Sea Grant
New York

Recreational Boating Expenditures in 2003 in New York State and Their Economic Impacts

New York Sea Grant

A Joint Program of the
State University of New York
and Cornell University

Recreational Boating Expenditures in 2003 in New York State and Their Economic Impacts

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NYSGI-S-04-001
September 2004

ACKNOWLEDGEMENTS

Jay Tanski served as New York Sea Grant project manager on this effort. In addition to providing rapid feedback on a host of questions, Jay organized an advisory committee of industry representatives, state agency personnel, and Sea Grant extension staff who provided invaluable help on survey design and evaluation of results. We wish to thank the advisory committee members for their thoughtful input. Advisory committee members included Sharon Brooks of the NYS Department of Environmental Conservation, Ginny DiForio of Empire State Marine Trades, Brian Kempf of NYS Office of Parks, Recreation and Historic Preservation, Conrad Kreuter of the Association of Marine Industries, Chris Squeri of New York Marine Trades Association, Hans Wahl of French Creek Marina, and Jack Mattice, David White and Jay Tanski of New York Sea Grant. We thank Loraine Wilson and Leonid Gluz of the NYS Division of Motor Vehicles who provided the sample and Brian Kempf, NYS Office of Parks, Recreation and Historic Preservation, who assisted with sample acquisition. Among Cornell's Human Dimensions Research Unit staff, Karlene Smith provided assistance with survey mailings, data entry, and phone interviews; Cristina Faustino assisted with data entry and phone interviews; and Margie Peech helped with table and report preparation.

NOTICE

This publication was supported by the National Sea Grant College Program of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration under award #NA16RG1645 to the Research Foundation of State University of New York for New York Sea Grant. The views expressed herein do not necessarily reflect the views of any of those organizations.

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EXECUTIVE SUMMARY

A study to determine the economic impact of recreational boating in New York was conducted at Cornell University in 2003-2004 under funding from New York Sea Grant. The primary purpose of the study was to estimate the annual expenditures of New York's recreational boaters and the economic impacts of these expenditures statewide and regionally.

A sample of 6,000 boat owners was chosen from a listing of all boats registered for "pleasure use" in New York State in 2003. A mail questionnaire was sent to the sample in January, 2004. The questionnaire asked about trip and non-trip related boating expenditures in 2003. It also asked about boating activity, interests of boaters, and topics of concern to boaters.

Of the 6,000 questionnaires mailed, 2,283 completed questionnaires were returned for a useable response rate of 40%. A nonrespondent telephone follow-up survey showed that nonrespondents had fewer boats registered in their name compared to respondents, and downstate nonrespondents were less likely than respondents to have boated in 2003. Adjustments to the respondent data set were made to account for these differences and reported numbers are considered to be as representative as possible of New York State registered recreational boaters.

Of the 529,844 boats registered in New York State in 2003, almost all (508,300) were registered for "pleasure use." We estimated that 371,022 boat owners registered a pleasure boat in New York State in 2003, and that 84% or 312,501 of those boat owners boated in 2003.

Expenditures by Boat Owners

Recreational boaters with boats registered in New York State spent an estimated $2.4 billion in 2003 in the state on boating-related expenses. Specifically for trip-related spending at-site and en-route in 2003 (e.g., gas, food, lodging, launching fees):

Overall - $431 million statewide, $1,380 per boater

By major boating region:

$173 million associated with trips to economic regions bordering the Great Lakes and Finger Lakes
$53 million associated with trips to the Mid-Hudson and Capital District Regions
$162 million associated with trips to the New York City Long Island Metropolitan Area

Non-trip related spending in 2003 (e.g., boat purchase, equipment, repair, insurance, annual fees associated with the use of marinas and yacht clubs):

Overall – almost $2 billion statewide, of which $1.2 billion was for boat purchases

By major boating region:

$661 million associated with the economic regions bordering the Great Lakes and Finger Lakes
$194 million associated with the Mid-Hudson and Capital District Regions
$907 million associated with the New York City Long Island Metropolitan Area

Economic Impacts

The estimates of expenditure totals can in turn be used to estimate the broader impacts on state and regional economies. Through input-output analysis using IMPLAN, we estimated that boating as a consumer-driven industry in New York in 2003 had:

a total economic impact of $1.8 billion,
accounted for approximately 18,700 jobs,
and contributed $728 million to labor income.

By major boating region the statewide economic impact was:

$600 million associated with the economic regions bordering the Great Lakes and Finger Lakes
$184 million associated with the Mid-Hudson and Capital District Regions
$843 million associated with the New York City Long Island Metropolitan Area

Boating in downstate areas may have been suppressed in 2003 compared with an average year because of bad weather. This may have resulted in an underestimation of trip expenditures in those areas.

All of the estimates above do not include spending by transient boaters and others who are not registered in New York State. These additional expenditures are most likely made in water bodies bordering other states, especially around Long Island and New York City. Non-motorized boaters also probably made economic contributions throughout the state, but were not included in the above estimates.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (cont.)

Page

LIST OF TABLES (cont.)

LIST OF FIGURES

INTRODUCTION

Recreational boating is one of America's leading pastimes and is an important economic generator nationwide, both in coastal areas and near navigable inland waters. The National Marine Manufacturers Association (NMMA) (2003) estimated that in 2002, 68.9 million people participated in boating, 17.35 million boats were in use, and $29.2 billion was spent in total retail sales related to boating. These receipts came from a diversified industry of outboard and inboard powered craft, sterndrive boats, powered and unpowered sailboats, personal watercraft, and canoes. In addition, preliminary results of a recent study documented a direct impact of $7.1 billion to the Canadian economy from recreational boating (Canadian Marine Manufacturers Association 2003).

New York is one of the nation's major boating states. Data from the New York State Division of Motor Vehicles (NYSDMV) show that 529,844 boats were registered in 2003. This represents an increase of over 20% in the past ten years. NMMA data show that New York was the fourth leading state in new boat sales in 2001, with sales totaling $412 million. New York ranked sixth in sales of marine accessories ($81 million), eighth in sales of boat trailers ($7 million), and ninth in sales of outboard motors ($75 million).

Most of the economic activity related to recreational boating in New York is consumer-driven. Statewide, New York has a small boat manufacturing sector, with 25 boat builders (U.S. Bureau of the Census, Economic Census of Manufacturing 1997). However, New York's firms are much smaller than the national average. The average boat building firm in New York has four to ten paid employees (Bureau of the Census uses an employment category to prevent individual data disclosure). This compares to a national average of 40 paid employees per firm. New York, which generates approximately 6% of boating-related consumer expenditures nationally (derived from NMMA data), has only about one-half of one percent of the recreational boat manufacturing industry nationwide, in terms of paid employees (data derived from U.S. Bureau of the Census). Thus, the request for research proposals from the New York Sea Grant Institute, which enabled this study to be conducted, very appropriately focused on the consumer side of boating.

Recreational boating is important in virtually all areas of New York, especially the marine waters surrounding New York City and Long Island, the Hudson River, and the Great Lakes-St. Lawrence River coast. Boating is also important to a number of inland areas served by New York's canal system, the Finger Lakes, and other large lakes. NYSDMV registration data show that the county of principal use for 27% of the state's registered boats lies in the Long Island-New York City area; 26% border on the Great Lakes or St. Lawrence River, 12% are in counties bordering the Hudson River south of the Troy Dam, and 19% are in additional inland counties that boaters can reach from these waters (e.g., Erie Canal system, Cayuga and Seneca Lakes, Lake Champlain). This leaves 16% of the state's boat fleet that is used primarily in other counties with lakes, rivers, and reservoirs unconnected to these major waterways.

Because of the wide diversity of water bodies noted above, the expenditures of recreational boaters are significant in most of the counties of New York State. In these counties, the expenditures of boaters support a significant portion of the marine trades industry.

STUDY OBJECTIVES

While several previous studies in New York addressed topics related to boating and marinas, no previous study had investigated the economic impacts of boating on either a statewide or regional basis. Thus, the objectives of this study were:

(1) Estimate the annual expenditures of New York's recreational boaters statewide and regionally by trip versus other expenditures.

(2) Estimate the direct, indirect, induced, and total economic impacts of these expenditures.

(3) Develop models to estimate the types of boating-related economic activity that result in the greatest economic activity statewide and for each major coastal region.

REVIEW OF PREVIOUS BOATING STUDIES

Descriptive surveys of the marina and boating sectors were among the earliest studies funded in the early 1970s by the New York Sea Grant Program. Francis and Busch (1973) analyzed boat usage in 1970 and made projections to 1985 by major boat length categories. They mapped the counties of highest boat ownership by county of residence and county of principal use. They also profiled the boat building and repair industry at that time and noted that employment had declined from 2,000 persons in 1959 to only 1,469 in 1970—a trend that has continued in more recent years.

Between 1972 and 1975, Noden and Brown conducted complementary statewide studies of the commercial marina and boatyard industry in New York, and of a statewide sample of registered boaters. The 1972 marina study (Noden and Brown 1975) provided data on number of firms by region, services offered, number of employees, and revenues. The study estimated gross revenues statewide in 1992 of $94 million, $72 million of which was downstate, $10 million of which was from marinas along the Great Lakes coast, and $12 million of which was from inland marinas. The 1973 recreational boating survey (Noden and Brown 1977) investigated demographics of boat owners, descriptions of the statewide fleet mix, boat use and trip patterns, and boating service needs. The results of that study estimated a total of 46 million boater days statewide in 1973.

The energy crisis of 1974, characterized by marked increases in gasoline prices, alternate-day gas rationing, and uncertain supplies at destination points, gave rise to a follow-up survey in the fall of 1974 of a sample of the marinas and boaters surveyed in 1973, also sponsored by Sea Grant. The results indicated that while the energy situation had no discernible effect on the number of participating boaters, users of boats under 16 feet, 16 to 25 feet, and over 25 feet purchased 17%, 30%, and 42% less fuel, respectively, in 1974 compared to 1973 (Brown 1976).

Updates of the marina industry along the Great Lakes occurred periodically during the 1980s and 1990s. Brown and Connelly (1987) updated an inventory of marinas and other coastal tourism businesses. White (1991) did an updated profile and business analysis of Great Lakes

marinas in 1990 and a follow-up survey two years later (White 1992) that estimated gross revenues and expenses. For the Lower Hudson River, Anderson (circa 1991) inventoried marina slips and moorings by county and obtained estimates of gross revenues. West and Heatwole (1981) examined the capacity for boat storage, marina demand, and boat usage in New York City.

Several surveys of New York Great Lakes charter boat businesses have been conducted, the last in 2002 (Lichtkoppler and Kuehn 2003), and the preceding one by Kuehn and Dawson (1996). In 2002, assuming the 124 respondents to the survey who provided sales information (about 41% of the total) were representative of the estimated 305 charter captains, New York's Great Lakes charter fishery had total sales of approximately $7.0 million. This 2002 survey was conducted across the Great Lakes; total industry sales Great Lakes-wide were estimated at $34.5 million (Lichtkoppler and Pistis 2003).

Economic Impact Studies of Boating

As part of the 1990 Long Island Sound study of the importance of water dependent activities, Altobello (1992) applied expenditure data from a 1987 Connecticut boating study to a separate estimate of boating days in Long Island Sound that was derived indirectly (not through primary data collection). The estimated economic impact of recreational boating on Long Island Sound (sum of direct, indirect, and induced effects) in 1990 was $3.223 billion, of which the New York portion was $1.384 billion.

Maryland conducted economic impact studies of boating in 1993 (Lipton and Miller 1995) and 2000 (Lipton 2001). Both studies used the results of a random survey of registered and documented boat owners to estimate total direct expenditures, both trip and non-trip related, then used the IMPLAN input-output model (MIG Inc. 2000) to estimate indirect impacts. The 1993 survey was stratified by county and total statewide expenditures were estimated by county, although the number of total responses per county would have been only about 20. The focus of the analysis was at the statewide level. The 1993 study also used a marine trades industry survey to determine retail margins and the multiplier effects of specialized firms that were embedded within much larger IMPLAN categories.

The 2000 Maryland survey, conducted in four waves (January – April, May – June, July – August, and September – November), estimated total direct expenditures of $2.3 billion by Maryland boaters, $970 million of which was directly available to impact the state's economy. The total direct and indirect impact of this spending was estimated at $1.6 billion. Combining both direct and indirect measures, total personal income related to boating was estimated at $656 million, and 28,212 full-time equivalent jobs were associated with these boating expenditures. Thus, the statewide multipliers for Maryland (total impact divided by direct impact) were 1.67 for output, 1.60 for personal income, 1.62 for total income, and 1.42 for jobs.

A similar economic impact study of boating in Ohio was carried out in 1998, also using a survey of registered boaters and input-output analysis via IMPLAN (Hushak 1999). This study incorporated an adjustment for the number of boats per household to avoid an upward bias in total estimated boater expenditures. The revenue to businesses from boating in Ohio was

estimated at about $1.2 billion. The $673 million available after leakages from businesses in Ohio to other states produced a total output of just over $1.0 billion. Total income was estimated at $386.2 million, and total full-time job equivalents at 19,500. The Ohio study also attempted a marine trades survey, but the response rate was too low to be useful. A separate survey of charter fishing businesses was also included in this effort.

The most recent Michigan study of 2002 boaters was conducted in similar fashion to the above studies, except that Michigan researchers used a Michigan tourism economic impact model rather than IMPLAN to derive indirect impacts. Total direct spending by boaters in 2002 was estimated at $2.24 billion, which after leakages resulted in total sales of $1.71 billion, total income of $636 million, and 24,000 jobs (Mahoney et al. 2002).

An economic impact study of boating in Oregon was conducted in 1996 (Neely et al. 1998). While this study employed a survey of recreational boaters and used IMPLAN for input-output analysis, the study also examined commercial motorized recreational boating (river cruises, tour boats, charter boats, guided fishing, and coastal ecocruises) and nonregistered recreational boating. Impacts related to windsurfing and whitewater float trips were also examined. These activities in combination amounted to just over $1.0 billion in total expenditures. It should be noted that this study was based on only about 140 responses.

As seen from the above summary, most economic impact studies have examined boating from the consumer side. However, a 1983 Texas study examined the economic impact of the boating industry in that state (Stoll et al. 1985). The sectors examined were boat and trailer manufacturing, boat equipment manufacturing, marinas and boatyards, and marine trade. In 1983, these sectors employed 10,220 people, had total output of $610 million, and paid out almost $184 million to Texas households. Of the $610 million of total output, over $209 million was value added in the form of income, interest, and tax payments.

A similar boating industry study was done in Florida, comparing the retail sales of boat and trailer manufacturing, boat equipment manufacturing, marinas and boatyards, and marine services (Milon and Adams 1987). The authors used multipliers derived from a primary input-output study of the marine trades sectors conducted in Florida in 1980. The direct employment in these sectors in 1985 was estimated at 23,225, and total output was approximately $1.36 billion. Original survey multipliers developed in 1983 by Milon were used to generate a total estimate of industry economic activity of $2.7 billion.

Lee (2001) used tobit regression analysis to investigate determinants of boater expenditures in Michigan. Tobit models were chosen because a large proportion of boaters had no expenditures in any single category associated with their boating trip. Among Lee's findings were that boaters setting out from marinas spent more than those from launch ramps and private docks. In addition, Great Lakes boaters spent more than boaters on inland waters. Distance traveled also was positively associated with expenditures.

Regional Planning Studies

Two regional studies on Long Island, of the South Shore Estuary Reserve and Peconic Bay Estuary system, were examined as part of the literature review for this study but were found to provide no data on economic impacts of boating.

METHODS

Sample Selection

A list of all registered boats in New York State in 2003 was provided by the NYS Division of Motor Vehicles, with assistance from NYS Office of Parks, Recreation and Historic Preservation. Since the study focused on recreational boating we selected only registered boats listed for "pleasure" use and did not include commercial, rental, or other use categories. From the list of 508,300 registered pleasure boats, a sample of 6,000 boat owners was chosen based on the *county of principal boat use* listed on the registration. New York State counties were divided into eight strata covering the regions of the state with the highest concentrations of boating activity. A ninth residual stratum contained all remaining counties. Six hundred names were randomly selected from each stratum except Suffolk County, where 1,200 names were selected because of its large number of boaters and marine water bodies that border the county. By drawing a stratified sample, we hoped to have sufficient responses from boaters that expenditures could be estimated by water body for the major water bodies of the state.

Mail Questionnaire Design, Implementation, and Analysis

A mail questionnaire was developed based on previous studies, primarily Lipton and Miller (1995) and Hushak (1999). The questionnaire asked about *trip and non-trip related boating expenditures* in 2003. We also asked about boating activity, interests, and topics of concern identified by the study advisory group. See Appendix A for the exact wording of the questionnaire.

The questionnaire was mailed out in January, 2004. Up to three follow-up mailings were sent to nonrespondents over the course of the following month to encourage their response. A telephone follow-up survey was conducted with 100 nonrespondents to determine if their activity level or expenditures differed from respondents.

Data were entered on the computer and analyzed using SPSS (a statistical package for the social sciences). Data were weighted to account for the original stratification of the sample such that results reported herein are representative of boaters statewide. Ninety-five percent confidence intervals were calculated for selected expenditure estimates using the STATA computer package.

Descriptive survey results are reported for Upstate and Downstate regions. *Downstate respondents* were defined as those listing New York City, Rockland and Westchester counties, or Long Island as their place of principal boating use. *Upstate New York respondents* were defined as having a county of principal use north of Rockland and Westchester counties.

Economic Impact Analysis

Boating expenditures serve as the starting point for economic impact analysis. The survey of boaters obtained detailed information on boater spending patterns. The resulting data serve as the basis for estimating statewide and regional expenditure totals. The estimates of expenditure totals can in turn be used to estimate the broader impacts on state and regional economies.

The purpose of economic impact analysis is to show the extent to which boaters' expenditures contribute to the economy of New York State and to regions within the state. The overall contribution of boating to the economy extends beyond boaters' purchases because the businesses that sell goods and services to boaters are in turn stimulated to use additional labor and purchase additional materials to produce their own products and services. Thus, each new boater purchase starts a chain reaction of spending and respending that has a cumulative impact on the level of sales, jobs, and other economic components in the state or region.

The extent of the stimulus provided by new economic activity is limited, however. A portion of the expenditures made on boating, or most other economic activities, immediately leaves the state or region and thus make no meaningful additional contribution to its economy. For boating, as is typical of retail purchases, the part of the expenditure that is respent outside of New York State is substantial. The portion of the cost of a gallon of fuel that a local marina or service station pays to an out-of-state fuel supplier, or the portion of the cost of a restaurant meal that goes to pay out-of-state growers and food processors adds nothing to New York's economy. Such expenditures exemplify the most important kind of *leakage* from an economy and must be estimated when doing economic impact analysis. A similar form of leakage must be accounted for at each stage of the spending and respending cycle.

We should note parenthetically that some of the boating-related expenditures that leave New York result in additional economic impacts within the Northeast, and a larger proportion of such expenditures impact the national economy. However, similar to the other boating studies that have been done at the state level, this study will examine the economic impacts at the statewide and sub-state levels.

The primary tool of economic impact analysis, an input-output model, can be used to estimate and sum up the statewide or regional changes in economic activity that are stimulated, after accounting for leakage, by new expenditures on boating. The changes are typically separated into *direct effects, indirect effects, induced effects*, and *total effects*. The *direct effect* represents the initial boating-related expenditures that are received by New York State businesses (for statewide impact analysis), or by regional businesses if a region of New York is being analyzed. The *indirect effect* represents the impact of the additional business spending that is created as these businesses sell more output and in turn must purchase additional inputs. This indirect effect would be illustrated in the first round of respending by the marinas, restaurants, lodging places, and other business sectors that sell *directly* to boaters and then in turn spend some fraction of their new revenues on purchases of additional supplies of goods and services within the state or region. The *induced effect* represents the additional economic activity associated with the increased wages and income that accrue to households and business owners,

because a large portion of the increased income is typically spent on household consumer goods purchased from businesses within the state or region. *Total effects* are the sum of direct, indirect, and induced effects.

To make these estimates, we used a computerized Input-Output economic model called *IMpact Analysis for PLANning (IMPLAN)*, a product first developed in conjunction with the US Forest Service and now maintained by MIG, Inc (2000). IMPLAN consolidates and organizes a wide array of economic data within a modeling framework that enables economic impact analyses for any area of the United States. More particularly, the model is based on numerical summaries of the purchasing (input) and selling (output) relationships between all business sectors of the economy. These interindustry relationships reflect and embody the production technologies used by each sector to produce goods and services. IMPLAN also incorporates Social Accounting Matrix (SAM) relationships that reflect the flows of funds between all economic sectors, including not only industry but also "institutions" such as households and government.

The most recent version of the IMPLAN software and databases, used in this analysis, uses data from 2001. IMPLAN organizes the economy into 509 sectors formed from the North American Industry Classification System (NAICS), which has replaced the former Standard Industrial Classification (SIC) system. IMPLAN enables input-output analysis to be conducted at the statewide level. It also allows the researcher to examine the impacts on a single county such as Suffolk, which we used in this study, and to combine groups of adjacent counties to form regions and thereby perform regional input-output analysis.

The parameters for reporting impact estimates from IMPLAN used in this study are *output (sales), employment, labor income*, and *total value added*. Output impacts are measured as the increased dollar value of additional purchases, as represented by direct, indirect, and induced expenditures. Employment impacts are measured by the effects on jobs. These are not wholly 40-hour per week jobs, but include part-time (less than 40 hours) jobs as well. The impact estimates, in number of jobs, reflect the mix of full and part time labor that is typical for each sector. Labor income impacts measure the additional income earned by those business proprietors and employees that benefit from boaters' expenditures. Finally, total value added refers to the enhanced value a company adds to a product or service. It is measured by the difference between the amount a company spends to purchase it and its value at the time it is sold to customers. Value added includes the labor income impacts just discussed but also includes the portions of increased boating expenditures that are returns to owners of property or are used for payment of various business taxes.

Analyses with IMPLAN

The first stage of an IMPLAN analysis is to aggregate the basic economic data purchased from IMPLAN into the state(s) or region(s) that will be used in the analysis. The second stage is to use the aggregated data to create the state and regional IMPLAN models that will be used in the impact analyses. The third stage is to prepare for entry into the IMPLAN model estimates of boaters' expenditures that constitute the direct impacts to the economy. The final stage is to run

these direct effects through the IMPLAN models to estimate the indirect, induced and total effects.

Data Aggregation into Regions

After using statewide data from all New York counties to estimate statewide economic impacts, two types of regions were formed for regional impact estimates. The first aggregation of counties forms the10 economic development regions of New York State (Figure 1). We made one change to the regional definitions by including Rockland and Westchester counties in the New York City region rather than the Mid-Hudson region for better consistency with Census-defined metropolitan areas. The second regional grouping of counties focuses on large water bodies of interest. Regions were defined around each water body to include all neighboring counties and economic development regions that in our judgment created an economy related to the water body. Each region contained at least one urban area. Appendix Table B-1 outlines the counties included in each region around the major water bodies. IMPLAN does not permit the incorporation of sub-county level data into a model; a given county must be either wholly included or excluded from a model.

Model Building

Within the second stage of analysis, namely model building, industry-specific multipliers are created to show how the effects of increased demand for each industry's products "multiply," or have impacts throughout the rest of the economy. While this stage is fully automated within IMPLAN, the analyst has a choice of types of multipliers to use as each model is created. In this analysis, we elected to employ two kinds of multipliers, *Type I* and *Type SAM*. The Type I multiplier enables the analyst to calculate the "indirect" effects, or those reflecting business/industry purchases from other businesses, associated with the change in "direct" effects. The Type SAM multiplier enables the analyst to generate "induced" effects by using existing data on household buying patterns to estimate the impacts of increases in household income on increased household purchases of goods and services.

Translation of Boater Expenditures into Direct Effects

The third stage, preparation of boaters' spending data to arrive at direct effects and subsequent IMPLAN analysis, first requires matching the trip and non-trip related expenditure categories with one of IMPLAN's 509 sectors. Some expenditure sectors such as meals and lodging matched up quite well with specific IMPLAN sectors, while a number of marina and boat-related purchases had to be placed in sectors that included a wide variety of businesses such as boat dealers, engine repair shops, etc. We used our knowledge of where particular items are most frequently purchased by boaters to make the best sector choice possible. A listing of expenditure categories and IMPLAN sectors is shown in Appendix Table B-2.

Once the out-of-pocket estimates of statewide or regional boating expenditures are allocated to the correct sector, IMPLAN is used to make several additional adjustments to ensure accurate estimation of impacts. First, IMPLAN employs industry-specific price deflators to ensure that the dollar values used by IMPLAN are compatible with the dollar values in the year

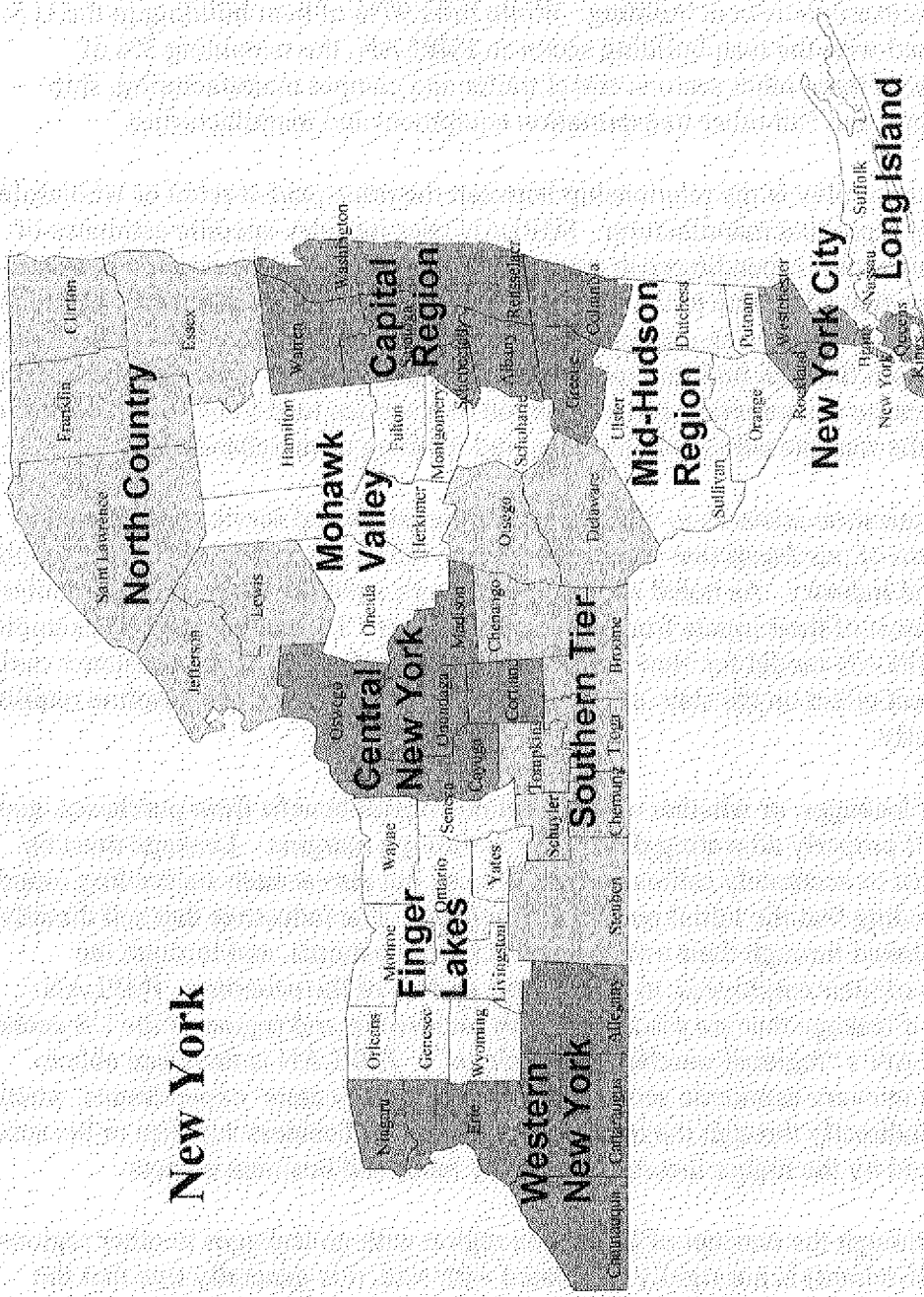

Figure 1. Map depicting New York State regions used in analysis.

the boating expenditures are estimated (i.e. 2003). Thus, in the analyses completed for this report, all results are reported in 2003 dollar values.

Second, IMPLAN allocates any given boater outlay to the industry sector that actually supplies the good or service. Several factors are at play here. Some products that are typically

associated with one primary industry may actually be produced by several of IMPLAN's industry sectors. An example is boat building. While fully 97% of boat building in the U.S. economy is associated with the boat building sector in IMPLAN, the remaining 3% of production comes from three other sectors: travel trailer and camper manufacturing, ship building and repairing, and "all other transportation equipment and manufacturing."

Another factor at play is the relationship between the price paid at retail or wholesale and the price received by a product manufacturer. IMPLAN uses industry-specific estimates of "margins" to distribute total expenditures in appropriate proportions to the retail, wholesale, and transportation sectors that add value to the product after it leaves the manufacturer. Using the national boat-building industry as an example again, IMPLAN assigns only 73% of household purchases of boats from the boat building industry to the manufacturer. Note that most services have no margins because consumption and production of a service tend to be simultaneous, or at least don't involve the transportation, wholesaling, and retailing of merchandise.

Finally, the question arises as to whether or not the goods and services purchased by boaters, and the chain of purchases that results from these initial purchases, are in fact supplied by local business and industry. As noted above, even though a retailer may be local, retailers typically purchase most of their inputs from nonlocal suppliers. To use the gasoline example cited earlier, the IMPLAN model for New York State retains only 21% of the consumer outlay on gasoline as a direct effect on the state's economy, indicating that only the gasoline retailing sector benefits directly.

The issue of leakages, or whether or not local businesses benefit from purchases, goes beyond the matter of properly allocating direct effects through margins. Leakage must be accounted for not just to accurately estimate direct effects, but also at each succeeding round of spending and respending that the initial purchase stimulates. The industries that sell directly to boaters are in turn linked through their own input purchasing patterns, and through the purchasing patterns of their employees, to many other sectors of the economy. IMPLAN includes estimates of leakage that are associated with each sector and region of the US economy (embodied in IMPLAN's "regional purchase coefficients"). IMPLAN is therefore able to account for leakage in every economic sector that benefits from boaters' expenditures, whether the sector benefits indirectly through the increased purchases of business supplies or because of the purchases induced by the higher incomes earned by labor and business owners.

Note that although the concept of leakage (a region with no leakages to other regions would be totally self-reliant) is not rigidly correlated with size, it is generally true that the smaller the region, the higher the leakage. This is because the smaller the region, the more likely that businesses will purchase from nonlocal suppliers and that local households will spend increased earnings on nonlocally made products and nonlocal businesses.

A Note on Final Demand and Impact Analysis

The basic premise of input-output models used for analysis of economic impacts is that all economic activity is driven by the "final demand" for goods and services. The implication is that no production would occur if it were not for the stimulus of some form of final demand.

Final demand is then defined as the sales of goods and services to the final or end users of a product, i.e., those purchasers who consume the product for its own sake rather than because they need it as an input to the production of some other locally marketed product. It is this latter element of the definition, namely that of further use in the production of a locally marketed product, that makes the critical distinction between final demand and intermediate demand. Under certain assumptions, local households and government can be sources of final demand. In addition, from the perspective of a state or regional economy, any source of demand that is external or "exogenous" to the economy in question (i.e. other U.S. or foreign export demand) is also considered final.

The conceptually clearest component of boater final demand (e.g., for marina berths or boating equipment) would be export demand–rental of marina berths or sales of boating equipment to tourists or other nonlocal boaters who would otherwise spend their money in another state or region. However, the overwhelming majority of New York boaters are residents of New York so this distinction is at best inadequate.

Can local boater spending (spending by a subset of local households) legitimately be considered as a source of final demand? Within an input-output modeling framework, the answer is yes, but with this caveat: when households are considered to be sources of exogenous final demand, they cannot simultaneously be modeled as an endogenous part of the local economy that is responding to changes in final demand. That is, when we treat household spending as part of final demand, we are assuming that households have no linkage or automatic feedback effects with the rest of the economy. Income earned by households is treated like income earned by overseas businesses - it is assumed none of the earnings are respent locally. This analytic assumption is consistent with the Type I multipliers that are used to generate indirect effects. Recall that indirect effects reflect only business purchasing, while household income and spending levels are not included.

If, in contrast, we wish to include the linkage and feedback effects of household income and spending within the model, we employ Type SAM multipliers and generate induced effects. In this case, household spending is estimated by the model itself. The final demand stimulus generating these effects must therefore come from an exogenous sector like exports or the federal government, not households themselves. Households are in this case treated formally like a business or industry sector that purchases inputs (household consumption goods) from a variety of industries and sells outputs (labor) to various industry sectors as well. Thus households, like any other business sector, respond to final demand changes with predetermined propensities to sell outputs and buy inputs.

The practical implications of this discussion frame the presentation of our results, given that local households are the source of final demand in this study. The direct and indirect results reported are fully compatible with the assumption that these impacts are generated by local household demand. To maintain comparability with other studies and use the IMPLAN Type SAM multiplier to estimate induced effects, we will interpret induced effects as the impact that would have resulted from an increase in true final demand (e.g. exports, government) exactly equal to the increase in local household spending. This assumption involves no additional data

manipulations, but conceptually avoids the problem of treating the induced effects as though they were derived from actual local household spending.

RESULTS

Response Rate and Nonresponse Bias

Of the 6,000 questionnaires mailed, 322 were undeliverable and 2,283 completed questionnaires were returned. This resulted in an adjusted response rate of 40%. The response rate was higher for those indicating a county in Upstate New York as their county of principal boating use (Table 1). Response rates did not differ based on the length of the boat or the propulsion method used.

Table 1. Survey response rate.

Area	Initial Sample	Undeliverables	Returned Useable	Adjusted Response Rate
Statewide	6,000	322	2,283*	40.2%
Downstate county of principal use	1,800	101	504	29.7%
Upstate county of principal use	4,200	221	1,773	44.6%

*Includes six people who removed their identification number so we could not determine if they came from the downstate or upstate sample.

Analysis of the telephone nonrespondent follow-up survey showed that nonrespondents had fewer boats registered in their name compared to respondents. Our estimates of the number of boat owners are based on the number of boats registered in New York State; thus, we had to take this difference into account. Nonrespondents whose county of principal use was downstate were less likely to have boated in 2003 than respondents. Adjustments to estimates of boat owners who boated in 2003 were made based on these nonresponse comparisons.

Nonrespondents, regardless of county of principal use, boated fewer days in 2003 but did not differ in their overall expenditures related to boating. Therefore, days boated were adjusted for nonresponse bias, but expenditure estimates were not adjusted. Respondents were more likely to be male than nonrespondents, however this difference is unlikely to affect estimates of days boated or expenditures. Thus, no adjustments were made based on gender. A complete listing of the respondent – nonrespondent comparisons can be found in Appendix Table B-3.

Boaters and Their Boats

Over half a million (508,300) boats were registered for pleasure use in New York State in 2003 at the time the sample was drawn. Boaters reported an average ownership of 1.37 boats. Most (81%) owned just one boat, but respondents reported owning up to 12 boats for pleasure purposes. We estimate from these data that there were 371,022 recreational boat owners who registered a boat in New York State in 2003. Almost all boat owners live in the region (upstate/downstate) where they principally boat; 98% of downstate boaters live in the downstate region, 96% of upstate boaters live upstate. Three percent of upstate boaters and one percent of downstate boaters live outside New York State.

Most boat owners owned at least one powerboat (Table 2). Almost 40% of boat owners owned a personal watercraft and just over 10% owned a sailboat. Sailboats were more popular with boaters whose county of principal use was downstate. The boat used most often by boaters was most likely a powerboat in the 16 to 25 foot range. Boats 26 feet and longer were three times as likely to have their principal use in a downstate location (Table 3).

Table 2. Types of boats owned by NYS registered boaters.

	Standard powerboat	Personal watercraft	Sailboat
Number of boaters owning at least one boat	319,079	142,101	50,830
	Percent		
Boaters owning at least one boat			
Overall	86.0	38.3	13.7
Upstate Principal Use	85.5	40.1	11.2
Downstate Principal Use	87.3	33.7	19.9
Boat used most often			
Overall	64.3	27.3	8.4
Upstate Principal Use	64.4	28.9	6.6*
Downstate Principal Use	64.1	23.0	13.0

*Statistically significant difference between upstate and downstate principal use using chi-square test at P = 0.05.

Table 3. Length of boat used most often, overall and by area of principal use.

	Length of Boat Used Most Often		
	≤16'	16-25'	∃26'
	Percent		
Overall	21.7	63.8	14.6
Upstate Principal Use	26.1	64.7	9.2*
Downstate Principal Use	10.0	61.3	28.7

*Statistically significant difference between upstate and downstate principal use using chi-square test at P = 0.05.

Boat owners had owned a boat registered in NYS for an average of 16.5 years. They were mostly likely to be male (91%) and have no children living at home (68%). The average age of boat owners was 55 years old. The median household income for those with a downstate county of principal use was predictably higher than those with an upstate county of principal use ($90,000 versus $65,000).

Boating Use

We estimated that 84% or 312,501 boat owners boated in 2003. Most respondents (82%) had boated in each of the three years from 2001 through 2003. Thirteen percent indicated they had boated sporadically over the past three years; 5% indicated they had not gone boating in the past three years.

Approximately 1% of respondents indicated they used any of their boats as part of a charter business in 2003. We asked about charter boats primarily as a way of alerting respondents that we wanted them to list only personal use and expenditures associated with their boats in the remainder of the questionnaire and did not want them to list charter-related expenditures. However, we used this question to estimate the number of charter boat operators in NYS in 2003 at approximately 3,750.

How boaters access the water varies across the state. Those whose county of principal use is upstate were more likely than downstate boaters to use a boat launch ramp (Table 4). Boaters with a downstate county of principal use were more likely to have a slip or mooring at a marina or yacht club. This is not surprising because downstate has a higher percentage of longer boats that need slips or moorings. Thus, it also follows that downstate users were more likely to keep their boat in the water during the boating season (Table 5). Respondents who kept their boat in the water indicated that on average, they spent about 22% of their time onboard with the boat docked or moored.

Two-thirds of boaters participated in fishing while boating and a majority enjoyed cruising or sailing (Table 6). Fishing was more popular in smaller boats, whereas

Table 4. 2003 boaters' primary access method for boating, overall and by area of principal use and boat length categories.

	Primary Access Method		
	Boat Launch Ramp	Private Dock or Mooring	Marina or Yacht Club
Estimated Number of 2003 Boaters	132,500	93,750	86,250
	Percent		
Overall	42.4	30.0	27.6
Area of Principal Use			
Upstate	49.2	28.9	21.9*
Downstate	20.5	33.4	46.1
Length of Boat Used Most Often			
<16'	68.7	27.7	3.6*
16–25'	42.6	31.5	25.9
26'+	2.9	23.1	73.9

*Statistically significant difference between groups using chi-square test at P = 0.05.

Table 5. For those who boated in 2003, the percent who kept their boat in the water during the season, overall and by area of principal use.

Kept boat in water during season	Overall	Upstate Principal Use	Downstate Principal Use
		Percent	
No	42.6	49.1	22.4*
Yes	57.4	50.9	77.6

*Statistically significant difference between upstate and downstate principal use using chi-square test at P = 0.05.

Table 6. Percent of boaters participating in various activities while boating, overall and by area of principal use and boat length categories.

	Activity Participation			
	Fishing	Cruising/ Sailing	Water skiing/ Tubing	Scuba Diving
	Percent Participating			
Overall	66.3	58.4	30.5	3.1
Area of Principal Use				
Upstate	65.6	55.7*	35.3*	2.5*
Downstate	68.0	65.3	18.0	4.6
Length of Boat Used Most Often				
<16'	78.3*	33.3*	15.3*	1.5*
16–25'	69.3	60.7	39.2	3.0
26'+	41.4	89.4	12.6	5.8

*Statistically significant difference between groups in the percent participating using chi-square test at P = 0.05.

cruising/sailing was more popular in larger boats. Approximately one-third of boaters used their boat for water skiing or tubing. This was more popular among those with an upstate county of principal use. Few boaters used their boats for scuba diving. Seventeen percent of respondents listed other activities they engaged in while boating; those most commonly listed were swimming and socializing.

Respondents to the mail survey indicated they boated twice as many days as nonrespondents. Adjusting for this difference, we estimate that boaters spent 14 million days on New York waters in 2003. However, we found no difference in trip expenditures between respondents and nonrespondents, leading us to question some respondents' interpretation of the days boated question. From discussions on the phone with nonrespondents, we believe that some respondents misunderstood the question and reported the days they spent at a specific location (e.g., total days on vacation) and not the days they spent in boating-related activities (likely a smaller number). Thus, our estimate of days boated in 2003 may be biased upward and we will not use it in further analysis.

Before the survey was implemented, concern was expressed among advisory committee members that 2003 might not be a representative year in terms of boating use and expenditures. Some felt bad weather at certain times of the year might have decreased boating participation and thus trip expenditures. We asked boaters how their participation in 2003 compared with the previous year and found little overall difference between the two years. Approximately half of the respondents (48%) indicated they boated about the same number of days in 2003 as in 2002. One-quarter said they boated fewer days in 2003, but this was countered by 22% who said they

boated more days. When asked how many days more or less they boated, those saying fewer days estimated an average of 17 fewer days compared with those saying more days estimating an average of 20 more days. Almost half of the respondents who boated fewer days indicated weather was the main reason for their decreased boating. Those indicating a downstate county of principal use were more likely to indicate that they both boated less (32% versus 23%) or more (24% versus 21%) than upstate principal users, although the trend was toward less boating in 2003. Whereas total days boated in 2003 and 2002 appear to be very similar there is some indication that downstate boating in 2003 might have been suppressed due to bad weather. This could result in an underestimate of trip expenditures for this area compared with an average year.

Boater Expenditures

Trip-related Expenditures

Boaters were asked to estimate their expenditures for each location where they spent money while boating in 2003. We analyzed these expenditures by water body and region. Overall, boaters spent an average of $1,380 per boater on at-site and en-route trip expenditures in 2003. These expenditures were made at a variety of establishments (Table 7), most notably at marinas and yacht clubs, gas stations, restaurants and bars, and grocery and convenience type stores. The total statewide estimate for trip-related spending was $431 million, with a 95% confidence interval of +/- $36 million. Three-quarters of the total was spent outside marinas or yacht clubs (Table 7).

To get a sense of how trip expenditures differed by boat size, we examined the expenditures of respondents who owned only one boat. Respondents who owned a boat less than 16' long spent $532 in 2003 on trip-related expenditures. Respondents with larger boats spent more per year; those owning a boat in the 16' to 25' range spent $1,204 on average ($1,514 for downstate principal users and $1,099 for upstate principal users) and those owning a boat 26' or longer spent $2,832 ($2,975 for downstate principal users and $1,104 for upstate principal users) on trip-related expenditures in 2003.

Tables 8 through 10 itemize trip-related expenditures by the economic region where they occurred (see Figure 1 for a map of regions). Table 8 splits out Suffolk County because of its large number of boaters and contribution to overall expenditures. Boaters spent an estimated $94 million on trips that took place in Suffolk County in 2003. The North Country accounted for the second highest total of trip-related expenditures, $81 million (Table 9). The Southern Tier region had the lowest trip-related expenditures, $8.6 million (Table 10).

Tables 11 through 15 itemize trip-related expenditures for the most heavily used water bodies in New York State. The tables also contain information, where sample sizes were sufficient, on non-trip expenditures made at marinas and yacht clubs associated with the specific water body. These expenditures included items such as the annual slip or mooring rental fee, haul-out, winterization, etc.

Table 7. Mean and total statewide trip-related expenditures, and 95% confidence limits at the boating location and en-route in 2003.

Expenditure Category	Mean expenditure per boater	Total statewide expenditures	Confidence limits, ∀
At-site expenditures			
Marinas and yacht clubs	$359	$112,187,859	$23,887,576
Gas stations	214	66,875,214	6,737,522
Restaurants and bars	184	57,500,184	5,512,518
Grocery and convenience type stores	148	46,250,148	5,512,518
Bait and tackle shops	62	19,375,062	3,062,510
Boat launching and mooring fees	58	18,125,058	4,287,514
Lodging	58	18,125,058	4,287,514
Entertainment and all other expenses	56	17,500,056	4,900,016
All other retail purchases	55	17,187,555	3,062,510
Tournament fees	12	3,750,012	1,225,004
TOTAL AT-SITE EXPENDITURES	1,206	376,876,206	33,687,608
En-route expenditures	174	54,375,174	6,737,522
TOTAL EXPENDITURES	$1,380	$431,251,380	$36,137,616

Table 8. Trip-related expenditures by category and per boater for downstate New York regions in 2003.

Expenditure Category	New York City area	Long Island	Suffolk Co. only
At-site expenditures			
Marinas and yacht clubs	$16,714,906	$41,213,188	$33,417,610
Gas stations	6,047,504	21,520,880	15,064,446
Restaurants and bars	3,271,601	16,527,473	13,314,000
Grocery and convenience type stores	1,526,747	7,595,605	5,887,865
Bait and tackle shops	1,725,026	8,017,583	5,251,339
Boat launching and mooring fees	1,447,435	8,439,561	6,524,390
Lodging	575,009	1,898,901	1,909,578
Entertainment and all other expenses	2,756,076	2,602,198	2,386,972
All other retail purchases	396,558	4,430,769	3,766,112
Tournament fees	237,935	1,406,593	1,220,008
TOTAL AT-SITE EXPENDITURES	34,698,796	113,652,750	88,742,319
En-route expenditures	5,650,947	7,806,594	5,622,645
TOTAL EXPENDITURES	$40,349,743	$121,459,343	$94,364,964
NUMBER OF BOATERS	19,828	70,330	53,044
MEAN EXPENDITURE PER BOATER	$2,035	$1,727	$1,779

Table 9. Trip-related expenditures by category and per boater for eastern New York regions in 2003.

Expenditure Category	Mid-Hudson Region	Capital Region	Mohawk Valley	North Country
At-site expenditures				
Marinas and yacht clubs	$2,688,966	$6,898,070	$2,624,737	$17,687,489
Gas stations	3,038,750	4,670,568	3,131,789	9,264,875
Restaurants and bars	3,060,612	6,682,505	4,086,239	8,903,906
Grocery and convenience type stores	1,727,059	4,742,423	4,175,718	12,874,567
Bait and tackle shops	699,568	1,041,896	507,052	2,647,107
Boat launching and mooring fees	633,984	1,688,590	417,572	1,143,069
Lodging	43,723	1,868,227	2,982,656	6,858,414
Entertainment and all other expenses	306,061	2,910,123	686,011	4,692,599
All other retail purchases	437,230	2,407,139	864,970	4,090,984
Tournament fees	196,754	359,274	59,653	481,292
TOTAL AT-SITE EXPENDITURES	12,832,708	33,268,816	19,536,397	68,644,302
En-route expenditures	2,033,121	4,850,205	5,458,260	12,814,405
TOTAL EXPENDITURES	$14,865,828	$38,119,021	$24,994,657	$81,458,707
NUMBER OF BOATERS	21,862	35,927	29,827	60,162
MEAN EXPENDITURE PER BOATER	$680	$1,061	$838	$1,354

Table 10. Trip-related expenditures by category and per boater for western New York region in 2003.

Expenditure Category	Western New York	Finger Lakes	Central New York	Southern Tier
At-site expenditures				
Marinas and yacht clubs	$7,785,071	$8,251,789	$4,602,780	$1,100,871
Gas stations	6,283,914	5,267,099	3,978,117	1,317,114
Restaurants and bars	4,608,203	5,354,884	2,498,652	1,474,381
Grocery and convenience type stores	2,897,582	4,740,389	2,761,668	1,061,554
Bait and tackle shops	1,501,157	1,711,807	986,310	452,144
Boat launching and mooring fees	1,536,068	965,635	1,315,080	471,802
Lodging	1,920,085	833,957	427,401	235,901
Entertainment and all other expenses	1,396,425	1,228,990	427,401	432,485
All other retail purchases	1,536,068	1,360,667	1,019,187	412,827
Tournament fees	209,464	131,677	460,278	98,292
TOTAL AT-SITE EXPENDITURES	29,674,037	29,846,896	18,476,876	7,057,371
En-route expenditures	4,363,829	5,662,132	3,747,978	1,572,673
TOTAL EXPENDITURES	$34,037,867	$35,509,028	$22,224,854	$8,630,044
NUMBER OF BOATERS	34,911	43,892	32,877	19,658
MEAN EXPENDITURE PER BOATER	$975	$809	$676	$439

Total expenditures associated with Great Lakes water bodies (Lake Ontario, Lake Erie, St. Lawrence River, Niagara River) exceeded $126 million in 2003 (Table 11). The Finger Lakes area accounted for $38 million in total expenditures (Table 12). The entire Erie Canal System generated $16 million in boater expenditures, with the central section accounting for almost two-thirds of the total. Lake George accounted for an estimated $25 million in expenditures by boaters, nearly three times as much as Lake Champlain (Table 13). Long Island Sound was associated with the largest boater expenditures of any single water body, $95 million, about two-thirds of which occurred at marinas and yacht clubs (Table 14). The South Shore of Long Island generated a total of $105 million, $51 million of which was associated with Great South Bay (Table 15).

Table 11. Trip (and non-trip marina) expenditures associated with New York State Great Lakes waterbodies in 2003.

Expenditure Category	Eastern Lake Ontario[a]	Western Lake Ontario[b]	Lake Erie	St. Lawrence River	Great Lakes Total[c]
At-site trip expenditures					
Marinas and yacht clubs	$10,513,862	$5,023,572	$3,219,707	$6,286,902	$27,365,850
Gas stations	1,959,402	1,917,712	2,146,472	4,411,398	12,488,078
Restaurants and bars	1,943,472	2,230,383	1,246,847	4,728,384	11,717,209
Grocery and convenience type stores	1,736,380	1,229,837	804,927	6,551,058	11,254,688
Bait and tackle shops	1,067,316	792,099	615,532	950,960	3,854,345
Boat launching and mooring fees	430,113	270,981	662,881	475,480	2,158,433
Lodging	1,401,848	208,447	205,177	1,479,271	3,468,911
Entertainment and all other expenses	2,246,143	416,894	189,395	1,373,609	4,548,127
All other retail purchases	1,083,246	375,205	426,138	1,875,504	4,162,693
Tournament fees	127,441	145,913	110,480	264,156	616,695
At-site non-trip expenditures					
Marinas and yacht clubs	8,283,954	4,080,156	6,226,560	7,006,950	32,413,095
TOTAL AT-SITE EXPENDITURES	30,793,177	16,691,199	15,854,116	35,403,672	114,048,125
En-route expenditures	3,186,019	2,105,314	1,341,545	5,309,527	12,873,513
TOTAL EXPENDITURES	$33,979,196	$18,796,513	$17,195,661	$40,713,198	$126,921,638
NUMBER OF BOATERS	15,930	20,845	15,783	26,416	77,087
MEAN EXPENDITURE PER BOATER	$2,133	$902	$1,090	$1,541	$1,646

[a]Eastern Lake Ontario includes Cayuga, Oswego, and Jefferson counties.
[b]Western Lake Ontario includes Wayne, Monroe, Orleans, and Niagara counties.
[c]Includes Lake Ontario, Lake Erie, the St. Lawrence River and the Niagara River.

Table 12. Trip (and non-trip marina) expenditures associated with Central New York waterbodies in 2003.

Expenditure Category	Finger Lakes[a]	Erie Canal System[b]	Erie Canal Central Region[c]
At-site trip expenditures			
Marinas and yacht clubs	$4,899,836	$2,514,960	$2,023,531
Gas stations	5,680,341	2,168,069	1,290,873
Restaurants and bars	4,639,668	1,243,026	802,435
Grocery and convenience type stores	5,810,425	1,589,917	872,212
Bait and tackle shops	1,084,035	693,782	523,327
Boat launching and mooring fees	1,387,564	607,059	540,771
Lodging	650,421	173,446	139,554
Entertainment and all other expenses	1,040,673	404,706	313,996
All other retail purchases	1,561,010	433,614	244,219
Tournament fees	130,084	115,630	87,221
At-site non-trip expenditures			
Marinas and yacht clubs	**	**	**
TOTAL AT-SITE EXPENDITURES	33,227,659	14,367,973	9,514,477
En-route expenditures	4,856,475	1,676,640	941,989
TOTAL EXPENDITURES	$38,084,133	$16,044,613	$10,456,466
NUMBER OF BOATERS	43,361	28,908	17,444
MEAN EXPENDITURE PER BOATER	$878	$555	$599

[a]Finger Lakes includes all lakes between Otisco and Conesus.
[b]The Erie Canal System starts in Erie County and ends in Albany County and includes the Seneca, Oswego, and Mohawk Rivers and Oneida, Onondaga, and Cross Lakes.
[c]The Central Region includes the Canal, the Seneca and Oswego Rivers and Oneida, Onondaga and Cross Lakes.

**Sample size too small to estimate.

Table 13. Trip (and non-trip marina) expenditures associated with large New York State inland lakes in 2003.

Expenditure Category	Lake George	Lake Champlain	Chautauqua Lake
At-site trip expenditures			
Marinas and yacht clubs	$3,431,530	$948,966	$1,853,076
Gas stations	1,668,666	957,439	1,151,319
Restaurants and bars	3,148,934	677,833	1,600,882
Grocery and convenience type stores	2,610,654	720,198	1,129,390
Bait and tackle shops	444,080	211,823	350,878
Boat launching and mooring fees	834,333	423,646	317,983
Lodging	834,333	220,296	1,436,408
Entertainment and all other expenses	1,534,096	186,404	811,406
All other retail purchases	1,224,585	211,823	614,037
Tournament fees	80,742	135,567	21,930
At-site non-trip expenditures			
Marinas and yacht clubs	**	**	**
TOTAL AT-SITE EXPENDITURES	22,624,840	7,007,996	11,247,255
En-route expenditures	2,032,004	1,372,612	1,425,443
TOTAL EXPENDITURES	$24,656,844	$8,380,608	$12,672,699
NUMBER OF BOATERS	13,457	8,473	10,965
MEAN EXPENDITURE PER BOATER	$1,832	$989	$1,156

**Sample size too small to estimate.

Table 14. Trip (and non-trip marina) expenditures associated with the Lower Hudson River and Long Island Sound in 2003.

Expenditure Category	Lower Hudson River[a]	Long Island Sound
At-site trip expenditures		
Marinas and yacht clubs	$7,376,751	$19,961,521
Gas stations	6,040,025	7,733,943
Restaurants and bars	4,926,086	5,685,824
Grocery and convenience type stores	2,401,157	2,537,222
Bait and tackle shops	519,838	2,904,050
Boat launching and mooring fees	1,113,939	4,126,807
Lodging	148,525	1,467,309
Entertainment and all other expenses	1,089,185	1,161,620
All other retail purchases	594,101	1,772,999
Tournament fees	346,559	213,983
At-site non-trip expenditures		
Marinas and yacht clubs	21,713,265	43,928,160
TOTAL AT-SITE EXPENDITURES	46,269,431	91,493,437
En-route expenditures	2,203,124	3,637,704
TOTAL EXPENDITURES	$48,472,555	$95,131,141
NUMBER OF BOATERS	24,754	30,569
MEAN EXPENDITURE PER BOATER	$1,958	$3,112

[a]Lower Hudson River includes Rensselaer and Albany counties south to, but not including New York Harbor.

**Sample size too small to estimate.

Table 15. Trip (and non-trip marina) expenditures associated with Long Island South Shore, Great South Bay, and The Peconics in 2003.

Expenditure Category	Long Island South Shore[a]	Great South Bay[b]	The Peconics
At-site trip expenditures			
Marinas and yacht clubs	$19,228,697	$8,036,310	$15,057,863
Gas stations	15,949,347	7,736,103	2,992,268
Restaurants and bars	9,245,278	4,549,290	3,750,677
Grocery and convenience type stores	4,492,804	2,378,563	1,544,396
Bait and tackle shops	6,024,574	2,401,656	523,992
Boat launching and mooring fees	3,300,781	2,586,398	2,413,119
Lodging	623,507	92,371	275,785
Entertainment and all other expenses	1,785,459	946,807	386,099
All other retail purchases	1,899,594	877,528	1,296,190
Tournament fees	1,305,992	461,857	68,946
At-site non-trip expenditures			
Marinas and yacht clubs	32,799,323	17,982,435	**
TOTAL AT-SITE EXPENDITURES	96,655,355	48,049,317	40,945,046
En-route expenditures	8,160,081	2,655,677	717,041
TOTAL EXPENDITURES	$104,815,435	$50,704,995	$41,662,087
NUMBER OF BOATERS	43,195	23,093	13,789
MEAN EXPENDITURE PER BOATER	$2,427	$2,196	$3,021

[a] Long Island South Shore includes all bays and inlets along the south shore of Long Island from Shinnecock Bay to Jamaica Bay, including Great South Bay. It also includes New York Harbor and the Atlantic Ocean.

[b]Great South Bay is a bay within Long Island South Shore.

**Sample size too small to estimate.

Non-trip Related Expenditures

Boaters were asked to indicate their expenditures by county in 2003 on a number of non-trip boat-related items. The question format was designed to permit regional analysis. Boaters spent almost $2 billion on these boat-related expenditures in New York State in 2003 (Table 16). Almost 20% of boaters indicated they bought a boat in 2003. This was the largest statewide expenditure category and amounted to an estimated $1.2 billion, with a confidence interval of plus or minus $247 million. We used a separate expenditure line to distinguish boat purchase amounts from loan payments made in 2003. A larger percentage of boaters spent money on other boat-related expenditures such as winterization, insurance, boat equipment, and engine maintenance, but the average cost per boater was much smaller than for those purchasing a boat.

Boat-related purchases were estimated by region in a similar manner as trip-related expenditures (Tables 17 through 19). (Refer to Figure 1 for a depiction of regions.) Several categories had to be combined so that there would be sufficient sample sizes (generally n>30) by category for analysis in most regions. Boat equipment and supplies, engine purchase, and boat trailer and car rack expenditures were combined into one category called "boat equipment" in the regional analysis. Water skiing and scuba diving were also combined. Several categories (NYS boat registration fee, dues for boating-related organizations, and subscriptions to boating magazines) could not easily be attributed to a New York State county where the expenditure was made. Therefore, those categories were not included in the regional analysis.

The Long Island region accounted for the largest single portion of statewide boat-related expenditures (Table 17). The Finger Lakes region was second (Table 19). The Mohawk Valley region had the least boat-related expenditures, not the Southern Tier, as had been the case for trip-related expenditures (Tables 18 and 19).

Out-of-state Expenditures

Approximately 13% of boaters, or an estimated 47,862 people, used their New York State registered boats outside New York State in 2003. They boated an average of 19 days outside the state and spent an estimated total of $52.5 million outside New York State.

Explaining Annual Trip-related Expenditures

One of the objectives of this study was to develop models that would characterize the types of boating and boaters that result in the greatest expenditures to major regions in the state. To do this we examined factors associated with annual trip-related expenditures, both statewide and by regions of particular importance to Sea Grant. Types of explanatory variables examined included (1) demographic variables, (income, age, number of children living at home, and gender) (2) boat-related variables (number of boats owned, length of the boat used most often, and whether that boat was a PWC, motorboat, or sailboat), and (3) boating-related variables (activities participated in while boating, how boaters accessed the water, and the annual consistency of boating participation). Stepwise regression was used to develop models that explained annual trip-related expenditures.

Table 16. Percent of boaters reporting boat-related expenditures, mean expenditures, and total expenditures (and 95% confidence limits) statewide by category in 2003.

Expenditure Category	Percent of boaters reporting expenditure in category	Mean expenditure per reporting boater	Total statewide expenditures	Confidence limits ∀
Boat purchase	19.1	$19,775	$1,178,081,783	$247,371,164
Loan payments	8.2	4,664	119,421,720	36,456,853
Seasonal slip and mooring rental	36.8	1,040	119,653,872	8,538,938
Winterization and storage	59.4	566	105,021,809	8,697,635
Misc. marina services	30.5	558	53,149,835	12,278,308
Boat equipment				
Boat equipment and supplies	51.1	278	44,370,051	5,922,780
Engine purchase	6.2	2,453	47,734,889	14,366,700
Boat trailer and car racks	10.4	724	23,481,492	5,067,619
Engine maintenance and repair	51.6	376	60,653,124	8,506,599
Electronics (purchase and repair)	19.4	705	42,721,943	14,439,381
Hull repair and bottom paint	24.7	437	33,717,347	13,562,549
Insurance	58.5	407	74,407,618	6,070,141
Fishing equipment	45.5	277	39,387,489	6,387,534
Water skiing equipment	9.6	193	5,765,393	1,050,197
Scuba diving equipment	3.1	456	4,358,995	1,306,912
Boating clothing	26.2	171	14,011,056	1,280,241
NYS boat registration fee	60.7	42	7,972,373	741,473
Dues for boating-related organizations	23.8	82	6,102,866	1,017,525
Subscriptions to boating magazines	20.7	40	2,587,812	126,357
Other	2.4	578	4,341,242	2,009,711
TOTAL			$1,986,942,708	

Table 17. Boat-related expenditures by category for downstate New York regions in 2003.

Expenditure Category	New York City area	Long Island	Suffolk Co. only
Boat purchase	**	$438,805,517	$356,277,188
Loan payments	**	41,185,984	31,489,883
Seasonal slip and mooring rental	$16,299,290	50,348,306	38,284,767
Winterization and storage	12,042,373	46,935,672	35,414,788
Misc. marina services	10,475,176	23,911,485	19,537,639
Boat equipment (incl. engines and trailers)	5,467,180	44,884,541	40,035,978
Engine maintenance and repair	5,682,262	23,104,416	17,221,923
Electronics (purchase and repair)	**	23,576,231	17,841,564
Hull repair and bottom paint	3,624,132	12,426,960	8,795,830
Insurance	5,793,217	27,376,866	19,906,351
Fishing equipment	2,763,292	15,567,840	10,129,338
Water skiing and scuba diving equipment	**	2,413,015	2,154,917
Boating clothing	1,273,763	4,768,675	3,410,927
Other	**	**	**
TOTAL	$148,703,086	$758,599,335	$599,771,520

**Sample size too small to estimate.

Table 18. Boat-related expenditures by category for eastern New York regions in 2003.

Expenditure Category	Mid-Hudson Region	Capital Region	Mohawk Valley	North Country
Boat purchase	**	$83,523,510	**	$64,330,685
Loan payments	**	**	**	**
Seasonal slip and mooring rental	$4,403,207	8,235,080	**	7,845,372
Winterization and storage	3,523,931	5,150,873	$2,882,270	6,594,482
Misc. marina services	**	2,624,513	997,742	3,177,581
Boat equipment (incl. engines and trailers)	5,361,687	11,487,427	1,818,979	4,670,352
Engine maintenance and repair	1,944,956	4,800,767	1,535,447	3,317,384
Electronics (purchase and repair)	**	1,374,135	**	2,098,074
Hull repair and bottom paint	**	734,181	**	7,455,323
Insurance	3,602,794	4,261,355	1,952,637	3,507,885
Fishing equipment	2,246,071	2,318,106	840,015	2,031,159
Waterskiing and scuba diving equipment	**	1,260,449	**	824,822
Boating clothing	**	947,385	**	708,405
Other	**	**	**	**
TOTAL	$59,968,105	$133,753,009	$36,247,121	$109,440,891

**Sample size too small to estimate.

Table 19. Boat-related expenditures by category for western New York regions in 2003.

Expenditure Category	Western New York	Finger Lakes	Central New York	Southern Tier
Boat purchase	27,820,672	$198,006,026	58,889,452	**
Loan payments	10,590,228	**	**	**
Seasonal slip and mooring rental	9,344,289	9,321,244	3,536,904	**
Winterization and storage	7,993,369	6,828,341	4,507,504	$2,018,528
Misc. marina services	2,459,104	3,012,172	1,643,841	**
Boat equipment (incl. engines and trailers)	6,747,771	12,754,363	8,479,864	3,020,878
Engine maintenance and repair	4,523,379	4,801,791	4,670,352	1,737,555
Electronics (purchase and repair)	2,867,419	1,831,270	**	**
Hull repair and bottom paint	957,627	2,461,153	**	**
Insurance	5,342,398	4,846,514	5,308,087	1,748,992
Fishing equipment	2,392,019	2,575,522	2,214,320	1,463,753
Waterskiing and scuba diving equipment	833,699	1,328,729	**	**
Boating clothing	1,392,912	692,359	1,136,862	**
Other	**	**	**	**
TOTAL	$184,325,274	$256,260,985	$111,096,681	$47,691,702

**Sample size too small to estimate.

The best statewide model we could build included a variable from each of the three categories described above (Table 20). The demographic variable, income, was statistically significant and was positively associated with expenditures (people with higher incomes spent more on trip-related expenditures). The length of the boat used most often was also statistically significant and positively associated with expenditures. The model suggests that for every foot increase in length, on average, a boater will spend $145 more on annual trip-related expenditures. The number of boats owned was also positively related to annual trip expenditures. Boating-related variables in the model included participation in scuba diving and consistency in boating participation; both had a positive relationship with expenditures. The final variable in the model was whether or not the boater accessed the water primarily from a marina or yacht club. This variable had a positive relationship with expenditures, indicating that boaters who used marinas or yacht clubs spent more on average per year than boaters who used private docks or boat launch ramps.

The overall statewide model had a low adjusted r^2 of 0.147, implying that important variables were missing from the model. Boating location (upstate versus downstate), which we expected to be significant in the model, was not. This variable was moderately correlated with length of boat used most often and income, both of which had higher correlations with annual trip expenditures. Thus, the presence of the latter two variables in the model likely accounted for the effect of boating location.

We created three other models to explain annual trip expenditures in various parts of New York State. The model for trip expenditures to the Great Lakes (Lake Ontario, Lake Erie, and the St. Lawrence River) included four variables and had an adjusted r^2 of 0.138 (Table 20). The variables included three that were in the statewide model (length of boat used most often, consistent boating in past three years, and number of boats owned). The fourth variable with a positive relationship to annual trip expenditures was whether the boat used most often was a sailboat. If the boat was a sailboat, the model predicts boaters spent on average $1,300 more on Great Lakes trips in 2003.

The model describing expenditures on trips to the lower Hudson River had only two significant variables (access primarily from a marina or yacht club, and whether the boat used most often was a motorboat). Yet, the Hudson River model had the highest adjusted r^2 of all models developed (0.22) (Table 20). The two variables in this model highlight the importance of marinas/yacht clubs and boating with a motor boat as opposed to a sailboat or PWC on the lower Hudson River.

The model describing expenditures on trips to water bodies on Long Island included three variables seen in past models (length of boat used most often, income, and whether the boat used most often was a motorboat), but the adjusted r^2 was the lowest of all models developed (Table 20). This may indicate the homogeneous nature of boating and trip-related spending on Long Island.

Even though the variance explained by all the models was low, the significant variables in each model can be potentially useful to those trying to encourage boating in New York State. For example, encouraging scuba diving may increase trip-related spending. Programs that keep boaters involved on a consistent basis may encourage trip-related spending. Sail boating, while not as common on the Great Lakes as motor boating, if encouraged, could lead to an increase in trip-related expenditures.

Economic Impact of Boating-related Expenditures

Output Effects

Table 21 shows the impacts of boater spending in 11 regions of the state on the New York State economy as a whole. The first ten regions are geographically distinct. Suffolk County, within the Long Island region, was modeled separately because of the large amount of boating that occurs there. The last row in the table shows the collective impacts of all regional spending on the state's economy. In contrast, Table 22 shows the effects of boaters' expenditures on the individual regional economies (and on Suffolk County) in which they occur, rather than on the state as a whole.

Table 20. Regression models that explain annual trip-related expenditures, statewide and for three areas in New York State.

Variables in model	Statewide	Great Lakes	Lower Hudson River	Long Island
	Coefficients (Significance Level)			
(Constant)	-2,729.3	-2,377.0	-113.2	-2,954.3
Length of boat used most often (ft.)	144.5 (p<.001)	123.3 (p<.001)		156.4 (p=.001)
Income (in 000's)	5.8 (p=.001)			10.5 (p=.045)
Scuba diving	1,513.0 (p<.001)			
Boated in each of past 3 years	733.0 (p=.001)	922.6 (p=.028)		
Access water primarily from marina or yacht club	576.5 (p<.001)		1,497.5 (p<.001)	
Number of boats owned	268.1 (p=.001)	411.4 (p=.002)		
Boat used most often is a sailboat		1,300.1 (p=.006)		
Boat used most often is a motorboat			812.7 (p=.015)	1,266.2 (p=.005)
Adjusted R^2	0.147	0.138	0.218	0.079

Table 21. Output impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on the New York State economy (2003 dollars).

Region	Output			
	Direct	Indirect	Induced	Total
NYC and Suburbs	$107,859,726	$ 32,122,649	$ 40,784,119	$180,766,493
Long Island	394,439,583	116,128,915	151,254,794	661,823,285
Mid-Hudson	31,808,724	9,487,373	12,246,180	53,542,277
Capital	77,026,872	23,346,271	30,365,844	130,738,988
Mohawk Valley	27,933,352	8,669,212	10,833,904	47,436,468
North Country	91,460,643	28,780,090	35,077,353	155,318,084
Central NY	61,689,356	16,534,541	23,452,401	101,676,297
Finger Lakes	104,593,377	31,631,103	42,818,843	179,043,325
Southern Tier	16,315,615	4,753,710	6,045,230	27,114,555
Western NY	96,817,475	28,642,866	38,911,386	164,371,728
Suffolk County	304,347,325	89,789,860	116,869,211	511,006,398
New York State	$1,091,401,355	$ 321,219,650	$ 421,466,177	$1,834,087,189

Table 22. Output impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on regions in New York State (2003 dollars).

Region	Output			
	Direct	Indirect	Induced	Total
NYC and Suburbs	$ 107,859,760	$ 28,251,266	$ 30,075,157	$166,186,182
Long Island	394,439,697	109,137,505	143,459,409	647,036,610
Mid-Hudson	31,808,733	8,615,576	10,996,698	51,421,007
Capital	77,026,889	19,787,382	27,866,161	124,680,432
Mohawk Valley	27,933,359	5,885,973	7,786,589	41,605,921
North Country	91,460,676	15,370,830	22,666,677	129,498,185
Central NY	61,689,374	14,188,640	21,567,075	97,445,089
Finger Lakes	104,593,397	28,450,221	37,562,276	170,605,894
Southern Tier	16,315,620	3,588,605	4,632,032	24,536,256
Western NY	96,817,500	25,874,924	36,771,383	159,463,807
Suffolk County	304,347,422	84,896,462	107,594,109	496,837,992

The first two columns of Table 21 show the direct and indirect effects on the value of economic output in New York State that is associated with boaters' expenditures. The third and fourth columns show the induced and total effects of these expenditures, under the assumption that the direct effects spending by households was exogenous, for example that it was drawn from household savings rather than diverted from current local household spending on other goods and services.

The last row of Table 21 indicates that boater spending statewide had an impact of almost $1.1 billion in direct effects, after accounting for margins and related initial leakage from the New York economy. These direct effects stimulate additional indirect and induced economic activity that increases the total by almost 70% to a sum of $1.8 billion.

The greatest direct effects, by a factor of almost four, are in the Long Island/Suffolk County region. Direct effects in the adjacent New York City region are next largest, but are nearly matched Upstate by several recreation destination regions including the Finger Lakes, Western New York, and the North Country.

From Table 21, it can be calculated that the quotient of direct plus indirect to direct effects is approximately 1.3, with only slight variation for all regions. This number can be thought of as a Type I boating multiplier. Dividing the total effects by the direct effects yields a Type SAM multiplier in the vicinity of 1.7. The small variation that does exist around 1.3 and 1.7 relates to differences in the mix of goods and services that are purchased in each region.

The results in Table 22 show that the same direct effects (i.e. the same within the range of IMPLAN's rounding error) have smaller impacts on regional economies than on the state

economy as a whole. As suggested earlier, this is because both businesses and households are less likely to purchase goods and services within a small region than within the state as a whole. The relative size of the difference varies by region, with the greatest differences showing up in the least self-sufficient regions. For example, the indirect effects of business spending in the North Country are only 53% as great as the effects of the same spending on the state economy as a whole. In contrast, the ratio is 95% for spending in Suffolk County. Similar calculations for the induced effects of household spending show a range from about 65% for the North Country region to 90% or better for six of the other regions.

From Table 22, Type I boating multipliers ranging from 1.17 (North Country region) to 1.28 (Suffolk County/Long Island) can be calculated. Type SAM multipliers range from 1.42 in the North Country to 1.65 in Western New York, followed closely by Long Island. This variation relates to differences in the mix of goods and services that are purchased in each region and to the extent to which the region is able to meet consumer and business needs with local production.

Note finally in Table 21 that if the value of the direct effects were summed across the first ten distinct regions, the total of $1.0 billion would differ somewhat from the $1.1 billion figure shown for statewide direct effects. These figures might logically be expected to be the same. The discrepancy is due to differences in statistical precision that occur when regional and statewide population values are estimated from sample-based survey results. Note that the actual estimated boater expenditures differ, not just the direct effects that are derived from them.

Table 23 presents similar results for output impacts broken out for the regions surrounding specific water bodies. Only trip expenditures and nontrip expenditures made at marinas are included in this analysis. Other nontrip expenditures such as boat purchases could not be associated with spending at specific water bodies. The greatest direct output effects are found for the Great Lakes in total, Long Island Sound, and Long Island South Shore ($87, $77, and $72 million respectively). Two Long Island water bodies (Great South Bay [which is a part of the Long Island South Shore] and The Peconics), as well as the Lower Hudson River, are next in order of size of direct effect. The water bodies attracting the smallest direct spending effects, each less than $10 million, are the Central Erie Canal section, Chautauqua Lake, and Lake Champlain.

Table 23 can also be used to derive the Type I and Type SAM boating multipliers associated with each water body. Both multiplier types tend to vary little by water body (from 1.27 to 1.33 for Type I; from 1.59 to 1.70 for Type SAM) with the exception of notably lower values of 1.18 (Type I) and 1.42 (Type SAM) for the comparatively isolated St. Lawrence River area.

Table 23. Output impacts of regional boating expenditures (trip plus marina-nontrip related) on regions surrounding specific water bodies (2003 dollars).

	Output			
Water Body	Direct	Indirect	Induced	Total
Great Lakes	$86,883,115	$28,490,955	$32,351,971	$147,726,042
Eastern Lake Ontario	25,407,989	6,754,195	8,444,665	40,606,848
Western Lake Ontario	12,939,829	3,976,552	4,637,309	21,553,690
St. Lawrence River	24,282,804	4,411,993	5,849,396	34,544,193
Lake Champlain	5,215,731	1,389,669	1,727,657	8,333,056
Chautauqua Lake	8,497,427	2,440,721	2,958,893	13,897,040
Lake George	17,550,444	4,702,108	5,787,967	28,040,519
Lake Erie	12,333,952	3,436,964	4,095,760	19,866,677
Erie Canal Central	7,048,260	1,916,053	2,333,866	11,298,178
Finger Lakes	21,878,495	6,606,127	7,285,943	35,770,565
Lower Hudson River	37,256,815	10,943,431	11,132,175	59,332,420
Long Island Sound	76,875,779	22,713,685	22,816,209	122,405,674
Long Island South Shore	72,403,436	21,718,602	21,996,425	116,118,461
Great South Bay	36,427,633	11,340,365	12,403,519	60,171,518
Peconics	34,663,581	10,621,568	11,659,733	56,944,883

Employment and Labor Income Effects

The analysis of output effects of boaters' spending presented in the previous section is mirrored within IMPLAN in several other metrics. In this section, the effects on employment and income are summarized.

Table 24, like Table 21, shows the effects of regional spending on the state economy as a whole and on the individual regions in which the spending occurred. The last row (New York State), shows that the spending of boaters statewide directly supports more than 12,000 full and part time jobs and generates more than $443 million in income, implying income (compensation plus all benefits, inclusive of self-employment income) of just over $36,000 per job. Another 2,533 jobs and $131.4 million in income are stimulated through the indirect effects of the purchases businesses make to meet the boaters' demands for goods and services. Increasing household incomes, and the associated consumer purchases, account for 3,887 induced jobs and $153.3 million in income. Altogether, a total of 18,702 jobs and $728.1 million in income for workers and the self-employed can be associated with boaters' final demand for goods and services. The fact that the total average of almost $39,000 per job is somewhat higher than the per job income for the direct effects only is an indication that higher pay is associated with the induced, and especially the indirectly supported jobs.

The comparison of regional impacts portrayed in Table 24 is broadly similar to that found in Table 21. As for output, the boating-related direct and total effects on jobs and income are several times greater in the Long Island/Suffolk County region than elsewhere. The effects are smallest in the Southern Tier, Mohawk Valley, and Mid-Hudson regions. Because of the different mixes in goods and services purchased by region, there are some small shifts in the middle-tier rankings of effects by region, since some goods and services are more labor intensive or have better pay than others.

Table 25 shows the direct, indirect, and induced employment and labor income effects on specific regions that are associated with boaters' final demand. As with output (Table 22), the Long Island/Suffolk County regions rank highest in terms of both direct and total effects, while the Southern Tier, Mohawk Valley and Mid-Hudson regions rank lowest. However, in terms of employment generated, the Finger Lakes, North Country, Western New York, and Capital regions all surpass the high wage area of the New York City and Suburbs region in rank. In terms of labor income, only the Finger Lakes region nudges New York City and Suburbs out of the second rank it holds for output.

Unlike in Table 24, in Table 25 statewide industry-specific average relationships between output and jobs, or between output and income, are not used by IMPLAN to calculate direct job and income effects from the estimated direct effects on output. Instead, the output/job and output/income relationships in Table 25 are unique to each regional model. This is the main reason why the direct effects, especially in terms of jobs, differ between Tables 24 and 25. Note that for all regions except New York City and the whole of Long Island, the direct effects on jobs for the regional models are estimated to be somewhat greater than for the New York State model (i.e., in the upstate regions, it takes more jobs to produce a given level of output than for the state as a whole). For all regions except New York City, the whole of Long Island, and the Mid Hudson region, the direct effects on labor income for the regional models are estimated to be somewhat greater than for the New York State model (i.e., in the upstate regions, more income is generated per unit of output produced than for the state as a whole).

Table 26 shows the effects of boater spending on employment and labor income for the regions associated with particular water bodies. The Great Lakes has the largest impact in terms of labor income followed by four downstate water bodies: Long Island Sound, Long Island South Shore, Great South Bay, and the Lower Hudson. The top five in terms of employment are somewhat different, with Eastern Lake Ontario displacing the Lower Hudson region. The Lake Champlain region ranks last among the regions in terms of employment or labor income impacts.

Total Value Added Effects

Tables 27-29 reframe similar results in terms of total value added. Value added includes (a) employee compensation (salaries and fringe benefits), (b) income received by proprietors (all self-employment income), (c) other income related to the property (interest, rents, royalties, dividends, and profits, and (d) indirect business taxes, primarily consisting of excise and sales taxes paid by individuals to businesses. Because labor income constitutes 60% or more of total value added for these models, the results closely resemble those for labor income and are not discussed here. There are some minor differences that relate to the different distributions of

Table 24. Employment and labor income impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on the New York State economy (2003 dollars).

Region	Employment				Labor Income			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
NYC and Suburbs	1,194	255	376	1,825	$ 42,223,023	$ 13,140,334	$ 14,838,964	$ 70,202,321
Long Island	4,410	919	1,395	6,724	158,409,148	47,650,925	55,032,839	261,092,912
Mid Hudson	388	74	113	575	12,866,640	3,819,888	4,455,674	21,142,202
Capital	922	182	280	1,384	32,015,454	9,440,279	11,048,372	52,504,104
Mohawk Valley	366	67	100	533	11,341,627	3,395,614	3,941,828	18,679,068
North Country	1,170	224	323	1,718	36,132,683	11,457,471	12,762,604	60,352,757
Central NY	610	132	216	959	25,231,525	6,912,680	8,532,976	40,677,180
Finger Lakes	1,216	247	395	1,858	45,598,320	13,019,187	15,579,304	74,196,811
Southern Tier	189	37	56	282	6,324,046	1,912,061	2,199,508	10,435,616
Western NY	1,098	225	359	1,682	41,433,380	11,804,202	14,157,605	67,395,188
Suffolk County	3,408	710	1,078	5,196	122,386,516	36,809,754	42,521,920	201,718,189
New York State	12,283	2,533	3,887	18,702	$ 443,324,597	$131,463,094	$153,347,102	$728,134,793

Table 25. Employment and labor income impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on regions in New York State (2003 dollars).

Region	Employment				Labor Income			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
NYC and Suburbs	993	191	244	1,428	$ 42,522,161	$ 12,062,011	$11,332,744	$ 65,916,915
Long Island	4,024	995	1,406	6,425	162,162,539	43,680,506	52,294,185	258,137,227
Mid Hudson	396	79	111	586	12,900,972	3,473,910	4,023,563	20,398,445
Capital	1,102	228	335	1,665	31,094,254	7,990,164	10,019,619	49,104,038
Mohawk Valley	519	77	101	697	10,457,121	2,025,983	2,546,117	15,029,221
North Country	1,705	220	315	2,241	34,464,604	5,360,495	7,472,450	47,297,551
Central NY	937	178	278	1,393	24,202,383	5,707,998	7,481,915	37,392,295
Finger Lakes	1,617	323	456	2,397	43,935,711	11,214,879	12,836,022	67,986,611
Southern Tier	297	47	61	405	5,743,596	1,401,528	1,569,872	8,714,996
Western NY	1,355	314	456	2,125	39,132,499	10,223,959	12,719,868	62,076,327
Suffolk County	3,676	857	1,103	5,636	124,556,084	34,394,620	38,557,830	197,508,537

Table 26. Employment and labor income impacts of regional boating expenditures (trip plus marina-nontrip related) on regions surrounding specific water bodies (2003 dollars).

	Employment				Labor Income			
Water Body	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Great Lakes	1,166	223	298	1,687	$32,397,152	$11,164,584	$11,770,981	$55,332,717
Eastern Lake Ontario	521	81	104	706	8,905,054	2,539,949	2,918,768	14,363,771
Western Lake Ontario	240	45	56	341	4,561,384	1,448,445	1,588,297	7,598,126
St. Lawrence River	503	61	81	646	8,763,672	1,480,747	1,928,358	12,172,777
Lake Champlain	93	17	21	131	1,884,293	531,576	607,844	3,023,713
Chautauqua Lake	147	29	37	212	3,043,988	892,950	1,023,547	4,960,484
Lake George	318	55	71	444	6,317,670	1,774,685	2,036,390	10,128,745
Lake Erie	186	42	51	279	4,150,729	1,282,598	1,416,821	6,850,148
Erie Canal Central	147	23	29	198	2,442,576	709,279	799,462	3,951,317
Finger Lakes	461	75	90	626	7,811,076	2,424,064	2,473,953	12,709,093
Lower Hudson River	444	78	95	616	13,737,141	4,458,000	4,150,126	22,345,268
Long Island Sound	736	161	192	1,089	28,266,638	9,361,380	8,577,862	46,205,880
Long Island South Shore	791	153	185	1,128	27,590,915	8,890,067	8,269,665	44,750,645
Great South Bay	516	113	127	757	13,777,034	4,420,205	4,444,987	22,642,227
Peconics	467	106	119	692	12,945,526	4,139,781	4,178,443	21,263,751

returns to property and indirect taxes across regions, however, and Tables 27-29 can be used for a complete reference.

Total direct value added resulting from boating-related expenditures at the statewide level was approximately $687 million, and when the indirect and induced effects are included, totaled nearly $1.2 billion (Table 27). For most regions, the regional impact of value added was only slightly less than the statewide impact of a particular region (Table 28). Rural regions differ more greatly in this respect—the regional impact of value added for the North Country was 77% of its statewide impact, compared to over 99% for Long Island. As with the other impact measures, Long Island contributed the largest share of value added of any region, about 36% of the statewide total. Long Island Sound was the largest single contributing water body to value added, with a total of nearly $75 million (Table 29).

Boating Issues

In an effort to make the survey more relevant to individual boaters and to identify emerging trends and issues of concern to this audience, we also inquired about the importance of certain boating-related issues. We asked about the importance of 10 current boating-related topics. The topic of importance to the most boaters was dredging to maintain boating access and provide safe navigation (Table 30). This was followed closely in importance by the establishment of boating no-discharge zones. A plurality of boaters thought these two topics were very important, however we did not measure attitudes toward dredging or establishment of no-discharge zones. Rather, boaters perceived these topics to be important, and thus they should be addressed in a timely fashion. A second set of topics that a plurality of boaters believed to be important included learning about environmentally sound boating practices and enhancement/repair of current boat launching facilities. Of importance to slightly fewer boaters was the development of new boat launching facilities. Topics of limited importance to boaters statewide were regulation of Great Lakes water levels and development or enhancement of transient docking facilities for larger boats.

These topics were often of greater importance to selected groups of boaters with more of a vested interest in the topic (e.g., large boat owners and transient space for large boats). Table 31 illustrates how these selected groups place more importance on topics of more relevance to them. For example, boaters who most often use a large boat (26'+) were 5 to 7 times more likely than other boaters to say development or enhancement of transient docking facilities for larger boats was very important. Similarly, those using launch ramps as their primary access method were more likely to indicate development or enhancement of boat launching facilities was very important to them, compared with those who accessed the water through marinas or private docks. Dredging, establishment of no discharge zones, and learning about sound environmental boating practices were more likely to be very important to those who primarily used larger boats.

Downstate and upstate boaters differed significantly in the importance they placed on each of the boating-related topics (Table 32). A majority of downstate principal users

Table 27. Total value added impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on the New York State economy (2003 dollars).

Region	Total Value Added			
	Direct	Indirect	Induced	Total
NYC and Suburbs	$ 66,695,172	$ 21,019,090	$ 24,977,886	$ 112,692,150
Long Island	247,447,306	76,165,513	92,634,687	416,247,503
Mid Hudson	19,783,727	6,160,807	7,500,067	33,444,600
Capital	47,891,046	15,229,873	18,597,295	81,718,214
Mohawk Valley	17,038,730	5,585,123	6,635,131	29,258,984
North Country	55,090,588	18,660,201	21,482,827	95,233,616
Central NY	40,895,876	10,935,716	14,363,213	66,194,806
Finger Lakes	65,973,996	20,858,519	26,224,020	113,056,533
Southern Tier	10,187,831	3,079,774	3,702,349	16,969,953
Western NY	61,610,316	18,894,546	23,830,934	104,335,795
Suffolk County	190,721,718	58,868,100	71,575,534	321,165,355
New York State	$686,911,169	$210,545,955	$258,123,282	$1,155,580,408

Table 28. Total value added impacts of regional boating expenditures (trip plus nontrip related, including boat purchases) on regions in New York State (2003 dollars).

Region	Total Value Added			
	Direct	Indirect	Induced	Total
NYC and Suburbs	$ 66,857,499	$ 19,199,397	$ 19,055,267	$ 105,112,163
Long Island	254,039,374	71,475,113	89,001,207	414,515,697
Mid Hudson	19,962,916	5,636,218	6,891,383	32,490,516
Capital	46,823,944	12,142,070	16,665,522	75,631,534
Mohawk Valley	15,824,104	3,080,626	4,338,776	23,243,506
North Country	52,902,793	8,090,815	12,705,316	73,698,923
Central NY	39,588,072	8,735,293	12,663,437	60,986,802
Finger Lakes	63,945,212	17,561,414	21,838,571	103,345,196
Southern Tier	9,372,288	2,070,162	2,639,312	14,081,762
Western NY	58,484,978	15,660,313	21,343,781	95,489,072
Suffolk County	194,668,183	55,650,449	66,627,113	316,945,750

Table 29. Total value added impacts of regional boating expenditures (trip plus marina-nontrip related) on regions surrounding specific water bodies (2003 dollars).

Water Body	Total Value Added			
	Direct	Indirect	Induced	Total
Great Lakes	$50,019,339	$18,251,010	$19,813,700	$88,084,048
Eastern Lake Ontario	14,245,836	3,966,397	4,928,031	23,140,263
Western Lake Ontario	7,001,772	2,293,823	2,681,724	11,977,318
St. Lawrence River	13,129,360	2,245,418	3,278,742	18,653,520
Lake Champlain	2,898,156	810,078	1,012,413	4,720,646
Chautauqua Lake	4,616,749	1,397,495	1,717,470	7,731,715
Lake George	9,669,811	2,714,918	3,391,768	15,776,498
Lake Erie	6,530,895	1,999,285	2,377,354	10,907,534
Erie Canal Central	3,802,139	1,108,137	1,349,204	6,259,480
Finger Lakes	11,622,986	3,814,200	4,194,494	19,631,679
Lower Hudson River	21,317,350	7,231,102	6,983,702	35,532,153
Long Island Sound	45,263,142	15,114,438	14,377,713	74,755,295
Long Island South Shore	42,312,744	14,431,366	13,861,118	70,605,228
Great South Bay	21,420,436	7,311,618	7,680,835	36,412,888
Peconics	20,575,837	6,839,610	7,220,252	34,635,700

Table 30. Importance of boating-related topics to boaters.

Boating-related Topics	Level of Importance: Not at all Important	Somewhat Important	Important	Very Important
	Percent			
Dredging to maintain boating access and provide safe navigation	14.9	17.7	26.9	40.5
Establishment of boating no discharge zones	15.8	18.4	27.3	38.5
Learning about environmentally sound boating practices	10.3	24.0	37.8	27.9
Enhancement/repair of current boat launching facilities	19.3	21.3	33.0	26.3
Development of new boat launching facilities	27.1	23.3	23.9	25.7
Restricting or limiting recreational boating access to certain waterways for homeland security reasons	27.4	26.2	23.5	22.8
Increasing law enforcement	21.6	25.8	30.9	21.7
Regulating Great Lakes water levels	41.7	20.6	19.6	18.2
Development of new transient docking facilities for larger boats	55.4	23.3	10.4	10.9
Enhancement/repair of transient docking facilities for larger boats	55.7	22.3	12.7	9.3

Table 31. Percent of boaters indicating selected boating-related topics were very important, by length of boat used most often and primary access method.

Boating-related Topics	Length of Boat Use Most Often			Primary Access Method		
	16'	16–25'	26'+	Marina or Yacht Club	Private Dock	Launch Ramp
	Percent indicating "Very Important"					
Dredging to maintain boating access and provide safe navigation	26.8	40.6	64.1*			
Establishment of boating no discharge zones	29.7	38.6	51.8*			
Learning about environmentally sound boating practices	27.0	25.6	34.9*			
Enhancement/repair of current boat launching facilities				16.7	15.5	39.9*
Development of new boat launching facilities				14.6	11.5	40.3*
Increasing law enforcement	17.1	21.8	24.8*			
Development of new transient docking facilities for larger boats	7.2	6.3	38.5*	20.5	7.4	5.8*
Enhancement/repair of transient docking facilities for larger boats	4.9	4.9	35.6*	18.9	6.2	3.9*

*Statistically significant difference between length or access groups using chi-square test at P = 0.05.

Table 32. Importance of boating-related topics by area of principal use.

Boating-related Topics	Level of Importance: Not at all Important	Somewhat Important	Important	Very Important
	Percent			
Dredging to maintain boating access and provide safe navigation				
Upstate principal use	18.1	20.8	29.3	31.9*
Downstate principal use	6.9	10.1	20.8	62.3
Establishment of boating no discharge zones				
Upstate principal use	18.7	20.2	28.4	32.7*
Downstate principal use	8.7	13.8	24.5	53.1
Learning about environmentally sound boating practices				
Upstate principal use	11.3	26.4	38.5	23.8*
Downstate principal use	7.6	18.1	35.7	38.5
Enhancement/repair of current boat launching facilities				
Upstate principal use	16.7	19.6	36.4	27.3*
Downstate principal use	26.1	25.8	24.1	23.9
Development of new boat launching facilities				
Upstate principal use	23.8	22.1	27.8	26.3*
Downstate principal use	35.7	26.5	13.6	24.2
Restricting or limiting recreational boating access to certain waterways for homeland security reasons				
Upstate principal use	28.5	27.4	23.5	20.6*
Downstate principal use	24.8	23.1	23.6	28.5
Increasing law enforcement				
Upstate principal use	23.0	26.9	30.4	19.6*
Downstate principal use	18.2	22.8	32.2	26.8

Table 32. (cont.)

Boating-related Topics	Level of Importance: Not at all Important	Somewhat Important	Important	Very Important
	Percent			
Regulating Great Lakes water levels				
Upstate principal use	32.9	20.5	22.3	24.3*
Downstate principal use	64.8	20.6	12.5	2.0
Development of new transient docking facilities for large boats				
Upstate principal use	58.1	24.1	9.2	8.6*
Downstate principal use	48.5	21.1	13.4	17.1
Enhancement/repair of transient docking facilities for large boats				
Upstate principal use	59.3	22.1	11.0	7.7*
Downstate principal use	46.3	22.9	17.3	13.6

*Statistically significant difference between upstate and downstate principal use using chi-square test at P = 0.05.

felt dredging and establishment of boating no-discharge zones were very important topics. In contrast, upstate principal users were more likely to think regulating Great Lakes water levels was very important.

Respondents were asked to indicate additional topics not mentioned in the questionnaire of importance to them. Three topics were mentioned by what we judged to be a significant number of respondents: (1) additional restrictions on the use of personal watercraft, (2) increased pollution control (air, noise, weeds), and (3) development of additional facilities for boaters.

Boaters' views on boating safety courses were of interest and two questions in the survey were devoted to this topic. Just over half (52%) had taken a boating safety course offered by a State, U.S. Coast Guard Auxiliary, or U.S. Power Squadron. Of those who had taken a course, most (83%) had taken a traditional classroom type course. A few indicated they took the course on-line or through home study (6%), with the remainder (11%) unsure of the format of the course they took. Downstate principal users and those who most often used a larger boat were more likely to have taken a boating safety course (Table 33). Approximately half of those owning a personal watercraft said they had taken a boating safety course.

Table 33. Boaters' past experience with boating safety courses and their support for mandatory boater education.

	Taken a boating safety course		Support mandatory boater education	
	No	Yes	No	Yes
	Percent			
Overall	48.4	51.6	28.3	71.7
Area of principal use				
Upstate	56.1	43.9*	31.4	68.6*
Downstate	28.4	71.6	20.4	79.6
Length of boat used most often				
<16'	64.1	35.9*	37.4	62.6*
16'–25'	49.0	51.0	29.5	70.5
26'+	19.7	80.3	12.8	87.2
Own a personal watercraft				
No	46.0	54.0*	27.5	72.5
Yes	50.9	49.1	29.9	70.1
Taken a boating safety course				
No			43.4	56.6*
Yes			14.5	85.5

*Statistically significant difference between groups using chi-square test at P = 0.05.

A majority of respondents (72%) indicated support for a mandatory boater education requirement to operate a recreational boat. Support was more likely among downstate principal users and large boat owners and, not surprisingly, among those who had already taken a boating safety course (Table 33).

Boaters were asked about their use of "green" products, such as bilge socks and fuel bibs. Few respondents indicated they used these products, although use was more likely among downstate principal users and those who used larger boats (Table 34).

Just over one-third of respondents (36%) indicated they painted the bottoms of any of their boats. Many painted their boats on their property (16%) or had someone else paint them (13%). Fewer had their boats painted at a marina or yacht club (7%). As would be expected, owners of larger boats were much more likely to have the bottoms painted as were downstate principal users (Table 34).

Table 34. Boaters' use of products or services with environmental consequences, overall and by area of principal use and boat length categories.

	Products and Services with Environmental Consequences				
	Products labeled as "green"	Pump out service	Bilge sock	Fuel bib	Paint bottom of boat
	Percent Using				
Overall	19.3	15.6	9.5	4.4	35.9
Area of principal use					
Upstate	14.6*	10.6*	7.2*	3.4*	21.5*
Downstate	31.7	28.5	15.5	7.0	74.1
Length of boat used most often					
<16'	8.1*	1.7*	2.2*	1.3*	14.9*
16–25'	18.6	7.6	6.8	3.9	32.9
26'+	44.3	74.6	34.8	11.7	87.2

*Statistically significant difference between groups using chi-square test at P = 0.05.

DISCUSSION

Recreational boating is very important to the State of New York. Over half a million (508,300) boats were registered in New York State in 2003. From our survey, we estimated there were 371,022 boat owners who registered a boat in New York State in 2003 and 84% (or 312,501) of them boated in 2003. Overall, boaters spent an average of $1,380 per boater on at-site and en-route trip expenditures in 2003. The total statewide estimate for trip-related spending was $431 million, with a 95% confidence interval of plus or minus $36 million. Three-quarters of the total was spent outside marinas or yacht clubs. Additionally, boaters spent almost $2 billion on boat-related expenditures in New York State in 2003. These expenditures included boat and equipment purchases, repairs, storage, and annual fees associated with the use of marinas and yacht clubs. Almost 20% of boaters indicated they bought a boat in 2003.

Through both trip-related spending and the purchase of boats and boating-related equipment, boating is a multi-million dollar industry in every region of New York State. It is particularly significant economically on Long Island and in Northern New York in association with boating on Lake Ontario, the St. Lawrence River, and Lake George. Boating is also very important to communities along the Lower Hudson River.

Through input-output analysis using IMPLAN, we estimated that boating as a consumer-driven industry has a total statewide output of $1.8 billion in New York. It accounts for approximately 18,700 jobs, and contributes $728 million to labor income, and approximately $1.2 billion in value added

statewide. The $1.8 billion in total output for New York compares to $1.6 billion found in a 2000 Maryland study (Lipton 2001) and $1.0 billion for Ohio in 1998 (Hushak 1999).

Readers may question why the economic estimates for boating in New York are so similar in magnitude to those in Maryland (Lipton 2001) when New York has over twice as many registered boats as Maryland. We found two possible reasons for this:

1. Mail survey respondents typically participate more frequently and therefore spend more money than nonrespondents. If one expands sample data results without taking nonresponse data into account, one likely overestimates participation and expenditures. The New York study adjusted for nonresponse bias downstate (no bias was found upstate). We have no evidence that the Maryland study adjusted for nonresponse bias.

2. Both mean trip and non-trip related expenditures were substantially higher in Maryland than in New York. While we can't make a direct comparison, it is likely that boats in Maryland are larger on average than in New York, and as our analysis shows, more money is spent on larger boats. In addition, about 20% of Maryland's registered boaters are from out of state, compared to only 2% for New York. Out of state boaters typically are on longer trips and spend more money than local boaters. Furthermore, because of the wide diversity of waters in New York, both the fleet mix and demographics of boaters is probably more diverse in New York than in Maryland. This may contribute to the larger proportion of boaters in New York with lower expenditure levels.

We don't see anything to indicate that different interpretations of multipliers or applications of IMPLAN led to differences in the results of this study versus the Maryland or Ohio studies. As examples, the total effects to direct effects multipliers for output were 1.68 in New York, 1.67 in Maryland, and 1.52 in Ohio. The comparable employment multipliers were 1.52 in New York, 1.42 in Maryland, and 1.31 in Ohio. The similarity of the multipliers also implies that the recent changeover in sector definitions from SIC to NAICS (the New York study used the latter) had little impact on the results.

The estimates derived in this report do not include spending by transient boaters and others who are not registered in New York State. These additional expenditures are most likely made in water bodies bordering other states, especially around Long Island and New York City. Non-motorized boaters also probably made economic contributions throughout the state, but were not included in the above estimates. Thus, estimates provided herein are conservative if one wishes to consider the entire boating spectrum in New York State.

The boating-related topic of importance to the most boaters was dredging to maintain boating access and provide safe navigation. This was followed closely in importance by the establishment of boating no-discharge zones. A plurality of boaters thought these two topics were very important, however we did not measure attitudes toward dredging or establishment of no-discharge zones. Rather, boaters perceived these topics to be important, and thus they should be addressed in a timely fashion. A second set of topics that a plurality of boaters believed to be important included learning about environmentally sound boating practices and enhancement/repair of current boat launching facilities.

Slightly over half of New York boaters had taken a boating safety course. A majority of respondents (72%) indicated support for a mandatory boater education requirement to operate a recreational boat.

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GLOSSARY

County of principal use – New York State county indicated by boater on boat registration form as the county where the boat was principally used.

Direct effects - The direct effect represents the component of initial boating-related expenditures that are received by New York State businesses (for statewide impact analysis) that remains in-state, or within a region of New York, in the case of regional analyses.

Downstate principal use - Downstate respondents were defined as those listing New York City, Rockland and Westchester counties, or Long Island as their place of principal boating use.

Employment impacts - Employment impacts are measured by the effects on jobs. These are not wholly 40-hour per week jobs, but include part-time (less than 40 hours) jobs as well. The impact estimates, in number of jobs, reflect the mix of full and part time labor that is typical for each sector.

IMPLAN (Impact Analysis for PLANning) – A computerized Input-Output economic model first developed in conjunction with the US Forest Service and now maintained by MIG, Inc (2000). IMPLAN consolidates and organizes a wide array of economic data within a modeling framework that enables economic impact analyses for any area of the United States.

Indirect effects - The indirect effect represents the impact of the additional business spending that is created as businesses purchase additional inputs in order to sell more output.

Induced effects - The induced effect represents the additional economic activity associated with the increased wages and income that accrue to households and business owners.

Labor income impacts - Labor income impacts measure the additional income earned by those business proprietors and employees that benefit from boaters' expenditures.

Leakage - **The** portion of the expenditures made on boating, or other economic activities, that immediately leaves the state or region and thus makes no meaningful additional contribution to its economy.

Non-trip related expenditures – Boating expenditures that are not specific to a particular boating trip. These expenditures include boat purchase, boat repair, annual slip rental, etc.

Output (sales) impacts - Output impacts are measured as the increased dollar value of additional purchases, as represented by direct, indirect, and induced expenditures.

Total value added impacts - Total value added refers to the enhanced value a company adds to a product or service. It is measured by the difference between the amount a company spends to purchase it and its value at the time it is sold to customers. Value added components within IMPLAN include employee compensation and fringe benefits, proprietary (self-employment)

income, other property type income (including corporate profits), and sales taxes and other business taxes except for taxes on profit or income.

Trip-related expenditures – Boating expenditures that are specific to a boating trip. These expenditures include launching fees, boat fuel, groceries, lodging, etc.

Type I multiplier - The Type I multiplier enables the analyst to calculate the "indirect" effects, or those reflecting business/industry purchases from other businesses, associated with the change in "direct" effects.

Type SAM multiplier - The Type SAM multiplier enables the analyst to generate "induced" effects by using existing data on household buying patterns to estimate the impacts of increases in household income on increased household purchases of goods and services.

Upstate principal use - Upstate New York respondents were defined as having a county of principal use north of Rockland and Westchester counties.

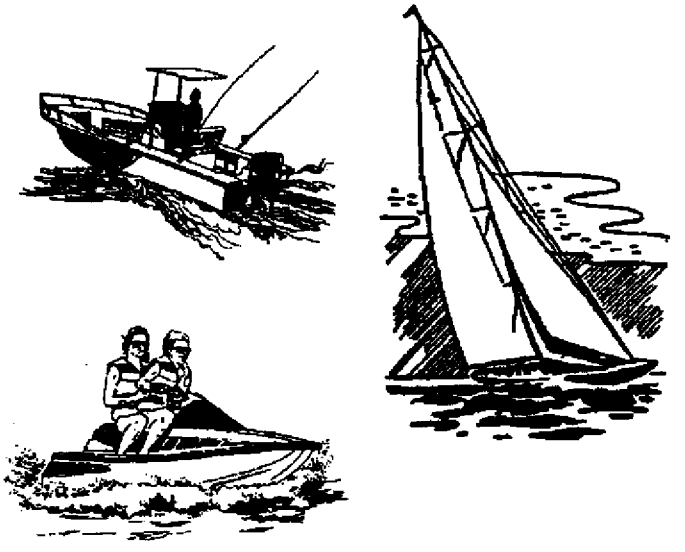
APPENDIX A:

Mail Questionnaire

Recreational Boating

in

New York State



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RECREATIONAL BOATING

IN

NEW YORK STATE

Research conducted by the
Human Dimensions Research Unit
Department of Natural Resources
Cornell University

Sponsored by New York Sea Grant

We are conducting a survey of recreational boaters in New York State to learn more about their experiences, how and where they spend their money, and their opinions on current boating issues. You were chosen to participate in this survey because you have at least one boat registered in New York State. Information from this study will help New York state agencies, New York Sea Grant, and boating organizations better meet the needs of boat users in New York State. A major objective of this study is to estimate the economic impact of boating in New York State.

Please complete this questionnaire at your earliest convenience, seal it, and drop it in any mailbox (no envelope is needed); return postage has been provided. Your participation in this study is voluntary, but your response is extremely important to us. The information you provide will represent many other boaters. Your responses will remain confidential and will never be associated with your name. The questionnaire has an identification number so your name can be crossed off our list when you return it. Your prompt response will keep us from bothering you with unnecessary reminder letters.

THANK YOU FOR YOUR HELP!

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1. **How many boats do you have currently registered in your name in New York State?**

   _____ number of boats

2. **Please tell us about the boat(s) you use most often in New York State.** *(Please write in the length of your boat and check whether it is a personal watercraft [jet ski], other powerboat, or sailboat.)*

	Length (in feet)	Personal watercraft	Other powerboat *(Check one)*	Sailboat
Boat used most often	_____	_____	_____	_____
Other boat 1	_____	_____	_____	_____
Other boat 2	_____	_____	_____	_____
Other boat 3	_____	_____	_____	_____

3. **Did you go boating in New York State waters in any of the past 3 years?**

Year	No	Yes
2003	_____	_____
2002	_____	_____
2001	_____	_____

If you did NOT use your boat in New York State in 2003, please go to Question 10.

4. **Were any of the boats registered in your name used as part of a charter business in 2003?**

_____ No

_____ Yes ➜ Please answer all the remaining questions considering ONLY your personal use of your boats. Do not include expenditures or activities associated with your charter business.

5. **What is the primary way that you gain access to New York State waters for boating?** *(Check only ONE method.)*

_____ From a slip or mooring at a marina or yacht club

➜ What water body is this marina or yacht club located on?

_____

_____ From a private dock or mooring

_____ From a boat launch ramp ➜ What type of vehicle do you use to trailer your boat to the launch site? *(Check one.)*

_____ Truck

_____ SUV

_____ Car

6. **Did you keep your boat in the water during the 2003 boating season?**

_____ No: *Go to Question 7*

_____ Yes: *(Please answer the following question:)*

About _____% of my total time on the boat was spent while the boat was docked or moored.

BOATING EXPENSES

7. Please estimate below how much you spent in New York State on each boating-related item in 2003. Then write in the county, city, or village where each expenditure was made.

	Cost	County, City, or Village Where Expenditure Was Made
Boat purchase (please list only amount paid in 2003)	$_____	_____
Loan payments (not included above)	$_____	_____
Seasonal slip or mooring rental	$_____	_____
Winterization and storage	$_____	_____
Miscellaneous marina services (utilities, haul-out, etc.)	$_____	_____
Hull repair or bottom paint	$_____	_____
Engine purchase (new or used)	$_____	_____
Engine maintenance and repair	$_____	_____
Electronics (purchase and repair)	$_____	_____
Boat equipment and supplies (sails, paddles, life vests, coolers, etc.)	$_____	_____
Boat trailer or car racks	$_____	_____
Fishing equipment (rods, reels, nets, downriggers, etc.)	$_____	_____
Waterskiing equipment	$_____	_____
Scuba diving equipment	$_____	_____
Boating clothing (foul weather gear, boat shoes, etc.)	$_____	_____
Insurance (boat, towing, etc.)	$_____	_____
NYS boat registration fee	$_____	
Dues for boating-related organizations such as BoatUS	$_____	
Subscriptions to boating magazines	$_____	
Other *(please specify:* _____		
_____)	$_____	_____

8. WHERE DID YOU BOAT IN NEW YORK STATE, AND APPROXIMATELY HOW MUCH DID YOU SPEND IN 2003?

Please fill in the table below and list each location in New York State where you spent money boating in 2003. This would include locations where you launched, docked or moored your boat and destinations that you visited while boating. Popular boating locations that you might have visited include Lake Erie, Niagara River, Lake Ontario, St. Lawrence River, Lake Champlain, Seneca Lake, Erie Canal, Long Island South Shore Bays/Atlantic Ocean, Peconic/Gardiners Bays, or New York Harbor. If you spent money at several locations on a large body of water like Lake Ontario or Long Island Sound, please use a separate line for each location.

Where did you boat in New York in 2003?		How many days (or parts of days) were you at this location?	How much did you spend during ALL visits to this location at the following types of businesses in 2003:										If you drove to this location, how much did you spend in New York State getting to and from this location for items like gas, lodging, food, and supplies?
Name of Water Body	Nearest City or Village		Marinas or yacht clubs (fuel, launching fees, supplies, etc.)	Boat launching or mooring fees (not at marinas/yacht clubs)	Hotels, motels, B&Bs, campgrounds	Restaurants or bars	Grocery or convenience type store	Gas stations (fuel, sundries)	Bait and tackle shops	Race/regatta/fishing tournament fees	Liquor stores, souvenirs, all other retail purchases	Entertainment & all other expenses	
Example: Hudson River	Poughkeepsie	17	200	0	220	15	10	25	5	0	80	0	200

9. **How does the number of days you went boating in New York State in 2003 compare with your experiences in 2002?**

_____ I didn't boat in New York State in 2002

_____ I boated more days in 2003 than in 2002

➜ Approximately how many more days?

_____ days

_____ I boated about the same number of days in 2003 and 2002

_____ I boated fewer days in 2003 than in 2002

➜ Approximately how many fewer days?

_____ days

➜ What was the main reason for your boating fewer days in 2003?

_____

10. **Did you purchase a boat in 2003?**

_____ No

_____ Yes ➜ Who did you buy the boat from?

_____ A boat dealer/broker

_____ Another individual

11. **Which of the following activities do you typically engage in while boating?** *(Check all that apply.)*

_____ Fishing

_____ Water skiing/tubing

_____ Cruising/sailing

_____ Scuba diving

_____ Other *(please specify:* _____)

12. Did you use any of your New York registered boats outside New York State in 2003?

_____ No

_____ Yes ➜ Approximately how many days did you spend outside New York State on these boating trips in 2003 and how much did you spend? *(Please include the cost of gas, food, lodging, boat repairs, launch fees, etc.)*

_____ # days $_____ spent outside New York State

13. How important are each of the following boating-related topics to you personally?

	Not at all Important	Somewhat Important	Important	Very Important
Dredging to maintain boating access and provide safe navigation	1	2	3	4
Development of new boat launching facilities	1	2	3	4
Enhancement/repair of current boat launching facilities	1	2	3	4
Development of new transient docking facilities for larger boats	1	2	3	4
Enhancement/repair of transient docking facilities for larger boats	1	2	3	4
Regulating Great Lakes water levels	1	2	3	4
Increasing law enforcement	1	2	3	4
Learning about environmentally sound boating practices	1	2	3	4
Establishment of boating no discharge zones	1	2	3	4
Restricting or limiting recreational boating access to certain waterways for homeland security reasons	1	2	3	4
Other (_____ _____)	1	2	3	4

14. Have you taken a boating safety course (offered by a State, U.S. Coast Guard Auxiliary, or U.S. Power Squadron)?

_____ No

_____ Yes, a traditional classroom type

_____ Yes, on-line or home study

_____ Yes, but I don't recall the format of the course

15. Do you support a mandatory boater education requirement to operate a recreational boat?

_____ No

_____ Yes

16. Do you use any of the following products or services when you boat? *(Check all that apply.)*

_____ bilge sock

_____ fuel bib

_____ pump out service

_____ boating products labeled as "green"

17. Have you had the bottom of any of your boats painted?

_____ No

_____ Yes, I paint them on my property

_____ Yes, I paint them at the marina/yacht club

_____ Yes, I have someone else paint them

The following information will help us categorize boating participation in New York State and predict future interest. All information is kept strictly confidential and is never associated with your name.

18. How many years have you owned a boat registered in New York State?

_____ # of years

19. In what year were you born? 19____

20. Are you male or female? _____Male _____Female

21. How many children under age 18 do you have living currently in your household? *(If none, please write in zero.)*

_____ # of children

22. Please circle your approximate 2003 TOTAL HOUSEHOLD INCOME <u>before</u> taxes, in thousands of dollars:

Less than 20	20	25	30	35	40	45	50	
55	60	65	70	75	80	85	90	95
100	125	150	More than 150					

Please use the space below for any comments you wish to make.

THANK YOU FOR YOUR TIME AND EFFORT!

To return this questionnaire, simply seal it (postage has been provided) and drop it in the nearest mailbox.

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APPENDIX B:

Additional Tables

Table B-1. Counties included in the regional economic impact model for each major water body.

Water bodies	Counties included in regional economic impact model
Great Lakes	All counties
Eastern Lake Ontario	Cayuga, Cortland, Jefferson, Madison, Onondaga, Oswego
Western Lake Ontario	Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Seneca, Wayne, Wyoming, Yates
Lake Erie	Allegany, Cattaraugus, Chautauqua, Erie, Niagara
St. Lawrence River	Clinton, Essex, Franklin, Jefferson, Lewis, St. Lawrence
Finger Lakes	Broome, Chemung, Chenango, Delaware, Genesee, Livingston, Monroe, Ontario, Orleans, Otsego, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates
Erie Canal Central Region	Cayuga, Cortland, Madison, Oneida, Onondaga, Oswego, Seneca
Lake George	Albany, Clinton, Columbia, Essex, Franklin, Greene, Jefferson, Lewis, Rensselaer, St. Lawrence, Saratoga, Schnectady, Warren, Washington
Lake Champlain	Albany, Clinton, Columbia, Essex, Franklin, Greene, Jefferson, Lewis, Rensselaer, St. Lawrence, Saratoga, Schnectady, Warren, Washington
Chautauqua Lake	Allegany, Cattaraugus, Chautauqua, Erie, Niagara
Lower Hudson River	Albany, Bronx, Columbia, Dutchess, Greene, Kings, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schnectady, Sullivan, Ulster, Warren, Washington, Westchester

Table B-1. (Cont.)

Water bodies	Counties included in regional economic impact model
Long Island Sound	Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester
Long Island South Shore	Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester
Great South Bay	Suffolk
The Peconics	Suffolk

Table B-2. Expenditure categories from the survey and their related IMPLAN classification.

Nontrip-related Expenditures	IMPLAN Code	Description (Each category defined once)
Boat purchase	401	Motor vehicle & parts dealers
Loan payments	425	Nondepository credit intermediation, etc.
Slip/mooring rental	478	Other amusement and recreation industries
Winterization-storage	478	
Misc. marina services	478	
Hull repair or bottom paint	478	
Engine purchase	401	
Engine maintenance/repair	486	Household goods repair & maintenance
Electronics (purchase & repair)	409	Sporting goods and other stores
Boat equipment and supplies	401	
Boat trailers/car racks	401	
Fishing equip.	409	
Waterski equip.	409	
Scuba diving equip.	409	
Boating clothing	408	Clothing & clothing accessory stores
Insurance	428	Insurance agencies, etc.
Boat registration fee	499	Other state & local government enterprises
Dues, boating orgs.	478	
Magazine subscriptions	414	Periodical publishers
Other	410	General merchandise stores
Trip-related Expenditures		
Marinas-yacht clubs (fuel, launching, supplies)	478	
General launch fees	478	
Lodging	479	Hotels and motels
Restaurant-bars	481	Food services and drinking places
Grocery-convenience store	405	Food and beverage stores
Gas stations	407	Gasoline stations
Bait & tackle shops	409	
Tournament fees	493	Civic, social, professional organizations, etc.
Misc. retail purchases	411	Miscellaneous store retailers
Entertainment & other	478	

Table B-3. Tests for nonresponse bias.

Question	Downstate county of principal use		Upstate county of principal use	
	Respondents	Non-respondents	Respondents	Non-respondents
	Percent			
Boat in NYS in 2003				
Yes	89.4	68.0	88.0	86.0
No	10.6	32.0	12.0	14.0
	($x^2 = 19.1$, df = 1, $p < 0.05$)			NS*
Gain access primarily from:				
Marina or yacht club	45.5	55.9	21.9	29.3
Private dock or mooring	34.9	29.4	33.7	31.7
Boat launch ramp	19.6	14.7	44.4	39.0
	NS			NS
Fish while boating				
Yes	67.7	61.2	65.9	70.0
No	32.3	38.8	34.1	30.0
	NS			NS
Water ski/tube while boating				
Yes	20.1	22.4	35.6	38.0
No	79.9	77.6	64.4	62.0
	NS			NS
Cruise/sail while boating				
Yes	65.5	65.3	58.1	72.0
No	34.5	34.7	41.9	28.0
	NS			NS
Taken a boating safety course				
Yes	72.8	64.0	47.1	60.0
No	27.2	36.0	52.9	40.0
	NS			NS
Support mandatory boater education				
Yes	80.7	89.6	70.6	74.0
No	19.3	10.4	29.4	26.0
	NS			NS

Table B-3. (cont.)

Question	Downstate county of principal use: Respondents	Downstate county of principal use: Non-respondents	Upstate county of principal use: Respondents	Upstate county of principal use: Non-respondents
	Percent			
Gender				
Male	93.2	78.0	89.7	78.0
Female	6.8	22.0	10.3	22.0
	($x^2 = 13.98$, df = 1, $p < 0.05$)		($x^2 = 7.1$, df = 1, $p < 0.05$)	
	Mean			
Number of boats registered in name	1.59	1.18	1.57	1.28
	($t = 4.18$, df = 531, $p < 0.05$)		($t = 2.9$, df = 1,724, $p < 0.05$)	
If cost was incurred:				
Cost of seasonal slip or mooring rental	1,399	1,496	941	921
	NS		NS	
Cost of winterization and storage	972	1,329	436	534
	NS		NS	
Cost of boat equipment and supplies	447	766	232	349
	NS		NS	
Number of days at most popular spot	57.7	27.3	51.5	29.6
	($t = 5.3$, df = 398, $p < 0.05$)		($t = 3.7$, df = 1,394, $p < 0.05$)	
Costs at most popular spot (including zeros):				
Marinas or yacht clubs	592	617	251	318
	NS		NS	
Restaurants or bars	187	334	150	265
	NS		NS	
Grocery or convenience-type stores	105	147	161	181
	NS		NS	
Gas stations	280	535	147	166
	NS		NS	
Age	53.6	55.0	55.8	52.6
	NS		NS	
Number of children in household	0.7	0.8	0.5	0.8
	NS		NS	

*Tests for statistical differences between respondents and nonrespondents were not significant.