>	271,812	284,333	237,341	272,460
<i>Replacement value</i>	459,497	560,769	467,308	455,643
Liabilities - Loan on vessel	92,553	147,831	52,737	91,955
<i>% of vessels with loan</i>	48%	33%	43%	49%
Equity - Owner's equity in vessel	85,113	114,835	115,644	83,194
<i>Insurance coverage (% of vessels / % of assets)</i>	42% / 69%	40% / 88%	64% / 83%	42% / 68%
<u>Vessel Operation (2006)</u>				
Actively shrimping (%)	82%	0%	93%	85%
Owner-operator (%)	47%	53%	43%	47%
Shrimp landed (pounds)	84,763	1,536	135,423	85,948
Shrimp price per pound (vessels basis)	2.43	1.87	1.97	2.45
Annual fuel use (gallons)	44,670	41,618	36,251	45,030
Fuel price per gallon (vessels basis)	2.10	2.21	2.12	2.09
Fuel efficiency I (shrimp pounds/gallon)	2.5	0.2	4.0	2.5
Fuel efficiency II (shrimp revenue/gallon)	5.30	0.30	7.69	5.40
Days lost due to lack crew	36	12	24	37
<u>Cash Flow (2006)</u>				
Inflow - Total	230,113	454,693	291,379	220,824
Shrimp landings	202,170	2,928	252,995	207,174
Non-shrimp landings	16,385	450,065	32,816	1,582
Government payments received (shrimp related)	11,558	1,700	5,568	12,068
Outflow - Total	212,598	324,680	235,371	208,202
Fuel	92,044	90,093	77,932	92,542
Ice	2,084	6,988	839	1,960
Other supplies	17,871	53,002	15,262	16,793
Crew & captain (hired)	49,154	113,590	63,458	46,590
Regular maintenance (vessel and gear)	16,997	15,360	31,620	16,601
Major repair, replacement or haul-out	5,949	1,644	8,969	5,998
Overhead (excluding loan payments)	13,156	15,392	20,865	12,845
Interest payments made (on vessel loans)	6,317	10,818	4,347	6,229
Principal payments made (on vessel loans)	7,652	16,371	10,050	7,291
New investments and upgrades (in vessel)	1,375	1,421	2,029	1,353
Net Cash Flow	17,515	130,014	56,008	12,622

Table 13: F&E Results: Averages for the Total Fleet by Fishery, cont.

	Total Fleet 484	Total Fleet		
# of Observations		Other Fish 15	S. Atlantic Shrimp 14	Gulf Shrimp 455
<u>Income Statement (2006)</u>				
Operating Activities				
Revenue (from commercial fishing)	218,554	452,993	285,811	208,756
Expenses	221,141	332,726	243,113	216,787
<u>Variable costs - Supplies</u>	<u>50.6%</u>	<u>45.1%</u>	<u>38.7%</u>	<u>51.3%</u>
Fuel	41.6%	27.1%	32.1%	42.7%
Ice	0.9%	2.1%	0.3%	0.9%
Other supplies	8.1%	15.9%	6.3%	7.7%
<u>Variable costs - Labor</u>	<u>25.9%</u>	<u>38.2%</u>	<u>30.3%</u>	<u>25.1%</u>
Crew & captain (hired)	22.2%	34.1%	26.1%	21.5%
Owner's vessel time	3.6%	4.1%	4.2%	3.6%
<u>Fixed costs</u>	<u>23.5%</u>	<u>16.7%</u>	<u>31.0%</u>	<u>23.6%</u>
Regular maintenance (vessel and gear)	7.7%	4.6%	13.0%	7.7%
Major repair, replacement and haul-out	2.7%	0.5%	3.7%	2.8%
Depreciation	7.2%	6.9%	5.7%	7.2%
Overhead (excluding loan payments)	5.9%	4.6%	8.6%	5.9%
Net Revenue from Operations	(2,587)	120,267	42,698	(8,031)
Non-Operating Activities				
Interest payments made (on vessel loans)	6,317	10,818	4,347	6,229
Government payments received (shrimp related)	11,558	1,700	5,568	12,068
Net Revenue (before taxes)	2,654	111,150	43,919	(2,192)
Owner's vessel time	8,067	13,652	10,319	7,813
Depreciation	15,821	23,005	13,849	15,644

Table 14: F&E Results: Averages for the Total Fleet by State

(in USD unless otherwise noted) # of Observations	Total Fleet				
	FL 74	AL+MS 39 + 43	LA 119	TX 196	Other 13
<u>Vessel Characteristics</u>					
Length (feet)	63	68	65	72	76
Gross tons	90	104	85	119	127
Horse power	410	530	472	538	574
Year built	1981	1988	1988	1984	1993
Hull material - Steel (%)	27%	72%	81%	89%	92%
Refrigeration - Freezer (%)	62%	52%	27%	79%	69%
Fuel capacity (gallons)	8,230	13,383	9,917	15,986	18,615
State - Florida (%)	100%	0%	0%	0%	0%
State - Alabama or Mississippi (%)	0%	100%	0%	0%	0%
State - Louisiana (%)	0%	0%	100%	0%	0%
State - Texas (%)	0%	0%	0%	100%	0%
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	130,778	236,155	170,481	159,978	408,077
<i>Original value of vessel (at purchase price)</i>	<i>179,361</i>	<i>336,830</i>	<i>234,008</i>	<i>292,756</i>	<i>418,231</i>
<i>Replacement value</i>	<i>396,393</i>	<i>454,373</i>	<i>310,967</i>	<i>540,716</i>	<i>870,417</i>
Liabilities - Loan on vessel	62,634	129,654	65,741	97,518	199,398
<i>% of vessels with loan</i>	<i>43%</i>	<i>49%</i>	<i>42%</i>	<i>53%</i>	<i>54%</i>
Equity - Owner's equity in vessel	68,144	106,501	104,740	62,460	208,679
<i>Insurance coverage (% of vessels / % of assets)</i>	<i>31% / 59%</i>	<i>51% / 79%</i>	<i>45% / 61%</i>	<i>38% / 65%</i>	<i>85% / 103%</i>
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	82%	74%	88%	85%	46%
Owner-operator (%)	35%	61%	79%	28%	31%
Shrimp landed (pounds)	63,692	78,382	98,492	87,677	75,360
Shrimp price per pound (vessels basis)	3.01	2.35	1.87	2.61	2.16
Annual fuel use (gallons)	33,541	45,940	38,041	51,151	62,997
Fuel price per gallon (vessels basis)	2.21	2.12	2.12	2.03	2.14
Fuel efficiency I (shrimp pounds/gallon)	2.3	1.9	4.1	1.8	1.5
Fuel efficiency II (shrimp revenue/gallon)	6.53	4.22	6.69	4.58	3.02
Days lost due to lack crew	35	29	21	49	1
<u>Cash Flow (2006)</u>					
Inflow - Total	186,112	212,236	207,003	242,370	620,078
Shrimp landings	170,284	192,673	191,240	228,025	153,805
Non-shrimp landings	6,542	4,902	5,721	1,759	462,961
Government payments received (shrimp related)	9,285	14,660	10,042	12,586	3,313
Outflow - Total	179,583	215,872	183,320	225,903	447,285
Fuel	71,204	94,095	79,917	103,319	138,739
Ice	807	1,553	4,782	889	6,003
Other supplies	12,204	14,893	14,021	20,492	64,629
Crew & captain (hired)	46,896	48,055	41,181	48,873	146,181
Regular maintenance (vessel and gear)	17,931	18,603	13,757	17,481	23,917
Major repair, replacement or haul-out	6,941	5,910	5,581	6,062	2,205
Overhead (excluding loan payments)	11,486	14,590	12,419	13,012	22,547
Interest payments made (on vessel loans)	5,765	8,062	3,656	6,822	15,209
Principal payments made (on vessel loans)	4,334	8,624	6,201	8,127	26,523
New investments and upgrades (in vessel)	2,015	1,488	1,805	828	1,331
Net Cash Flow	6,528	(3,637)	23,684	16,467	172,793

Table 14: F&E Results: Averages for the Total Fleet by State, cont.

# of Observations	Total Fleet				
	FL 74	AL+MS 39 + 43	LA 119	TX 196	Other 13
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	176,826	197,575	196,962	229,784	616,766
Expenses	182,839	226,051	202,893	229,762	445,281
<u>Variable costs - Supplies</u>	<u>46.1%</u>	<u>48.9%</u>	<u>48.7%</u>	<u>54.3%</u>	<u>47.0%</u>
Fuel	38.9%	41.6%	39.4%	45.0%	31.2%
Ice	0.4%	0.7%	2.4%	0.4%	1.3%
Other supplies	6.7%	6.6%	6.9%	8.9%	14.5%
<u>Variable costs - Labor</u>	<u>29.2%</u>	<u>25.2%</u>	<u>27.4%</u>	<u>23.3%</u>	<u>34.2%</u>
Crew & captain (hired)	25.6%	21.3%	20.3%	21.3%	32.8%
Owner's vessel time	3.5%	4.0%	7.1%	2.0%	1.4%
<u>Fixed costs</u>	<u>24.8%</u>	<u>25.9%</u>	<u>24.0%</u>	<u>22.4%</u>	<u>18.8%</u>
Regular maintenance (vessel and gear)	9.8%	8.2%	6.8%	7.6%	5.4%
Major repair, replacement and haul-out	3.8%	2.6%	2.8%	2.6%	0.5%
Depreciation	4.9%	8.6%	8.3%	6.5%	7.9%
Overhead (excluding loan payments)	6.3%	6.5%	6.1%	5.7%	5.1%
Net Revenue from Operations	(6,013)	(28,475)	(5,931)	22	171,485
Non-Operating Activities					
Interest payments made (on vessel loans)	5,765	8,062	3,656	6,822	15,209
Government payments received (shrimp related)	9,285	14,660	10,042	12,586	3,313
Net Revenue (before taxes)	(2,493)	(21,877)	455	5,787	159,588
Owner's vessel time	6,463	8,971	14,316	4,634	6,051
Depreciation	8,907	19,381	16,919	15,002	35,008

Table 15: F&E Results: Averages for the Gulf Shrimp Fleet by State and by Activity Status

(in USD unless otherwise noted) # of Observations	Gulf Shrimp Fleet				Gulf Shrimp Fleet	
	FL 62	AL+MS 38 + 42	LA 116	TX 194	Inactive 69	Active 386
<u>Vessel Characteristics</u>						
Length (feet)	62	69	65	72	58	70
Gross tons	88	106	86	120	71	111
Horse power	402	537	474	539	356	531
Year built	1982	1988	1988	1984	1978	1986
Hull material - Steel (%)	21%	73%	80%	90%	49%	80%
Refrigeration - Freezer (%)	61%	54%	28%	79%	39%	63%
Fuel capacity (gallons)	8,130	13,665	9,997	16,143	6,791	14,184
State - Florida (%)	100%	0%	0%	0%	16%	13%
State - Alabama or Mississippi (%)	0%	100%	0%	0%	28%	16%
State - Louisiana (%)	0%	0%	100%	0%	16%	27%
State - Texas (%)	0%	0%	0%	100%	41%	43%
<u>Balance Sheet (end of 2006)</u>						
Assets - Market value of vessel	129,359	240,934	172,260	161,447	75,635	192,938
Original value of vessel (at purchase price)	177,660	344,213	237,181	295,347	117,358	300,185
Replacement value	397,451	462,370	313,489	546,667	306,294	479,671
Liabilities - Loan on vessel	69,053	132,770	67,441	98,524	21,233	104,597
% of vessels with loan	47%	49%	43%	53%	25%	53%
Equity - Owner's equity in vessel	60,306	108,164	104,819	62,923	54,402	88,340
Insurance coverage (% of vessels / % of assets)	27% / 56%	53% / 79%	46% / 62%	39% / 65%	6% / 10%	48% / 72%
<u>Vessel Operation (2006)</u>						
Actively shrimping (%)	82%	76%	91%	86%	0%	100%
Owner-operator (%)	32%	61%	79%	27%	54%	46%
Shrimp landed (pounds)	56,687	80,342	100,955	88,575	245	101,268
Shrimp price per pound (vessels basis)	3.22	2.35	1.87	2.62	1.73	2.47
Annual fuel use (gallons)	33,873	47,014	38,726	51,547	831	52,931
Fuel price per gallon (vessels basis)	2.22	2.12	2.12	2.03	2.14	2.09
Fuel efficiency I (shrimp pounds/gallon)	1.9	1.9	4.2	1.8	0.4	2.6
Fuel efficiency II (shrimp revenue/gallon)	6.36	4.34	6.84	4.64	0.44	5.68
Days lost due to lack crew	35	29	22	49	55	35
<u>Cash Flow (2006)</u>						
Inflow - Total	178,514	217,098	206,986	243,881	3,678	259,640
Shrimp landings	166,613	197,490	196,025	230,366	404	244,136
Non-shrimp landings	1,535	4,893	660	799	126	1,842
Government payments received (shrimp related)	10,366	14,714	10,301	12,716	3,148	13,662
Outflow - Total	175,895	220,246	185,741	227,652	11,215	243,415
Fuel	71,815	96,274	81,412	104,081	1,734	108,775
Ice	450	1,567	4,825	893	131	2,287
Other supplies	11,850	15,171	14,246	20,693	537	19,699
Crew & captain (hired)	45,911	49,056	41,534	49,163	290	54,866
Regular maintenance (vessel and gear)	15,876	18,951	13,904	17,637	3,245	18,988
Major repair, replacement or haul-out	6,411	5,984	5,687	6,110	1,327	6,833
Overhead (excluding loan payments)	10,278	14,923	12,193	13,146	2,213	14,746
Interest payments made (on vessel loans)	6,503	8,238	3,750	6,892	1,133	7,140
Principal payments made (on vessel loans)	4,827	8,589	6,362	8,211	366	8,528
New investments and upgrades (in vessel)	1,974	1,491	1,830	829	240	1,552
Net Cash Flow	2,619	(3,148)	21,245	16,228	(7,537)	16,225

Table 15: F&E Results: Averages for the Gulf Shrimp Fleet by State and by Activity Status, cont.

	# of Observations	Gulf Shrimp Fleet				Gulf Shrimp Fleet	
		<u>FL</u>	<u>AL+MS</u>	<u>LA</u>	<u>TX</u>	<u>Inactive</u>	<u>Active</u>
		62	38 + 42	116	194	69	386
Income Statement (2006)							
Operating Activities							
Revenue (from commercial fishing)		168,148	202,383	196,685	231,165	530	245,978
Expenses		176,798	230,856	205,425	231,016	11,926	253,407
<u>Variable costs - Supplies</u>		<u>47.6%</u>	<u>49.0%</u>	<u>48.9%</u>	<u>54.4%</u>	<u>20.1%</u>	<u>51.6%</u>
Fuel		40.6%	41.7%	39.6%	45.1%	14.5%	42.9%
Ice		0.3%	0.7%	2.3%	0.4%	1.1%	0.9%
Other supplies		6.7%	6.6%	6.9%	9.0%	4.5%	7.8%
<u>Variable costs - Labor</u>		<u>29.1%</u>	<u>25.2%</u>	<u>27.2%</u>	<u>23.1%</u>	<u>5.8%</u>	<u>25.3%</u>
Crew & captain (hired)		26.0%	21.2%	20.2%	21.3%	2.4%	21.7%
Owner's vessel time		3.1%	3.9%	7.0%	1.8%	3.4%	3.6%
<u>Fixed costs</u>		<u>23.3%</u>	<u>25.9%</u>	<u>23.9%</u>	<u>22.5%</u>	<u>74.0%</u>	<u>23.1%</u>
Regular maintenance (vessel and gear)		9.0%	8.2%	6.8%	7.6%	27.2%	7.5%
Major repair, replacement and haul-out		3.6%	2.6%	2.8%	2.6%	11.1%	2.7%
Depreciation		4.9%	8.6%	8.4%	6.6%	17.1%	7.1%
Overhead (excluding loan payments)		5.8%	6.5%	5.9%	5.7%	18.6%	5.8%
Net Revenue from Operations		(8,650)	(28,473)	(8,740)	149	(11,396)	(7,429)
Non-Operating Activities							
Interest payments made (on vessel loans)		6,503	8,238	3,750	6,892	1,133	7,140
Government payments received (shrimp related)		10,366	14,714	10,301	12,716	3,148	13,662
Net Revenue (before taxes)		(4,787)	(21,996)	(2,189)	5,973	(9,381)	(907)
<i>Owner's vessel time</i>		5,505	9,079	14,382	4,154	406	9,138
<i>Depreciation</i>		8,701	19,850	17,243	15,141	2,044	18,076

Table 16: F&E Results: Averages for the Active Gulf Shrimp Fleet by State

(in USD unless otherwise noted)	Active Gulf Shrimp	Active Gulf Shrimp Fleet			
		FL	AL+MS	LA	TX
# of Observations	386	51	32 + 29	105	166
Vessel Characteristics					
Length (feet)	70	64	73	66	74
Gross tons	111	94	121	87	126
Horse power	531	429	602	488	561
Year built	1986	1982	1990	1988	1985
Hull material - Steel (%)	80%	22%	84%	83%	94%
Refrigeration - Freezer (%)	63%	67%	62%	28%	84%
Fuel capacity (gallons)	14,184	8,812	16,399	10,593	17,218
State - Florida (%)	13%	100%	0%	0%	0%
State - Alabama or Mississippi (%)	16%	0%	100%	0%	0%
State - Louisiana (%)	27%	0%	0%	100%	0%
State - Texas (%)	43%	0%	0%	0%	100%
Balance Sheet (end of 2006)					
Assets - Market value of vessel	192,938	141,976	291,818	182,018	176,057
<i>Original value of vessel (at purchase price)</i>	300,185	191,362	421,946	246,889	324,355
<i>Replacement value</i>	479,671	414,349	545,745	319,951	563,753
Liabilities - Loan on vessel	104,597	78,185	173,641	73,710	108,768
<i>% of vessels with loan</i>	53%	51%	59%	46%	57%
Equity - Owner's equity in vessel	88,340	63,790	118,177	108,308	67,289
<i>Insurance coverage (% of vessels / % of assets)</i>	48% / 72%	33% / 62%	67% / 85%	48% / 63%	45% / 70%
Vessel Operation (2006)					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	46%	25%	56%	80%	28%
Shrimp landed (pounds)	101,268	68,914	105,251	111,468	103,496
Shrimp price per pound (vessels basis)	2.47	3.22	2.45	1.88	2.62
Annual fuel use (gallons)	52,931	41,092	61,378	42,724	60,062
Fuel price per gallon (vessels basis)	2.09	2.22	2.11	2.11	2.03
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.0	2.2	4.3	1.9
Fuel efficiency II (shrimp revenue/gallon)	5.68	6.61	5.05	6.99	4.80
Days lost due to lack crew	35	36	34	23	41
Cash Flow (2006)					
Inflow - Total	259,640	215,885	283,481	228,111	284,645
Shrimp landings	244,136	202,549	258,833	216,469	269,175
Non-shrimp landings	1,842	1,866	6,275	729	934
Government payments received (shrimp related)	13,662	11,470	18,373	10,913	14,536
Outflow - Total	243,415	212,572	283,425	204,160	264,427
Fuel	108,775	87,127	125,662	89,806	121,275
Ice	2,287	518	2,001	5,318	1,026
Other supplies	19,699	14,367	19,761	15,613	24,101
Crew & captain (hired)	54,866	55,695	64,327	45,854	57,394
Regular maintenance (vessel and gear)	18,988	18,986	22,381	15,145	20,404
Major repair, replacement or haul-out	6,833	7,737	6,738	6,169	7,086
Overhead (excluding loan payments)	14,746	12,406	19,044	13,148	14,868
Interest payments made (on vessel loans)	7,140	7,468	10,716	4,065	7,800
Principal payments made (on vessel loans)	8,528	5,868	11,113	7,020	9,505
New investments and upgrades (in vessel)	1,552	2,400	1,684	2,022	968
Net Cash Flow	16,225	3,313	55	23,951	20,218

Table 16: F&E Results: Averages for the Active Gulf Shrimp Fleet by State, cont.

		Active Gulf Shrimp 386	Active Gulf Shrimp Fleet			
	# of Observations		FL 51	AL+MS 32 + 29	LA 105	TX 166
Income Statement (2006)						
Operating Activities						
Revenue (from commercial fishing)	245,978		204,415	265,108	217,198	270,110
Expenses	253,407		213,631	297,332	225,752	268,174
<u>Variable costs - Supplies</u>	<u>51.6%</u>		<u>47.8%</u>	<u>49.6%</u>	<u>49.1%</u>	<u>54.6%</u>
Fuel	42.9%		40.8%	42.3%	39.8%	45.2%
Ice	0.9%		0.2%	0.7%	2.4%	0.4%
Other supplies	7.8%		6.7%	6.6%	6.9%	9.0%
<u>Variable costs - Labor</u>	<u>25.3%</u>		<u>29.1%</u>	<u>25.6%</u>	<u>27.4%</u>	<u>23.2%</u>
Crew & captain (hired)	21.7%		26.1%	21.6%	20.3%	21.4%
Owner's vessel time	3.6%		3.1%	4.0%	7.0%	1.8%
<u>Fixed costs</u>	<u>23.1%</u>		<u>23.1%</u>	<u>24.8%</u>	<u>23.6%</u>	<u>22.2%</u>
Regular maintenance (vessel and gear)	7.5%		8.9%	7.5%	6.7%	7.6%
Major repair, replacement and haul-out	2.7%		3.6%	2.3%	2.7%	2.6%
Depreciation	7.1%		4.8%	8.6%	8.3%	6.4%
Overhead (excluding loan payments)	5.8%		5.8%	6.4%	5.8%	5.5%
Net Revenue from Operations	(7,429)		(9,216)	(32,224)	(8,555)	1,935
Non-Operating Activities						
Interest payments made (on vessel loans)	7,140		7,468	10,716	4,065	7,800
Government payments received (shrimp related)	13,662		11,470	18,373	10,913	14,536
Net Revenue (before taxes)	(907)		(5,214)	(24,567)	(1,707)	8,671
Owner's vessel time	9,138		6,565	11,878	15,889	4,736
Depreciation	18,076		10,229	25,541	18,810	17,284

Table 17: F&E Results: Averages for the Active Gulf Shrimp Fleet by Refrigeration and by Hull Material

(in USD unless otherwise noted)	Active Gulf Shrimp	Active Gulf Shrimp		Active Gulf Shrimp Fleet		
# of Observations	386	Freezer	Ice	Steel	Wood	Fiberglass
	242	139	308	34	43	
<u>Vessel Characteristics</u>						
Length (feet)	70	76	62	74	56	54
Gross tons	111	131	78	122	62	68
Horse power	531	615	396	580	305	371
Year built	1986	1989	1982	1989	1975	1980
Hull material - Steel (%)	80%	87%	70%	100%	0%	0%
Refrigeration - Freezer (%)	63%	100%	0%	69%	44%	37%
Fuel capacity (gallons)	14,184	18,604	6,992	16,651	3,924	4,891
State - Florida (%)	13%	14%	9%	4%	47%	56%
State - Alabama or Mississippi (%)	16%	16%	17%	17%	12%	12%
State - Louisiana (%)	27%	12%	55%	28%	32%	16%
State - Texas (%)	43%	57%	19%	51%	9%	16%
<u>Balance Sheet (end of 2006)</u>						
Assets - Market value of vessel	192,938	242,520	112,027	222,128	74,735	79,481
<i>Original value of vessel (at purchase price)</i>	300,185	395,046	144,370	351,277	97,574	97,690
<i>Replacement value</i>	479,671	598,577	272,486	526,778	256,417	340,419
Liabilities - Loan on vessel	104,597	155,010	20,440	127,268	21,297	7,913
<i>% of vessels with loan</i>	53%	65%	33%	58%	38%	23%
Equity - Owner's equity in vessel	88,340	87,510	91,587	94,860	53,438	71,568
<i>Insurance coverage (% of vessels / % of assets)</i>	48% / 72%	60% / 82%	28% / 33%	56% / 76%	24% / 31%	9% / 15%
<u>Vessel Operation (2006)</u>						
Actively shrimping (%)	100%	100%	100%	100%	100%	100%
Owner-operator (%)	46%	29%	78%	44%	71%	40%
Shrimp landed (pounds)	101,268	117,215	76,532	114,065	48,024	53,083
Shrimp price per pound (vessels basis)	2.47	2.63	2.10	2.43	2.39	2.87
Annual fuel use (gallons)	52,931	69,427	25,890	60,850	17,214	25,352
Fuel price per gallon (vessels basis)	2.09	2.06	2.13	2.06	2.19	2.21
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.0	3.7	2.4	4.1	3.4
Fuel efficiency II (shrimp revenue/gallon)	5.68	4.87	6.86	5.15	7.82	7.89
Days lost due to lack crew	35	36	33	36	34	25
<u>Cash Flow (2006)</u>						
Inflow - Total	259,640	322,389	156,652	290,188	116,310	159,227
Shrimp landings	244,136	302,035	149,034	272,943	110,918	148,073
Non-shrimp landings	1,842	2,354	1,018	1,886	146	2,916
Government payments received (shrimp related)	13,662	18,001	6,599	15,358	5,246	8,238
Outflow - Total	243,415	308,620	135,940	274,217	100,366	139,585
Fuel	108,775	142,184	53,987	124,530	36,469	54,926
Ice	2,287	532	5,413	2,450	2,182	1,181
Other supplies	19,699	24,547	11,878	21,978	12,321	9,512
Crew & captain (hired)	54,866	68,362	31,810	60,361	21,607	43,085
Regular maintenance (vessel and gear)	18,988	21,883	14,367	20,402	11,345	15,116
Major repair, replacement or haul-out	6,833	7,617	5,631	7,296	3,814	5,912
Overhead (excluding loan payments)	14,746	19,060	7,661	16,904	7,184	5,453
Interest payments made (on vessel loans)	7,140	10,718	1,168	8,662	1,668	524
Principal payments made (on vessel loans)	8,528	12,381	2,078	10,032	2,640	2,394
New investments and upgrades (in vessel)	1,552	1,338	1,947	1,602	1,135	1,482
Net Cash Flow	16,225	13,769	20,712	15,971	15,944	19,642

Table 17: F&E Results: Averages for the Active Gulf Shrimp Fleet by Refrigeration and by Hull Material, cont.

	Active Gulf Shrimp # of Observations 386	Active Gulf Shrimp Freezer 242	Ice 139	Active Gulf Shrimp Fleet		
				Steel 308	Wood 34	Fiberglass 43
Income Statement (2006)						
Operating Activities						
Revenue (from commercial fishing)	245,978	304,388	150,053	274,829	111,064	150,988
Expenses	253,407	315,864	151,074	285,009	109,301	145,178
<u>Variable costs - Supplies</u>	<u>51.6%</u>	<u>53.0%</u>	<u>47.2%</u>	<u>52.3%</u>	<u>46.6%</u>	<u>45.2%</u>
Fuel	42.9%	45.0%	35.7%	43.7%	33.4%	37.8%
Ice	0.9%	0.2%	3.6%	0.9%	2.0%	0.8%
Other supplies	7.8%	7.8%	7.9%	7.7%	11.3%	6.6%
<u>Variable costs - Labor</u>	<u>25.3%</u>	<u>23.7%</u>	<u>30.2%</u>	<u>24.5%</u>	<u>30.0%</u>	<u>32.8%</u>
Crew & captain (hired)	21.7%	21.6%	21.1%	21.2%	19.8%	29.7%
Owner's vessel time	3.6%	2.1%	9.2%	3.4%	10.2%	3.1%
<u>Fixed costs</u>	<u>23.1%</u>	<u>23.3%</u>	<u>22.6%</u>	<u>23.2%</u>	<u>23.4%</u>	<u>22.0%</u>
Regular maintenance (vessel and gear)	7.5%	6.9%	9.5%	7.2%	10.4%	10.4%
Major repair, replacement and haul-out	2.7%	2.4%	3.7%	2.6%	3.5%	4.1%
Depreciation	7.1%	7.9%	4.3%	7.5%	3.0%	3.8%
Overhead (excluding loan payments)	5.8%	6.0%	5.1%	5.9%	6.6%	3.8%
Net Revenue from Operations	(7,429)	(11,476)	(1,021)	(10,180)	1,763	5,810
Non-Operating Activities						
Interest payments made (on vessel loans)	7,140	10,718	1,168	8,662	1,668	524
Government payments received (shrimp related)	13,662	18,001	6,599	15,358	5,246	8,238
Net Revenue (before taxes)	(907)	(4,193)	4,410	(3,484)	5,341	13,525
Owner's vessel time	9,138	6,630	13,832	9,591	11,146	4,515
Depreciation	18,076	25,051	6,495	21,498	3,232	5,478

Table 18: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Length

(in USD unless otherwise noted)		Active Gulf Shrimp Fleet		
	Active Gulf Shrimp	<50 feet	<75 feet	<100 feet
# of Observations	386	34	195	157
<u>Vessel Characteristics</u>				
Length (feet)	70	41	66	82
Gross tons	111	24	93	151
Horse power	531	267	406	745
Year built	1986	1980	1981	1995
Hull material - Steel (%)	80%	15%	75%	100%
Refrigeration - Freezer (%)	63%	6%	53%	87%
Fuel capacity (gallons)	14,184	1,056	9,637	22,676
State - Florida (%)	13%	26%	17%	5%
State - Alabama or Mississippi (%)	16%	24%	8%	24%
State - Louisiana (%)	27%	44%	28%	22%
State - Texas (%)	43%	6%	46%	48%
<u>Balance Sheet (end of 2006)</u>				
Assets - Market value of vessel	192,938	56,097	125,243	306,651
<i>Original value of vessel (at purchase price)</i>	<i>300,185</i>	<i>48,544</i>	<i>170,300</i>	<i>516,003</i>
<i>Replacement value</i>	<i>479,671</i>	<i>149,214</i>	<i>417,116</i>	<i>646,790</i>
Liabilities - Loan on vessel	104,597	8,231	39,463	206,366
<i>% of vessels with loan</i>	<i>53%</i>	<i>26%</i>	<i>46%</i>	<i>67%</i>
Equity - Owner's equity in vessel	88,340	47,867	85,780	100,286
<i>Insurance coverage (% of vessels / % of assets)</i>	<i>48% / 72%</i>	<i>3% / 8%</i>	<i>31% / 34%</i>	<i>78% / 93%</i>
<u>Vessel Operation (2006)</u>				
Actively shrimping (%)	100%	100%	100%	100%
Owner-operator (%)	46%	71%	47%	40%
Shrimp landed (pounds)	101,268	39,740	84,774	135,079
Shrimp price per pound (vessels basis)	2.47	2.36	2.43	2.54
Annual fuel use (gallons)	52,931	8,139	36,795	82,672
Fuel price per gallon (vessels basis)	2.09	2.23	2.08	2.07
Fuel efficiency I (shrimp pounds/gallon)	2.6	5.4	2.8	1.8
Fuel efficiency II (shrimp revenue/gallon)	5.68	10.43	5.88	4.42
Days lost due to lack crew	35	18	35	37
<u>Cash Flow (2006)</u>				
Inflow - Total	259,640	80,731	212,353	357,117
Shrimp landings	244,136	77,617	198,494	336,886
Non-shrimp landings	1,842	1,064	2,545	1,138
Government payments received (shrimp related)	13,662	2,049	11,313	19,094
Outflow - Total	243,415	63,733	194,888	342,599
Fuel	108,775	17,864	75,446	169,858
Ice	2,287	2,249	3,022	1,382
Other supplies	19,699	5,744	19,437	23,046
Crew & captain (hired)	54,866	19,897	50,247	68,177
Regular maintenance (vessel and gear)	18,988	7,392	20,807	19,241
Major repair, replacement or haul-out	6,833	3,382	6,863	7,542
Overhead (excluding loan payments)	14,746	4,473	10,562	22,168
Interest payments made (on vessel loans)	7,140	538	2,561	14,257
Principal payments made (on vessel loans)	8,528	1,154	4,305	15,370
New investments and upgrades (in vessel)	1,552	1,040	1,637	1,558
Net Cash Flow	16,225	16,998	17,464	14,518

Table 18: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Length, cont.

		Active Gulf Shrimp	Active Gulf Shrimp Fleet		
	# of Observations	386	<50 feet 34	<75 feet 195	<100 feet 157
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)		245,978	78,682	201,039	338,023
Expenses		253,407	70,980	203,197	355,276
<u>Variable costs - Supplies</u>		<u>51.6%</u>	<u>36.4%</u>	<u>48.2%</u>	<u>54.7%</u>
Fuel		42.9%	25.2%	37.1%	47.8%
Ice		0.9%	3.2%	1.5%	0.4%
Other supplies		7.8%	8.1%	9.6%	6.5%
<u>Variable costs - Labor</u>		<u>25.3%</u>	<u>37.4%</u>	<u>29.2%</u>	<u>21.9%</u>
Crew & captain (hired)		21.7%	28.0%	24.7%	19.2%
Owner's vessel time		3.6%	9.4%	4.5%	2.7%
<u>Fixed costs</u>		<u>23.1%</u>	<u>26.2%</u>	<u>22.6%</u>	<u>23.4%</u>
Regular maintenance (vessel and gear)		7.5%	10.4%	10.2%	5.4%
Major repair, replacement and haul-out		2.7%	4.8%	3.4%	2.1%
Depreciation		7.1%	4.7%	3.8%	9.6%
Overhead (excluding loan payments)		5.8%	6.3%	5.2%	6.2%
Net Revenue from Operations		(7,429)	7,702	(2,158)	(17,253)
Non-Operating Activities					
Interest payments made (on vessel loans)		7,140	538	2,561	14,257
Government payments received (shrimp related)		13,662	2,049	11,313	19,094
Net Revenue (before taxes)		(907)	9,214	6,594	(12,416)
Owner's vessel time		9,138	6,658	9,183	9,618
Depreciation		18,076	3,321	7,630	34,245

Table 19: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Age

(in USD unless otherwise noted)	Active Gulf	Active Gulf Shrimp Fleet			
	Shrimp # of Observations 386	1968+ 116	1980+ 109	1990+ 83	2000+ 67
<u>Vessel Characteristics</u>					
Length (feet)	70	66	65	77	82
Gross tons	111	103	87	128	152
Horse power	531	419	418	647	812
Year built	1986	1975	1985	1996	2001
Hull material - Steel (%)	80%	68%	77%	94%	99%
Refrigeration - Freezer (%)	63%	62%	36%	82%	90%
Fuel capacity (gallons)	14,184	10,402	8,574	19,068	25,721
State - Florida (%)	13%	22%	14%	6%	6%
State - Alabama or Mississippi (%)	16%	8%	17%	18%	25%
State - Louisiana (%)	27%	9%	45%	23%	31%
State - Texas (%)	43%	61%	23%	52%	36%
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	192,938	108,360	121,724	263,731	392,753
<i>Original value of vessel (at purchase price)</i>	300,185	149,786	171,758	442,132	635,631
<i>Replacement value</i>	479,671	447,812	340,494	588,892	714,069
Liabilities - Loan on vessel	104,597	35,209	30,734	106,898	358,280
<i>% of vessels with loan</i>	53%	48%	39%	61%	76%
Equity - Owner's equity in vessel	88,340	73,150	90,990	156,833	34,473
<i>Insurance coverage (% of vessels / % of assets)</i>	48% / 72%	28% / 33%	36% / 37%	69% / 78%	82% / 103%
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	46%	32%	64%	41%	42%
Shrimp landed (pounds)	101,268	73,167	80,057	114,418	176,662
Shrimp price per pound (vessels basis)	2.47	2.71	2.29	2.46	2.43
Annual fuel use (gallons)	52,931	36,513	32,205	70,307	100,308
Fuel price per gallon (vessels basis)	2.09	2.06	2.15	2.05	2.10
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.3	3.4	2.0	2.3
Fuel efficiency II (shrimp revenue/gallon)	5.68	5.66	6.51	4.59	5.01
Days lost due to lack crew	35	46	32	32	24
<u>Cash Flow (2006)</u>					
Inflow - Total	259,640	206,816	186,295	297,345	449,304
Shrimp landings	244,136	194,785	173,431	278,792	425,407
Non-shrimp landings	1,842	799	3,888	2,073	338
Government payments received (shrimp related)	13,662	11,232	8,976	16,480	23,559
Outflow - Total	243,415	191,619	165,037	291,508	428,308
Fuel	108,775	74,467	67,207	143,120	207,209
Ice	2,287	1,866	3,670	1,569	1,617
Other supplies	19,699	21,502	12,414	20,974	28,530
Crew & captain (hired)	54,866	48,899	41,236	60,897	85,357
Regular maintenance (vessel and gear)	18,988	20,981	16,862	18,836	20,220
Major repair, replacement or haul-out	6,833	5,994	6,120	7,797	8,838
Overhead (excluding loan payments)	14,746	10,650	9,538	17,854	28,466
Interest payments made (on vessel loans)	7,140	1,878	2,110	8,793	23,497
Principal payments made (on vessel loans)	8,528	4,237	3,941	9,895	23,060
New investments and upgrades (in vessel)	1,552	1,144	1,939	1,773	1,514
Net Cash Flow	16,225	15,197	21,259	5,836	20,996

Table 19: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Age, cont.

# of Observations	Active Gulf Shrimp	Active Gulf Shrimp Fleet			
	386	1968+ 116	1980+ 109	1990+ 83	2000+ 67
Income Statement (2006)					
Operating Activities					
Revenue (from commercial fishing)	245,978	195,584	177,319	280,865	425,745
Expenses	253,407	196,134	176,056	304,264	442,871
<u>Variable costs - Supplies</u>	<u>51.6%</u>	<u>49.9%</u>	<u>47.3%</u>	<u>54.4%</u>	<u>53.6%</u>
Fuel	42.9%	38.0%	38.2%	47.0%	46.8%
Ice	0.9%	1.0%	2.1%	0.5%	0.4%
Other supplies	7.8%	11.0%	7.1%	6.9%	6.4%
<u>Variable costs - Labor</u>	<u>25.3%</u>	<u>28.0%</u>	<u>30.1%</u>	<u>22.9%</u>	<u>21.8%</u>
Crew & captain (hired)	21.7%	24.9%	23.4%	20.0%	19.3%
Owner's vessel time	3.6%	3.1%	6.6%	2.8%	2.5%
<u>Fixed costs</u>	<u>23.1%</u>	<u>22.1%</u>	<u>22.6%</u>	<u>22.7%</u>	<u>24.6%</u>
Regular maintenance (vessel and gear)	7.5%	10.7%	9.6%	6.2%	4.6%
Major repair, replacement and haul-out	2.7%	3.1%	3.5%	2.6%	2.0%
Depreciation	7.1%	2.9%	4.2%	8.1%	11.6%
Overhead (excluding loan payments)	5.8%	5.4%	5.4%	5.9%	6.4%
Net Revenue from Operations	(7,429)	(550)	1,263	(23,399)	(17,126)
Non-Operating Activities					
Interest payments made (on vessel loans)	7,140	1,878	2,110	8,793	23,497
Government payments received (shrimp related)	13,662	11,232	8,976	16,480	23,559
Net Revenue (before taxes)	(907)	8,804	8,129	(15,712)	(17,064)
Owner's vessel time	9,138	6,023	11,703	8,664	11,253
Depreciation	18,076	5,752	7,306	24,552	51,380

Table 20: F&E Results: Averages for the Active Gulf Shrimp Fleet by Landings Volume

(in USD unless otherwise noted)	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		<50k lbs	<100k lbs	<150k lbs	>150k lbs
		90	122	102	72
<u>Vessel Characteristics</u>					
Length (feet)	70	59	70	74	80
Gross tons	111	76	108	120	144
Horse power	531	379	476	567	767
Year built	1986	1980	1983	1990	1996
Hull material - Steel (%)	80%	50%	79%	94%	99%
Refrigeration - Freezer (%)	63%	31%	68%	72%	81%
Fuel capacity (gallons)	14,184	6,831	12,250	16,741	23,032
State - Florida (%)	13%	23%	18%	5%	4%
State - Alabama or Mississippi (%)	16%	21%	12%	11%	22%
State - Louisiana (%)	27%	23%	23%	33%	31%
State - Texas (%)	43%	32%	45%	50%	43%
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	192,938	105,309	145,335	235,332	323,075
Original value of vessel (at purchase price)	300,185	128,713	224,822	338,548	587,877
Replacement value	479,671	297,757	471,412	524,857	651,842
Liabilities - Loan on vessel	104,597	25,134	47,923	127,695	267,235
% of vessels with loan	53%	39%	43%	65%	71%
Equity - Owner's equity in vessel	88,340	80,175	97,412	107,637	55,840
Insurance coverage (% of vessels / % of assets)	48% / 72%	21% / 28%	37% / 48%	60% / 72%	83% / 107%
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	46%	57%	43%	41%	46%
Shrimp landed (pounds)	101,268	28,180	77,381	120,483	205,882
Shrimp price per pound (vessels basis)	2.47	2.53	2.56	2.40	2.34
Annual fuel use (gallons)	52,931	15,584	41,911	60,413	107,686
Fuel price per gallon (vessels basis)	2.09	2.17	2.08	2.07	2.05
Fuel efficiency I (shrimp pounds/gallon)	2.6	3.2	2.4	2.6	2.3
Fuel efficiency II (shrimp revenue/gallon)	5.68	6.48	5.54	5.63	5.02
Days lost due to lack crew	35	45	33	32	27
<u>Cash Flow (2006)</u>					
Inflow - Total	259,640	73,540	212,182	302,712	511,662
Shrimp landings	244,136	67,016	198,066	288,231	481,130
Non-shrimp landings	1,842	3,715	2,528	477	275
Government payments received (shrimp related)	13,662	2,809	11,588	14,005	30,258
Outflow - Total	243,415	87,147	201,680	281,982	454,830
Fuel	108,775	32,598	86,092	124,523	220,122
Ice	2,287	2,097	2,239	2,841	1,823
Other supplies	19,699	9,264	17,086	24,061	30,990
Crew & captain (hired)	54,866	17,265	47,210	65,714	99,473
Regular maintenance (vessel and gear)	18,988	11,354	21,231	20,353	22,796
Major repair, replacement or haul-out	6,833	3,857	6,823	6,887	10,491
Overhead (excluding loan payments)	14,746	4,900	11,422	18,333	27,604
Interest payments made (on vessel loans)	7,140	1,703	3,239	8,315	18,882
Principal payments made (on vessel loans)	8,528	3,091	4,701	9,212	20,842
New investments and upgrades (in vessel)	1,552	1,018	1,637	1,743	1,807
Net Cash Flow	16,225	(13,607)	10,502	20,730	56,832

Table 20: F&E Results: Averages for the Active Gulf Shrimp Fleet by Landings Volume, cont.

		Active Gulf Shrimp 386	Active Gulf Shrimp Fleet			
	# of Observations		<50k lbs 90	<100k lbs 122	<150k lbs 102	>150k lbs 72
Income Statement (2006)						
Operating Activities						
Revenue (from commercial fishing)	245,978		70,731	200,594	288,708	481,405
Expenses	253,407		92,243	209,317	294,869	470,831
<u>Variable costs - Supplies</u>	<u>51.6%</u>		<u>47.7%</u>	<u>50.4%</u>	<u>51.4%</u>	<u>53.7%</u>
Fuel	42.9%		35.3%	41.1%	42.2%	46.8%
Ice	0.9%		2.3%	1.1%	1.0%	0.4%
Other supplies	7.8%		10.0%	8.2%	8.2%	6.6%
<u>Variable costs - Labor</u>	<u>25.3%</u>		<u>25.0%</u>	<u>26.4%</u>	<u>25.7%</u>	<u>24.1%</u>
Crew & captain (hired)	21.7%		18.7%	22.6%	22.3%	21.1%
Owner's vessel time	3.6%		6.2%	3.8%	3.4%	3.0%
<u>Fixed costs</u>	<u>23.1%</u>		<u>27.4%</u>	<u>23.3%</u>	<u>22.9%</u>	<u>22.2%</u>
Regular maintenance (vessel and gear)	7.5%		12.3%	10.1%	6.9%	4.8%
Major repair, replacement and haul-out	2.7%		4.2%	3.3%	2.3%	2.2%
Depreciation	7.1%		5.6%	4.4%	7.5%	9.2%
Overhead (excluding loan payments)	5.8%		5.3%	5.5%	6.2%	5.9%
Net Revenue from Operations	(7,429)		(21,512)	(8,723)	(6,161)	10,573
Non-Operating Activities						
Interest payments made (on vessel loans)	7,140		1,703	3,239	8,315	18,882
Government payments received (shrimp related)	13,662		2,809	11,588	14,005	30,258
Net Revenue (before taxes)	(907)		(20,407)	(375)	(472)	21,949
Owner's vessel time	9,138		5,753	7,978	10,089	13,984
Depreciation	18,076		5,156	9,236	22,067	43,549

Table 21: F&E Results: Averages for the Active Gulf Shrimp Fleet by Survey Quality

(in USD unless otherwise noted)	Active Gulf	Active Gulf Shrimp Fleet	
	Shrimp	Medium Quality	High Quality
# of Observations	386	60	326
<u>Vessel Characteristics</u>			
Length (feet)	70	69	71
Gross tons	111	102	112
Horse power	531	501	537
Year built	1986	1984	1987
Hull material - Steel (%)	80%	72%	81%
Refrigeration - Freezer (%)	63%	42%	67%
Fuel capacity (gallons)	14,184	12,044	14,578
State - Florida (%)	13%	12%	13%
State - Alabama or Mississippi (%)	16%	13%	16%
State - Louisiana (%)	27%	37%	25%
State - Texas (%)	43%	38%	44%
<u>Balance Sheet (end of 2006)</u>			
Assets - Market value of vessel	192,938	164,355	198,198
<i>Original value of vessel (at purchase price)</i>	<i>300,185</i>	<i>278,580</i>	<i>304,162</i>
<i>Replacement value</i>	<i>479,671</i>	<i>436,667</i>	<i>486,239</i>
Liabilities - Loan on vessel	104,597	80,377	109,055
<i>% of vessels with loan</i>	<i>53%</i>	<i>42%</i>	<i>55%</i>
Equity - Owner's equity in vessel	88,340	83,978	89,143
<i>Insurance coverage (% of vessels / % of assets)</i>	<i>48% / 72%</i>	<i>40% / 76%</i>	<i>49% / 71%</i>
<u>Vessel Operation (2006)</u>			
Actively shrimping (%)	100%	100%	100%
Owner-operator (%)	46%	70%	42%
Shrimp landed (pounds)	101,268	91,113	103,137
Shrimp price per pound (vessels basis)	2.47	2.36	2.49
Annual fuel use (gallons)	52,931	45,871	54,230
Fuel price per gallon (vessels basis)	2.09	2.09	2.09
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.8	2.6
Fuel efficiency II (shrimp revenue/gallon)	5.68	5.78	5.67
Days lost due to lack crew	35	28	36
<u>Cash Flow (2006)</u>			
Inflow - Total	259,640	223,534	266,285
Shrimp landings	244,136	213,181	249,833
Non-shrimp landings	1,842	360	2,115
Government payments received (shrimp related)	13,662	9,993	14,337
Outflow - Total	243,415	202,203	251,000
Fuel	108,775	93,596	111,568
Ice	2,287	2,955	2,164
Other supplies	19,699	15,558	20,461
Crew & captain (hired)	54,866	39,776	57,644
Regular maintenance (vessel and gear)	18,988	17,563	19,251
Major repair, replacement or haul-out	6,833	6,574	6,880
Overhead (excluding loan payments)	14,746	11,153	15,407
Interest payments made (on vessel loans)	7,140	5,740	7,398
Principal payments made (on vessel loans)	8,528	7,664	8,687
New investments and upgrades (in vessel)	1,552	1,624	1,539
Net Cash Flow	16,225	21,331	15,285

Table 21: F&E Results: Averages for the Active Gulf Shrimp Fleet by Survey Quality, cont.

# of Observations	Active Gulf Shrimp	Active Gulf Shrimp Fleet	
	386	Medium Quality 60	High Quality 326
<u>Income Statement (2006)</u>			
Operating Activities			
Revenue (from commercial fishing)	245,978	213,541	251,948
Expenses	253,407	213,557	260,741
<u>Variable costs - Supplies</u>	<u>51.6%</u>	<u>52.5%</u>	<u>51.5%</u>
Fuel	42.9%	43.8%	42.8%
Ice	0.9%	1.4%	0.8%
Other supplies	7.8%	7.3%	7.8%
<u>Variable costs - Labor</u>	<u>25.3%</u>	<u>24.5%</u>	<u>25.4%</u>
Crew & captain (hired)	21.7%	18.6%	22.1%
Owner's vessel time	3.6%	5.8%	3.3%
<u>Fixed costs</u>	<u>23.1%</u>	<u>23.0%</u>	<u>23.2%</u>
Regular maintenance (vessel and gear)	7.5%	8.2%	7.4%
Major repair, replacement and haul-out	2.7%	3.1%	2.6%
Depreciation	7.1%	6.5%	7.2%
Overhead (excluding loan payments)	5.8%	5.2%	5.9%
Net Revenue from Operations	(7,429)	(16)	(8,793)
Non-Operating Activities			
Interest payments made (on vessel loans)	7,140	5,740	7,398
Government payments received (shrimp related)	13,662	9,993	14,337
Net Revenue (before taxes)	(907)	4,237	(1,854)
Owner's vessel time	9,138	12,493	8,520
Depreciation	18,076	13,889	18,846

Table 22: F&E Results: Averages for the Active Gulf Shrimp Fleet by Ownership Structure; and of the Owner-Operated Sub-Fleet by Captain's Share Structure

(in USD unless otherwise noted)	Active Gulf Shrimp	Active Gulf Shrimp Fleet		Own-Operator Active Gulf Shr.	
# of Observations	386	Hired Captain	Own-Operator	without Share	with Share
	208	178	120	58	
<u>Vessel Characteristics</u>					
Length (feet)	70	73	68	68	68
Gross tons	111	123	97	98	94
Horse power	531	565	492	503	468
Year built	1986	1987	1986	1987	1984
Hull material - Steel (%)	80%	83%	76%	78%	74%
Refrigeration - Freezer (%)	63%	83%	39%	39%	40%
Fuel capacity (gallons)	14,184	16,719	11,222	11,630	10,378
State - Florida (%)	13%	18%	7%	4%	14%
State - Alabama or Mississippi (%)	16%	13%	19%	17%	24%
State - Louisiana (%)	27%	10%	47%	49%	43%
State - Texas (%)	43%	58%	26%	29%	19%
<u>Balance Sheet (end of 2006)</u>					
Assets - Market value of vessel	192,938	216,923	164,910	159,539	176,021
<i>Original value of vessel (at purchase price)</i>	300,185	334,089	260,567	271,789	237,349
<i>Replacement value</i>	479,671	571,845	364,617	332,371	427,094
Liabilities - Loan on vessel	104,597	120,458	86,063	92,525	72,693
<i>% of vessels with loan</i>	53%	57%	48%	48%	47%
Equity - Owner's equity in vessel	88,340	96,465	78,847	67,014	103,328
<i>Insurance coverage (% of vessels / % of assets)</i>	48% / 72%	52% / 72%	43% / 72%	42% / 72%	47% / 71%
<u>Vessel Operation (2006)</u>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	46%	0%	100%	100%	100%
Shrimp landed (pounds)	101,268	105,313	96,541	96,259	97,125
Shrimp price per pound (vessels basis)	2.47	2.74	2.15	2.10	2.26
Annual fuel use (gallons)	52,931	60,975	43,531	43,863	42,845
Fuel price per gallon (vessels basis)	2.09	2.08	2.11	2.11	2.11
Fuel efficiency I (shrimp pounds/gallon)	2.6	2.1	3.3	3.3	3.4
Fuel efficiency II (shrimp revenue/gallon)	5.68	5.30	6.14	5.89	6.66
Days lost due to lack crew	35	41	27	26	30
<u>Cash Flow (2006)</u>					
Inflow - Total	259,640	293,328	220,274	218,581	223,776
Shrimp landings	244,136	276,079	206,809	203,666	213,312
Non-shrimp landings	1,842	1,236	2,551	3,556	470
Government payments received (shrimp related)	13,662	16,014	10,914	11,358	9,994
Outflow - Total	243,415	285,256	194,523	188,837	206,286
Fuel	108,775	124,669	90,202	91,184	88,170
Ice	2,287	1,010	3,779	3,553	4,247
Other supplies	19,699	23,612	15,126	14,461	16,502
Crew & captain (hired)	54,866	68,562	38,862	36,347	44,065
Regular maintenance (vessel and gear)	18,988	22,520	14,862	12,542	19,662
Major repair, replacement or haul-out	6,833	7,991	5,479	4,626	7,245
Overhead (excluding loan payments)	14,746	17,445	11,592	11,386	12,018
Interest payments made (on vessel loans)	7,140	7,903	6,249	6,975	4,747
Principal payments made (on vessel loans)	8,528	10,044	6,757	6,402	7,493
New investments and upgrades (in vessel)	1,552	1,500	1,614	1,361	2,138
Net Cash Flow	16,225	8,073	25,751	29,745	17,489

Table 22: F&E Results: Averages for the Active Gulf Shrimp Fleet by Ownership Structure; and of the Owner-Operated Sub-Fleet by Captain's Share Structure, cont.

	# of Observations	Active Gulf Shrimp	Active Gulf Shrimp Fleet		Own-Operator Active Gulf Shr.	
		386	Hired Captain	Own-Operator	without Share	with Share
		208	178	120	58	
Income Statement (2006)						
Operating Activities						
Revenue (from commercial fishing)	245,978	277,315	209,360	207,223	213,782	
Expenses	253,407	284,871	216,640	211,030	228,246	
<u>Variable costs - Supplies</u>	<u>51.6%</u>	<u>52.4%</u>	<u>50.4%</u>	<u>51.7%</u>	<u>47.7%</u>	
Fuel	42.9%	43.8%	41.6%	43.2%	38.6%	
Ice	0.9%	0.4%	1.7%	1.7%	1.9%	
Other supplies	7.8%	8.3%	7.0%	6.9%	7.2%	
<u>Variable costs - Labor</u>	<u>25.3%</u>	<u>24.1%</u>	<u>27.1%</u>	<u>25.8%</u>	<u>29.5%</u>	
Crew & captain (hired)	21.7%	24.1%	17.9%	17.2%	19.3%	
Owner's vessel time	3.6%	0.0%	9.1%	8.6%	10.1%	
<u>Fixed costs</u>	<u>23.1%</u>	<u>23.5%</u>	<u>22.6%</u>	<u>22.4%</u>	<u>22.8%</u>	
Regular maintenance (vessel and gear)	7.5%	7.9%	6.9%	5.9%	8.6%	
Major repair, replacement and haul-out	2.7%	2.8%	2.5%	2.2%	3.2%	
Depreciation	7.1%	6.7%	7.8%	8.9%	5.8%	
Overhead (excluding loan payments)	5.8%	6.1%	5.4%	5.4%	5.3%	
Net Revenue from Operations	(7,429)	(7,557)	(7,280)	(3,807)	(14,464)	
Non-Operating Activities						
Interest payments made (on vessel loans)	7,140	7,903	6,249	6,975	4,747	
Government payments received (shrimp related)	13,662	16,014	10,914	11,358	9,994	
Net Revenue (before taxes)	(907)	554	(2,615)	577	(9,217)	
<i>Owner's vessel time</i>	9,138	0	19,815	18,199	23,159	
<i>Depreciation</i>	18,076	19,063	16,922	18,732	13,179	