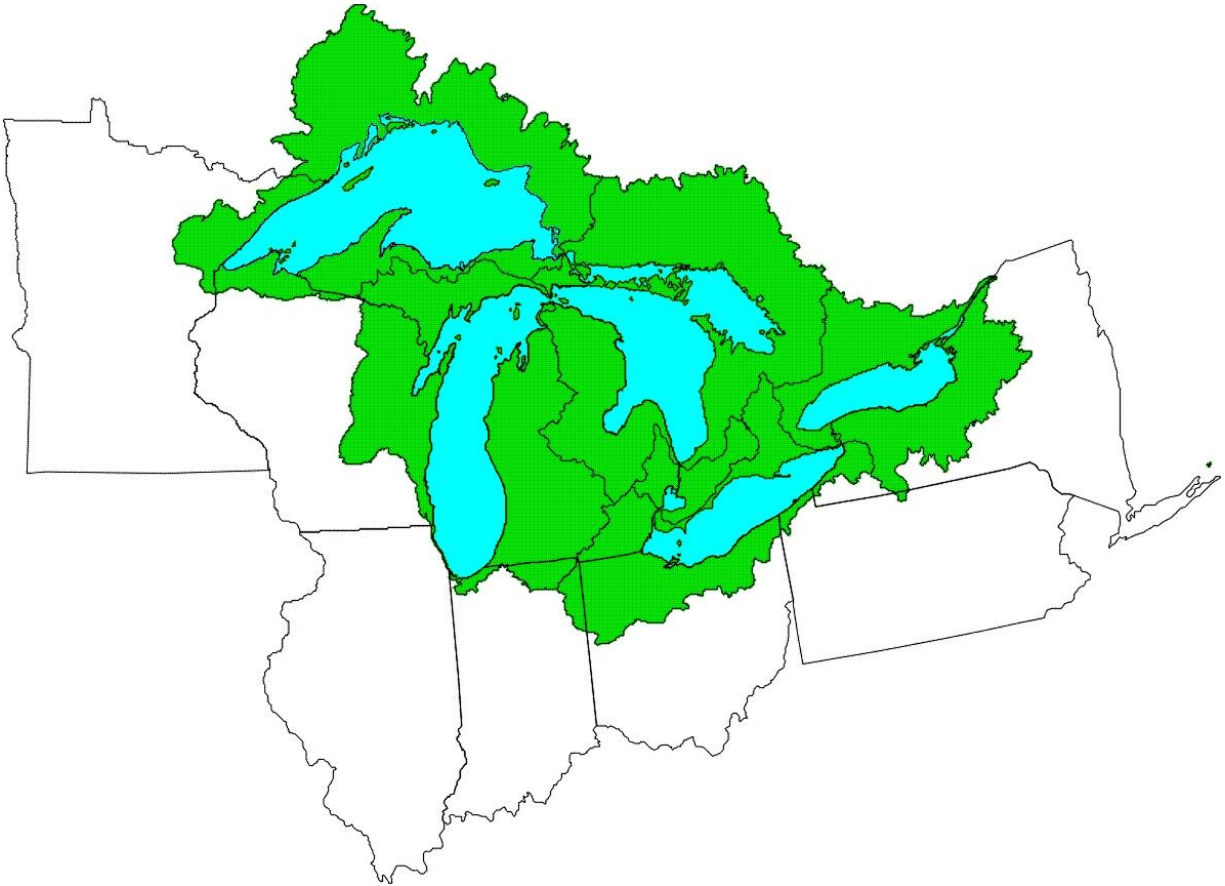


# Great Lakes Recreational Boating

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In response to Public Law 106-53, Water Resources Development Act of 1999, Section 455(c), John Glenn Great Lakes Basin Program,  
Great Lakes Recreational Boating

## Main Report



January 2005



US Army Corps  
of Engineers®



# Great Lakes Recreational Boating Economic Benefits Study

U.S. Army Corps of Engineers

**January, 2005**



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# Introduction

## **Study Authority**

The Water Resources Development Act of 1999 included a provision titled “John Glenn Great Lakes Basin Program” (Section 455). A subsection, “Great Lakes Recreational Boating,” authorized the Secretary of the Army to “submit to Congress a report detailing the economic benefits of recreational boating in the Great Lakes Basin, particularly at harbors benefiting from operation and maintenance projects for the Corps of Engineers.” Section 455 also directed the Secretary in carrying out its provisions to (1) encourage public participation, and (2) cooperate and, as appropriate, collaborate with Great Lakes states, tribal governments, and Canadian federal, provincial, and tribal governments. No money was appropriated by Congress for fiscal year 2000 to carry out the provision.

## **Purpose and Scope**

Recreational boating has long been recognized as having a powerful impact on the Great Lakes regional economy. Documentation of that impact, however, has historically been fragmented and partial. This study represents the most comprehensive effort yet to identify the economic benefits of Great Lakes recreational boating in their entirety.

Boating in the Great Lakes provides a great deal of activity and enjoyment, but it also supports a number of important industries in the region, generating income and jobs especially in coastal communities. Impacts are estimated by tracing the flow of spending of boaters within the regional economy to identify jobs and income resulting from this spending. The analysis includes marine businesses such as marinas, charterboats and boat dealers as well as the broader impacts of boaters on tourism industries and supporting businesses.

The study is unprecedented in both breadth and methodology. While previous economic impact studies have focused on state-specific and industry sector-specific aspects of recreational boating, this study embraces the entire eight-state region, and identifies the total impact, direct and secondary, generated by Great Lakes boaters and the industry that supports them. Much of the data on boater spending was collected by Michigan State University’s National Recreational Marine Research Center through recently developed on-line surveys involving the National Boater Panel formed in 2003 and now comprised of some 10,000 volunteer recreational boaters willing to report their ongoing spending activity.

## **Location of Study**

The geographic purview of the study includes the eight Great Lakes states of Minnesota, Wisconsin, Illinois, Indiana, Ohio, Michigan, Pennsylvania and New York, with primary focus on recreational boating activity in Great Lakes coastal zones and connecting channels.

## **Prior Studies and Reports**

In May 2000 the U.S. Army Corps of Engineers began a four-month initial study effort to assess data in support of future economic benefit/impact studies regarding recreational boating on the Great Lakes.

These studies were initiated in recognition of the Army Corps of Engineers Coast Saving Initiative Process and its implications for the maintenance of federally authorized Great Lakes harbors. The Great Lakes Commission advocated to Congress that a study be undertaken of recreational boating benefits on the Great Lakes and that these findings be incorporated into the Corps' Cost Savings Initiative. Great Lakes recreational boating and related sports fishing are a large part of the region's tourism and outdoor recreation economy. The economic impact of these activities accrues to both coastal locations and places inland depending on retail expenditures and levels of participation. A thorough accounting of the economic benefits of U.S. Great Lakes recreational boating demonstrates its importance to the regional economy.

Two specific products were produced in 2000, including an illustrated, eight-page booklet presenting an economic summary of recreational boating in the Great Lakes and St. Lawrence Region, and a 23-page report titled *Recreational Boating and the Great Lakes: An Initial Assessment of Data in Support of Future Economic Benefit/Impact Studies*.

In the interest of maintaining Congressional and regional focus on Great Lakes recreational boating, Great Lakes Commission staff consulted in the summer of 2001 with a broad range of recreational boating interests and state agencies regarding trends in boating, falling water levels and dredging needs. The culmination of these efforts was the convening in July, 2001 of a Recreation Boating and Dredging Symposium in Cleveland, Ohio. The Great Lakes Dredging Team, a federal/state partnership and the Great Lakes Commission cosponsored this daylong event.

In November 2001, the Detroit District completed a Special Reconnaissance Report for Section 455(c) that helped establish a federal interest in proceeding with the full study called for by Congress. The reconnaissance study was approved late in fiscal year 2002 and the economic impact (feasibility) study was initiated in fiscal year 2003.

## **Existing Conditions**

The Great Lakes--Superior, Michigan, Huron, Erie and Ontario--and their connecting channels form the largest fresh surface water system on earth. Covering nearly 95,000 square miles, these freshwater seas hold an estimated 6 quadrillion gallons of water, about one-fifth of the world's fresh surface water supply and nine-tenths of the U.S. supply.

The channels that connect the Great Lakes are an important part of the system. The St. Marys River is the northernmost of these, a 60-mile waterway flowing from Lake Superior down to

Lake Huron. At the St. Marys rapids, the Soo Locks bypass the rough waters, providing safe transport for ships. The St. Clair and Detroit rivers, and Lake St. Clair between them, form an 89-mile long channel connecting Lake Huron with Lake Erie. The 35-mile Niagara River, with its spectacular falls, links lakes Erie and Ontario; the manmade Welland Canal also links the two lakes, providing a navigation route around the falls. From Lake Ontario, the water from the Great Lakes flows through the St. Lawrence River to the Atlantic Ocean about 1,000 miles away.

The Great Lakes basin encompasses 295,710 square miles with the Great Lakes and their connecting channels making up about a third of this area. Forests account for the largest percentage of total basin area, at about 40 percent. Agriculture accounts for about a quarter of basin area. The “built environment” representing industrial, commercial, residential, institutional, and transportation uses takes up less than 3 percent of the area of the Great Lakes basin. As of the 2000 census, the eight Great Lakes states were home to 75.4 million people, or almost 27 percent of the U.S. population.

The Great Lakes basin is the resource centerpiece of a major industrial and agricultural region in North America. Although the region straddles an international border which separates distinct political traditions and national cultures, an integrated resource base and manufacturing complex has developed. This binational regional economy with its historical ties to the Great Lakes and its manufacturing sector strengths is continuing to evolve. The region’s economic future will have to contend with increased competition within the domestic and global economies, a maturing industrial and supporting infrastructure, continued urbanization and the environmental impact of economic and social activity.

While there have been several state-specific and resource-specific studies of recreational boating in the region, there has been, to date, no such study undertaken for the Great Lakes. Moreover, as stated above, the Corps’ cost-benefit methodology for evaluating projects does not consider the economic benefits that recreational boating generates in the region.

As a result, timely dredging of federally authorized shallow draft harbors and other navigation channels where commercial navigation is declining and recreational boating is increasing could be in jeopardy if Corps operation and maintenance funding declines.

### **Problems and Opportunities**

Estimates for some 50 recreational harbors in the Corps of Engineers’ Detroit and Buffalo Districts indicate that, in Fiscal Year 2005 alone there remained about 750,000 cubic yards of material that needed to be dredged to fully maintain shallow draft harbors, but for which funding was not available. The cost to complete the unmet dredging needs in these 50 recreational harbors in FY05 was estimated at \$7.6 million.

Because of diminishing federal funds for dredging activities, dredging priorities in recent years have focused on maintaining commercial navigation channels. Recreational and shallow draft harbors are getting dredged less frequently or not at all. In light of limited funds, federal policy for dredging recreational harbors has become increasingly problematic.

Recreational harbor dredging is usually done in the areas of greatest need. The perceived rationale is that commercial navigation is clearly in the federal interest, while recreational boating activities are lower priority. This approach does not fully recognize the value of recreational harbors to the nation as a whole, and in light of the economic data contained in this study, may demonstrate the need for additional consideration.

This summary has the opportunity to demonstrate the significant impact that recreational boating has to the Great Lakes economy, especially for the decision makers who rely on these data for policy, resource management, economic development and authorization purposes at any level of government. The development and presentation of this information also can provide source data for new or takeoff studies regarding Great Lakes recreational boating and its regional economic impact.

# Summary of Economic Benefits

## **Boater spending**

An average Great Lakes boat owner spends about \$3,600 per year on their boat including \$1,400 on craft-related expenses (e.g., equipment, repairs, insurance, slip fees) and \$2,200 on boating trips (e.g., gas and oil, food, lodging) involving an average of 23 boat days.

Average spending per boat day on trips varies from \$76 for boats less than 16 feet in length to \$275 per day for boats larger than 40 feet.

The greatest trip expenses are for boat fuel (22%), restaurants and bars (17%) and groceries (14%).

The majority of annual craft expenses are for equipment (39%), maintenance and repair (29%) and insurance (14%).

Registered watercraft in Great Lakes states spent almost \$10 billion on boating trips in 2003 and \$5.7 billion on craft expenses for a total of almost \$16 billion.

## **Economic impacts of boater spending**

The \$9.9 billion in boater trip spending has a direct economic impact on the region of \$6.8 billion in sales, \$2.5 billion in personal income, \$1.7 billion in value added, and 107,000 jobs.

With secondary effects, the total impact of boater trip spending is 160,000 jobs and \$4.3 billion in personal income.

Combining trip and craft-related spending, the total impact on the region's economy is 244,000 jobs and \$7.2 billion in personal income.

There were 110,000 boats kept at Great Lakes marinas in 2003, the majority in Michigan and Ohio. These boats spent \$665 million on trip-related expenses and \$529 million on craft-related items.

Direct economic impact of registered boats on Great Lakes states' economies include almost \$11.5 billion annually in sales, \$4 billion in personal income and \$6.4 billion in value added, for a total of over \$22 billion.

With secondary impacts added, the total impact on Great Lakes states' economies of registered recreational boats is over \$19 billion in sales, \$6.4 billion in personal income, \$9.2 billion in value added, and 246,117 jobs.

## **Numbers and types of registered boats in the Great Lakes**

There are almost 4.3 million recreational registered boats in the eight Great Lakes states. This comprises a third of all numbered U.S. recreational vessels, and represents a 1.3 increase over the five-year period between 1999 and 2003.

The most prevalent size boat on the Great Lakes is between 16 and 20 feet in length, which covers about 28 percent of the Lakes' recreational fleet.

The most popular type of boat on the Lakes is the 16 to 24-foot fiberglass runabout.

## **Economic impact of Great Lakes marinas**

It is estimated that there are more than a quarter million marina slips available in Great Lakes states. Most (89 percent) are seasonal rental slips.

An average of 93 percent of the accessible seasonal slips in Great Lakes counties were occupied the summer of 2004, which means that about 107,000 boats were kept in Great Lakes county marinas during the boating season.

At a typical Great Lakes marina, Tower Marine in Saugatuck, Michigan, the 395 boats renting slips spent \$2.85 million on annual craft expenses and another \$2.85 million on boating trips, accounting for 15,000 days of boating in 2004. The direct economic impacts of trip spending was \$1.8 million in sales, \$661,00 in wages and salaries and \$952,000 in value added to the local economy, supporting 37 jobs. Annual craft expenses directly supported an additional 44 jobs from \$2.6 million in direct sales, \$834,000 in wages and salaries and \$1.5 million in value added.

## **Boat sales and watercraft manufacturing**

Residents of Great Lakes states represent almost a quarter (23.6 percent) of the 2003 nationwide purchases of new power boats, outboard motors, trailers and accessories.

The majority of the manufacturers headquartered in Great Lakes states produce powerboats including outboards (58 manufacturers), inboards/outboards (47 manufacturers), pontoons (39 manufacturers) and inboards (18 manufacturers). There are also 47 canoe/kayak makers and 23 sailboat manufacturers.

Retail boat sales in Great Lakes states in 2003 totaled \$2.025 billion.

It is estimated that 182,700 watercraft were manufactured in 2003 by the 250 manufacturers with headquarters in Great Lakes States.

It is conservatively estimated that watercraft manufacturers in the Great Lakes states employ 18,500 persons.

**Economic impact of charter fishing**

The average cost of the half-day lake trout and salmon charter, the most popular trip, is \$328 per boat. This cost ranges from \$25 to \$560 across the region.

Estimated annual revenues for charter boat operators are \$19,782, with a net positive cash flow of \$4,298 for firms making boat loan payments and a net positive cash flow of \$8,339 for firms not making boat loan payments.

Depending on the depreciation situation, the average Great Lakes charter firm operated at a net return of either negative (-\$791) or a positive \$4,078 for the owner's time and labor.

Charter firms in the Great Lakes, totaling 1,746, spend an average of \$11,443 annually on operating expenses for a total of \$19.96 million.

The direct and secondary impacts of charter fishing on Great Lakes communities is approximately \$61 million in sales, \$25 million in salaries and wages and \$37 million in value added. The total employment impact of charter fishing in Great Lakes states is 1, 266 jobs.





## **Chapter 1**

# **Economic impacts of recreational boating in the Great Lakes**

At the core of this study is the economic impact on the Great Lakes region of recreational boaters, including what they spend directly both on each boating trip and on their boats over the course of the year, and the secondary economic impact generated by boater spending. While these impacts have been defined on state-specific basis for some states recent years, they had not been calculated Great Lakes basinwide basis to the degree of accuracy now available.

### **Methods**

Estimates of boater spending are based on the number of registered craft in each Great Lakes state, the numbers of marina slips in Great Lakes states, and spending and activity patterns of recreational boaters as measured in 2003-2004 boater surveys.

The number of registered craft in the seven Great Lakes states other than Pennsylvania was obtained from an analysis of data provided by Info-Link a company that regularly analyzes boat registration data. For Pennsylvania, the only boaters included were those living in Erie County, the state's only Great Lakes-fronting county.

Boats were segmented into six size classes based on length in feet (<12, 12-15, 16-20, 21-28, 29-40 and 41+). Info-Link provided an Access database of watercraft that had "current registrations." These are boats eligible to be operated the summer of 2004. The number of boats differs from the U.S. Coast Guard-reported registration information, which in some instances contains boats whose registrations have lapsed. Some states keep these boats on their registration lists because a high percentage will re-register.

The number of boats kept at marinas was estimated from a national marina database. First, all marinas in each state, and marinas specifically serving the Great Lakes and connecting waters were identified using zip codes of marinas and bodies of water. Phone calls were made to marinas with zip codes bordering the Great Lakes to verify the numbers of seasonal slips. The percentages of seasonal slips in each state were estimated from these calls. Seasonal slip percentages were applied to the total number of slips and moorings in each state. An occupancy rate of 93 percent was applied to the number of seasonal slips to estimate the number of occupied marina slips and occupied Great Lakes marina slips in each state.

Boats stored at marinas (based on occupied seasonal slips) were allocated to boat size classes based on the number of boats in each size class in each state and the propensities of boats of each size class to use marinas. Surveys of Michigan registered boaters in 1994 and 1998 were used to estimate the percentages of boats in each size class stored at marinas. These distributions were

applied to the other states taking into account the number of marina slips in each state and differences across the eight states in the distribution of registered boats by size group. Registered boats stored at marinas were split out of each size class, yielding the following nine boat segments:

**Boats not stored in marina slips or moorings**

Boats <16 feet

Boats 16-20 feet

Boats 21-28 feet

Boats 29-40 feet

Boats 41 feet or longer

**Boats stored in marina slips or moorings**

Boats up to 20 feet

Boats 21-28 feet

Boats 29-40 feet

Boats 41 feet or longer

Boat size and storage segments explain much of the variation in boater spending patterns. Distinct trip and annual craft spending averages were estimated for these nine segments using the 2003-2004 boater panel survey. Spending averages for boats registered in Great Lakes states were not significantly different than the national averages. Trip spending was estimated on a per boat day basis, while craft expenses were estimated on an annual basis per boat.

Spending averages within segments were applied to the numbers of registered craft in each state. Craft expenses are estimated by multiplying an annual average spending per boat times the number of boats in each segment. Annual spending on trips is calculated by first estimating the number of boat days by segment. Boat days are computed by multiplying the average number of days of use times the number of boats in each segment. Average days of use were estimated for the nine segments using the 2003-2004 boat panel survey data. Trip spending is then estimated by multiplying boat days by the average spending per boat day of each segment.

Total spending estimates are applied to input-output models to estimate economic impacts. Statewide impacts are estimated for each state using overall statewide boat registrations and an input-output model for each state. Impacts are also estimated for boats using the Great Lakes and for boats stored at Great Lakes marinas. Spending and impacts for Pennsylvania only cover Erie County.

Secondary sources do not clearly or consistently identify boats using the Great Lakes. Statewide registered boater surveys in Michigan (Stynes, Wu and Mahoney 1998) have identified the proportion of boats of different size classes using the Great Lakes and also identified boats stored at sites with Great Lakes access.

Other states and boater studies have often used boats registered in Great Lakes counties as an indicator of Great Lakes use. Most states report registrations by place of residence rather than

where the boat is located. Many boats kept at marinas or seasonal homes are stored and used in a different county than where the boater lives.

There are also rivers, streams and inland lakes in Great Lakes counties that do not provide Great Lakes access. While boaters living in counties adjacent to the Great Lakes are more likely to use the Great Lakes, many smaller craft in these counties are not used on the Great Lakes. Estimates of the number of boats using the Great Lakes will therefore be subject to unknown errors. The procedures applied to Michigan boat registrations balance quite well with previous estimates of the distribution of boating activity between the Great Lakes and inland waters in Michigan. There may, however, be some differences across states in Great Lakes use that will not be fully taken into account.

Input-output models are estimated using the IMPLAN® system, a widely used economic impact modeling system developed by the Minnesota IMPLAN Group, Inc., and 2001 economic data for each Great Lakes state. A fixed set of retail and wholesale margins for goods bought by boaters is applied across the seven states. Twenty percent of manufactured goods bought by boaters, including petroleum, are assumed to be made within the state. This means that eighty percent is assumed to be imported or not to represent production that would otherwise be lost to the state. IMPLAN's regional purchase coefficients (RPC) for petroleum range from 87 percent for Illinois to only 3 percent for New York.

As a significant share of boater spending goes to purchases of boat and auto fuel, these differences in RPC's would yield quite different impacts in each state if the associated petroleum refining were included. However, it is unlikely that boater fuel purchases impact fuel production in each state, as boating makes up a small percentage of all fuel sold and any unused refining capacity can readily find other markets.

Impact estimates use sector-specific economic ratios and multipliers from input-output models for each state estimated with the IMPLAN system and 2001 economic data. Basin-wide impact estimates use an input-output model covering the seven Great Lakes states and Erie, County, PA. Employment to sales ratios are adjusted to 2003 based on an overall price index. Sales, income and value added ratios are not adjusted. Spending categories are matched with IMPLAN sectors based on NAICS industry classifications. Marinas are part of a broader amusements and recreation sector. Economic ratios and multipliers for marinas may differ somewhat from the overall averages for this sector.

### **Calculating Boating Days, Craft Spending and Trip Spending**

Data used to estimate boating days, craft spending and trip spending for different size boats were obtained from on-line surveys conducted of the National Recreation Marine Research Center's National Boater Panel. A primary purpose of this continuing series of on-line surveys was to collect information needed to verify participation (e.g., number of persons boating, boating days, boating activities, type and length of boating trips) and the economic significance of boating.

The National Boater Panel was formed in 2003 and now consists of almost 10,000 (9,780) boaters from around the country. The Panel was enlisted through various ways, including a recruitment announcement emailed to West Marine customers nationwide, mailings to the membership of other boating organizations, and stories in various boating publications.

To join the Panel, boaters complete an on-line registration form that collects information on the boats that they own, their boating activity (amount and type) and their individual and household characteristics. Panel Members only provide their email addresses, and not their names, so they remain anonymous. Panel Members who complete different on-line surveys each year receive a coupon for \$10 off one \$100 purchase at West Marine stores. West Marine's assistance and incentive is influential in generating a high response rate to Panel surveys.

In addition to the surveys on craft and boating trip spending, the Panel has completed a survey pertaining to their opinions and perspectives related to a proposed requirement that adults wear life jackets while underway in all boats and the impacts of fuel price increases on both the amount and type of boating activity during Summer 2004 (<http://www.prr.msu.edu/boatfuel/>). The report of the results of this PFD Survey can be accessed at this web address <http://www.prr.msu.edu/rmrc/pfdsurvey.pdf> and the results of the fuel study can be seen at <http://www.prr.msu.edu/rmrc/boatfuel.pdf>.

On March 22, 2004, emails were sent to all 9,780 members National Boater Panel requesting them to complete an on-line survey (<http://www.prr.msu.edu/boaterpanel2/panelsurvey.html>). A total of 6,062 (62 percent) completed surveys were submitted prior to the April 9, 2004, closing date.

The survey collected comprehensive information on the type and size boats owned, number of days operated and where boats were kept during the boating season. It also collected information related to the dollar amount panel members spent in 2003 to operate and maintain boats that they own. They were asked to report expenses only for one identified boat that they owned and not include spending for consumable items used on boating trips or transportation to and from boating areas (for example, boat or auto fuel, food, bait and lures). They were also asked whether they took any boating trips in January, February, or March 2004. If so they were asked to describe the size and type boat used on the trip, length and destination, and what they spent in different categories near their permanent home or a second and spending away from home (more than 20 miles from home). This information was used to develop the annual craft spending profiles

On the March survey panel members were asked if they would be willing to complete a very short survey during the course of 2004 related to spending on boating trips. Beginning in May 2004, 6,000 panel members who volunteered were surveyed every two weeks concerning their most recent boating trips. They received emails every two weeks during the summer asking them to describe a boating trip they took during the proceeding two weeks, (<http://www.prr.msu.edu/boatpaneltrip/>). This information included trip spending profiles. Information was collected on approximately 8,000 boating trips taken by the owners of different size boats. This information from these surveys was and will continue to be used to develop

comprehensive trip profiles for different size boat segments including boats kept at marinas during the boating season.

The on-line survey was designed in HTML format with ASP coding. It was designed to make recording answers and navigating through the survey including automatic skips to appropriate questions based on responses to previous questions. The coded data was automatically sent to an Access database, eliminating the potential errors associated with manual coding and entry of data that can occur with mail and telephone survey data. The data was then converted into a format and analyzed using Statistical Package of Social Sciences.

### Boater Spending Results

An average boat owner spends about \$3,600 per year on their boat including \$1,400 on craft-related expenses (e.g., equipment, repairs, insurance, slip fees) and \$2,200 on boating trips (e.g., gas and oil, food, lodging) involving an average of 23 boat days. These averages are dominated by the high percentage of mostly smaller watercraft<sup>1</sup>. Owners of larger boats spend considerably more than these averages, up to as high as \$20,000 per year for boats 41 feet and more.

**Table E1. Average Trip Spending by Segments (\$ per boat per day)**

Category	Not Marina					Marina			
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'
Lodging	\$11.73	\$9.01	\$13.94	\$2.29	\$9.14	\$8.85	\$17.46	\$10.60	\$12.05
Marina Services	\$1.30	\$2.42	\$6.35	\$16.35	\$29.03	\$1.43	\$6.16	\$20.86	\$31.80
Restaurant	\$12.92	\$17.18	\$24.40	\$36.51	\$46.32	\$17.53	\$29.27	\$37.07	\$49.46
Groceries	\$12.82	\$13.33	\$19.68	\$24.50	\$40.29	\$13.41	\$20.72	\$25.28	\$50.28
Boat Fuel	\$10.97	\$24.09	\$39.69	\$48.70	\$75.03	\$22.84	\$46.38	\$43.94	\$78.10
Auto Fuel	\$11.54	\$13.42	\$14.21	\$6.56	\$6.27	\$13.12	\$11.18	\$6.42	\$5.87
Repair/Maintenance	\$8.24	\$11.16	\$12.18	\$29.97	\$23.69	\$10.86	\$11.12	\$10.16	\$19.29
Marine Supplies	\$4.35	\$7.02	\$11.31	\$14.81	\$20.95	\$9.25	\$10.24	\$10.72	\$14.83
Recreation/Entertainment	\$1.65	\$2.39	\$6.76	\$6.04	\$11.32	\$1.30	\$5.42	\$8.20	\$7.57
Shopping	\$0.76	\$2.00	\$4.33	\$6.96	\$8.17	\$2.46	\$5.43	\$6.98	\$15.88
Total per Boat Day	\$76.00	\$102	\$153	\$193	\$270	\$101	\$163	\$180	\$285
Average Days Boated per Year	17.7	24.4	33.4	39.9	42.1	28.0	34.7	40.7	44.3

Source: National Boater Panel Survey (2004)

Boating activity and spending vary with boat size and storage. Average spending per boat day on trips varies from \$76 for boats less than 16 feet in length to \$275 per day for boats larger than 40 feet. The greatest trip expenses are for boat fuel (22%), restaurants and bars (17%) and groceries (14%). Boat storage (marina or not) does not significantly influence trip spending. Boat use also varies directly with the size of the boat from 18 days per year for boats less than 16 feet to 42 days for the largest craft. Boats stored at marinas are used slightly more days per year than boats stored elsewhere. (Table E1).

<sup>1</sup> Eighty-seven percent of registered boats in the Great Lakes states are 20 feet or less in length.

Annual craft expenses vary more dramatically by size. Boat size classes are therefore good predictors of spending. For boats not stored at marinas, boat owners spend an average of about \$900 per year for boats under 16 feet, \$2,400 for boats 21-27 feet in length and almost \$10,000 per year for boats over 40 feet (Table E2). Boats stored at marinas incur additional expenses for slip rentals, raising their annual craft expenses to an average of \$3,800 for 21-27 foot boats and \$11,000 per year for boats over 40 feet. The majority of annual craft expenses are for equipment (39%), maintenance and repair (29%) and insurance (14%). New boat purchases are not included in these figures.

**Table E2. Average Annual Craft Spending by Segment (\$ Per Boat)**

Spending Category	Non-Marina					Marina				Total
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'	
Slip	\$9	\$6	\$8	\$9	\$6	\$875	\$1,300	\$2,266	\$3,547	\$1,271
Yacht dues	\$9	\$19	\$56	\$267	\$740	\$149	\$142	\$300	\$507	\$201
Off season storage	\$19	\$28	\$69	\$234	\$194	\$110	\$201	\$488	\$487	\$263
Put in and haul out	\$42	\$33	\$99	\$296	\$563	\$59	4134	\$351	\$571	\$222
Insurance	\$113	\$193	\$366	\$904	\$2,119	\$267	\$343	\$742	\$1,445	\$569
Repairs	\$246	\$421	\$734	\$1,581	\$3,900	\$550	\$817	\$1,474	\$2,276	\$1,111
Equipment	\$441	\$507	\$924	\$1,590	\$1,855	\$514	\$788	\$1,303	\$1,872	\$1,045
Taxes	\$27	\$43	\$103	\$252	\$457	\$49	\$60	\$186	\$510	\$148
<b>Total</b>	<b>\$906</b>	<b>\$1,249</b>	<b>\$2,360</b>	<b>\$5,133</b>	<b>\$9,834</b>	<b>\$2,573</b>	<b>\$3,784</b>	<b>\$7,109</b>	<b>\$11,214</b>	<b>\$4,830</b>

Source: National Boater Panel Survey (2004)

Total Great Lakes state boater trip and craft spending can be estimated by applying the averages in Tables E1 and E2 to the numbers of registered watercraft in each state<sup>2</sup>. We assume the average levels of boating activity and spending do not vary by state. Differences across states are therefore explained by the number of registered watercraft and the distribution of boats in each state across the nine boat segments.

<sup>2</sup> Spending and impact results therefore do not include spending associated with large numbers of unregistered boats or boat rentals.

**SPENDING AND IMPACTS OF ALL REGISTERED WATERCRAFT ON THE GREAT LAKES REGION ECONOMY**

**Table E3. Total Trip Spending by Segment (\$ Millions)**

Spending Category	Non-Marina					Marina				Total
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'	
Lodging	\$400	\$370	\$154	\$2	\$1	\$9	\$70	\$21	\$4	\$1,031
Marina Services	\$44	\$99	\$70	\$15	\$4	\$1	\$25	\$41	\$9	\$310
Restaurant	\$440	\$706	\$270	\$34	\$7	\$18	\$117	\$73	\$14	\$1,679
Groceries	\$436	\$548	\$218	\$23	\$6	\$14	\$83	\$50	\$15	\$1,392
Boat Fuel	\$374	\$990	\$439	\$45	\$11	\$24	\$186	\$87	\$23	\$2,177
Auto Fuel	\$393	\$552	\$157	\$6	\$1	\$14	\$45	\$13	\$2	\$1,181
Repair/Maintenance	\$281	\$459	\$135	\$28	\$3	\$11	\$44	\$20	\$6	\$987
Marine Supplies	\$148	\$289	\$125	\$14	\$3	\$10	\$41	\$21	\$4	\$655
Recreation/Entertainment	\$56	\$98	\$75	\$6	\$2	\$1	\$22	\$16	\$2	\$278
Shopping	\$26	\$82	\$48	\$6	\$1	\$3	\$22	\$14	\$5	\$206
<b>Total</b>	<b>\$2,598</b>	<b>\$4,194</b>	<b>\$1,690</b>	<b>\$178</b>	<b>\$39</b>	<b>\$105</b>	<b>\$653</b>	<b>\$355</b>	<b>\$83</b>	<b>\$9,895</b>

Note: Trip spending totals are estimated by multiplying the per day spending averages in Table E1 by the number of boat days by registered watercraft in each boat segment (Table M5). Boat days are estimated by multiplying the number of registered watercraft in each segment by the average days per boat for that segment (Table E1). Trip spending totals cover all watercraft registered (statewide) in Great Lakes States (except only Erie County in PA). All Figures are in \$ millions.

**Table E4. Total Annual Craft Spending by Segment in Great Lakes States (\$ Millions)**

Spending Category	Non-Marina					Marina				Total
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'	
Slip	\$17	\$11	\$3	\$0	\$0	\$32	\$150	\$110	\$23	\$346
Yacht dues	\$17	\$33	\$18	\$6	\$3	\$5	\$16	\$15	\$3	\$117
Off season storage	\$37	\$47	\$23	\$5	\$1	\$4	\$23	\$24	\$3	\$167
Put in and haul out	\$80	\$55	\$33	\$7	\$2	\$2	\$15	\$17	\$4	\$216
Insurance	\$218	\$325	\$121	\$21	\$7	\$10	\$40	\$36	\$10	\$787
Repairs	\$473	\$709	\$243	\$37	\$13	\$20	\$94	\$71	\$15	\$1,676
Equipment	\$847	\$854	\$306	\$37	\$6	\$19	\$91	\$63	\$12	\$2,236
Taxes	\$53	\$72	\$34	\$6	\$2	\$2	\$7	\$9	\$3	\$187
<b>Total</b>	<b>\$1,742</b>	<b>\$2,106</b>	<b>\$781</b>	<b>\$119</b>	<b>\$34</b>	<b>\$95</b>	<b>\$437</b>	<b>\$344</b>	<b>\$74</b>	<b>\$5,731</b>

Note: Craft spending totals are estimated by multiplying the per boat annual craft spending averages in Table E2 by the number of registered watercraft in each boat segment (Table R7). Craft spending totals cover all watercraft registered (statewide) in Great Lakes States (except only Erie County in PA). All Figures are in \$ millions.

Registered watercraft in Great Lakes states<sup>3</sup> spent almost \$10 billion on boating trips in 2003 (Table E3) and \$5.7 billion on craft expenses (Table E4) for a total of almost \$16 billion. Boats stored at marinas account for 12 percent of trip spending and 17 percent of craft spending.

### **Economic Impacts of Boater Spending**

The economic impacts of boater spending on the Great Lakes regional economy can be estimated by applying the spending to an input-output (I-O) model of the region's economy. For the Great Lakes basinwide analysis, a model was estimated for a region consisting of the eight Great Lakes states<sup>4</sup>. The I-O model was estimated using the IMPLAN system (MIG., Inc. 1999) and 2001 economic data for the region. Trip and craft spending categories were matched with IMPLAN sectors based on NAICS industry classifications.

The model estimates direct and secondary economic impacts within the region in terms of sales, jobs, personal income, and value added<sup>5</sup>. Direct effects cover economic activity in businesses selling goods and services directly to boaters. Secondary effects include indirect effects on backward linked industries and induced effects from household spending of income earned directly or indirectly from boaters. The aggregate sales multipliers for the region are 1.9 for trip-related spending and 1.7 for craft-related spending<sup>6</sup>. Multipliers for individual states are slightly lower than for the region as a whole.

Regional economic impacts are estimated separately for trip and craft-related spending. The \$9.9 billion in boater trip spending has a direct economic impact on the region of \$6.8 billion in sales<sup>7</sup>, \$2.5 billion in personal income, \$1.7 billion in value added, and 107,000 jobs. With secondary effects, the total impact of boater trip spending is 160,000 jobs and \$4.3 billion in personal income (Table E5).

The \$5.7 billion in boater craft spending has a direct economic impact on the region of \$4.6 billion in sales, \$1.6 billion in personal income, \$2.9 billion in value added, and 51,000 jobs. With secondary effects, the total impact of craft-related boater spending is 84,000 jobs and \$2.9 billion in personal income (Table E6). Combining trip and craft-related spending, the total impact on the region's economy is 244,000 jobs and \$7.2 billion in personal income.

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<sup>3</sup> For Pennsylvania only boats registered in Erie County are included.

<sup>4</sup> Only Erie County was included for Pennsylvania.

<sup>5</sup> See the Glossary for definitions of economic terms

<sup>6</sup> The aggregate multipliers represent weighted averages of multipliers for individual sectors in proportion to their share of boater spending.

<sup>7</sup> Direct sales are less than total spending as it excludes producer prices of goods bought at retail that are not manufactured within the region. Only 20% of the producer prices of goods bought at retail are assumed to create impacts on manufacturing sectors. The remainder represents imports or production not directly affected by boater spending. A large percentage of the excluded sales is associated with boat and auto fuel purchases. The models do capture 100% of the retail margins on these purchases and 60% of wholesale margins.



**Table E5. Economic Impacts of Trip Related Spending for Registered Boats in Great Lakes States**

Sector/Spending Category	Sales \$ Millions	Jobs	Personal Income \$ Millions	Value Added \$ Millions
<b>Direct Effects</b>				
Lodging	\$1,031	16,416	\$450	\$730
Marina services	\$310	4,100	\$115	\$194
Restaurant	\$1,679	43,421	\$712	\$803
Recreation/entertainment	\$278	3,681	\$103	\$174
Repair/maintenance	\$987	7,222	\$193	\$506
Food processing	\$217	915	\$37	\$57
Marine supplies	\$55	332	\$14	\$17
Petroleum Refining	\$466	180	\$21	\$28
Retail Trade	\$1,444	27,979	\$688	\$899
Wholesale Trade	\$349	2,308	\$134	\$235
Other Local Production	\$22	175	\$7	\$10
<b>Total Direct Effects</b>	<b>\$6,838</b>	<b>106,728</b>	<b>\$2,474</b>	<b>\$3,652</b>
<b>Secondary Effects</b>	<b>\$5,858</b>	<b>53,156</b>	<b>\$1,803</b>	<b>\$1,678</b>
<b>Total Effects</b>	<b>\$12,696</b>	<b>159,884</b>	<b>\$4,277</b>	<b>\$5,330</b>
Multiplier	1.9	1.5	1.7	1.5

**Table E6. Economic Impacts of Craft Related Spending for Registered Boats in Great Lakes States**

Sector/Spending Category	Sales \$ Millions	Jobs	Personal Income \$ Millions	Value Added \$ Millions
<b>Direct Effects</b>				
Slip	\$346	4,577	\$129	\$216
Yacht dues	\$17	1,548	\$44	\$73
Off season storage	\$67	2,211	\$62	\$104
Put in and haul out	\$216	2,857	\$80	\$135
Insurance	\$787	6,870	\$382	\$682
Repairs	\$1,676	12,269	\$328	\$859
Retail Trade	\$930	18,019	\$443	\$579
Wholesale trade	\$223	1,471	\$85	\$150
Local Manufacturer	\$187	1,134	\$46	\$57
<b>Total Direct Effects</b>	<b>\$4,647</b>	<b>50,955</b>	<b>\$1,600</b>	<b>\$2,855</b>
<b>Secondary Effects</b>	<b>\$3,447</b>	<b>33,095</b>	<b>\$1,261</b>	<b>\$2,047</b>
<b>Total Effects</b>	<b>\$8,095</b>	<b>84,051</b>	<b>\$2,861</b>	<b>\$4,902</b>
Multiplier	1.7	1.6	1.8	1.7

**Note 1:** Impacts of both trip and craft spending are estimated by applying the total trip spending in Table E3 and total craft spending in Table E4 to an input-output model of the Great Lakes region economy. The I-O model was estimated using the IMPLAN (MIG, Inc. 2004) system for a region consisting of seven Great Lakes states (IN, IL, MI, MN, NY, OH, and WI) and Erie County, PA. The I-O model was estimated using 2001 economic data. Distinct multipliers were used for each sector. The aggregate multipliers reported at the bottom of the table are based on the distribution of boater spending across these

sectors. Only 20% of goods purchased by boaters (fuel, groceries, equipment, sporting goods, clothing and souvenirs) are assumed to be made in the region. The region is assumed to capture 100% of the retail margins on these purchases and 60% of wholesale margins.

Note 2: Direct effects cover impacts on businesses that sell directly to boaters and the associated wholesale margins and local production associated with retail sales. Secondary effects include both indirect effects on backward linked industries and induced effects from household spending of income earned directly or indirectly from boater spending. Only economic activity within the Great Lakes region is included. Total effects are the sum of direct and secondary effects. Multipliers are the ratio of total effects to direct effects. Sales represent sales captured by local firms. Direct sales is less than total spending as it excludes the producer prices of goods not manufactured in the region. Jobs are not full time equivalents but include part time and full time positions. Jobs estimates do account for seasonal positions -- three seasonal jobs of 4 months each equates to one job. Personal income includes wages and salaries, income of sole proprietors and payroll benefits. Value added is the sum of personal income, rents and profits and sales and other indirect business taxes.

### **Boater Spending and Impacts for Boats Using the Great Lakes**

Spending and impact totals above cover all registered watercraft in these states. With a few assumptions, we can also estimate spending and impacts associated with boating activity on the Great Lakes and connecting waters. This requires the identification of which registered boats use the Great Lakes. From statewide registered boater surveys in Michigan (Stynes, Wu and Mahoney 1998) and by identifying marinas that serve the Great Lakes, some initial estimates can be made. Larger boats and boaters living near the Great Lakes are more likely to use them.

Some previous studies have used the number of registered watercraft in counties adjacent to the Great Lakes as an indicator of boats using the Great Lakes. However, many smaller boats in these counties predominantly use inland waters and many boaters who do not live in counties adjacent to the Great Lakes store their boats at Great Lakes marinas or nearby seasonal homes. The number of registered boats using the Great Lakes for each state was estimated based on propensities of boats of each size class to use the Great Lakes, the number of Great Lakes marina slips in each state and the percentage of registered watercraft in counties adjacent to the Great Lakes (Table M5). The procedure provides rough estimates of the number of boats using the Great Lakes by state within the nine boat segments.

**SPENDING AND IMPACTS OF REGISTERED WATERCRAFT USING THE GREAT LAKES**

**Table E7. Total Trip Spending for Registered Boats Using the Great Lakes (\$ Millions)**

Spending category	Not Marina					Marina				Total
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'	
Lodging	\$55	\$68	\$43	\$1	\$1	\$4	\$37	\$12	\$3	\$223
Marina services	\$6	\$418	\$20	\$7	\$2	\$1	\$13	\$24	\$7	\$98
Restaurant	\$61	\$130	\$75	\$16	\$4	\$7	\$61	\$43	\$10	\$407
Groceries	\$61	\$100	\$61	\$10	\$3	\$5	\$43	\$30	\$11	\$324
Boat fuel	\$52	\$182	\$122	\$21	\$6	\$9	\$97	\$51	\$16	\$556
Auto fuel	\$55	\$101	\$44	\$3	\$0	\$5	\$23	\$8	\$1	\$240
Repair/Maintenance	\$39	\$84	\$38	\$13	\$2	\$4	\$23	\$12	\$4	\$219
Marine supplies	\$21	\$53	\$35	\$6	\$2	\$4	\$21	\$13	\$3	\$157
Recreation/entertainment	\$8	\$18	\$21	\$3	\$1	\$1	\$11	\$10	\$2	\$73
Shopping	\$4	\$15	\$13	\$3	\$1	\$1	\$11	\$8	\$3	\$59
<b>Total (\$ Millions)</b>	<b>\$360</b>	<b>\$769</b>	<b>\$471</b>	<b>\$82</b>	<b>\$21</b>	<b>\$41</b>	<b>\$342</b>	<b>\$211</b>	<b>\$60</b>	<b>\$2,357</b>

Note: Computed in the same way as Table E3 but using numbers of watercraft using the Great Lakes (Table M4). Differences in use and spending patterns of Great Lake boaters and inland boaters are explained by the boat segments. Boats using the Great Lakes are generally larger than boats that are only used on inland waters and more likely to be stored at a marina. Craft spending estimated in the same manner.

**Table E8. Total Craft Spending for Registered Boats Using Great Lakes (\$ Millions)**

Spending category	Not Marina					Marina				Total
	Less than 16'	16-20'	21-27'	28-40'	More than 40'	Less than 21'	21-28'	28-40'	More than 40'	
Slip	\$2	\$2	\$1	\$0	\$0	\$13	\$78	\$65	\$17	\$178
Yacht dues	\$2	\$6	\$5	\$3	\$1	\$2	\$9	\$9	\$2	\$40
Off season storage	\$5	\$9	\$6	\$2	\$0	\$2	\$12	\$14	\$2	\$53
Put in and haul out	\$11	\$10	\$9	\$3	\$1	\$1	\$8	\$10	\$3	\$56
Insurance	\$30	\$60	\$34	\$10	\$4	\$4	\$21	\$21	\$7	\$190
Repairs	\$66	\$130	\$68	\$17	\$7	\$8	\$49	\$42	\$11	\$398
Equipment	\$117	\$157	\$85	\$17	\$3	\$7	\$47	\$37	\$9	\$481
Taxes	\$47	\$13	\$10	\$3	\$1	41	\$4	\$5	\$2	\$46
<b>Total (\$ Millions)</b>	<b>\$242</b>	<b>\$386</b>	<b>\$218</b>	<b>\$55</b>	<b>\$18</b>	<b>\$37</b>	<b>\$228</b>	<b>\$204</b>	<b>\$53</b>	<b>\$1,441</b>

**Table E9. Economic Impacts of Trip Spending for Boats Using the Great Lakes**

<b>Sector/Spending Category</b>	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Direct Effects</b>				
Lodging	\$223	3,551	\$97	\$158
Marina services	\$98	1,294	\$36	\$61
Restaurant	\$407	10,524	\$173	\$195
Recreation/entertainment	\$73	969	\$27	\$46
Repair/maintenance	\$219	1,602	\$43	\$112
Food processing	\$51	213	\$9	\$13
Marine supplies	\$13	80	\$3	\$4
Petroleum Refining	\$111	43	\$5	\$7
Retail Trade	\$345	6,692	\$164	\$215
Wholesale Trade	\$83	550	\$32	\$56
Other Local Production	\$6	50	\$2	\$3
<b>Total Direct Effects</b>	<b>\$1,629</b>	<b>25,568</b>	<b>\$592</b>	<b>\$869</b>
<b>Secondary Effects</b>	<b>\$1,401</b>	<b>12,720</b>	<b>\$432</b>	<b>\$401</b>
<b>Total Effects</b>	<b>\$3,030</b>	<b>38,289</b>	<b>\$1,023</b>	<b>\$1,271</b>
<b>Multiplier</b>	<b>1.9</b>	<b>1.5</b>	<b>1.7</b>	<b>1.5</b>

Note: See discussion after Table E6. Impacts estimated in the same way as for Tables E5 and E6, but based on spending Tables E7 and E8 covering only boats using the Great Lakes

Overall, about 19 percent of registered watercraft in the region use Great Lakes waters. The percentage is highest in Michigan (32%) due to the proximity of populations to the Great Lakes. Ten percent of registered boats in Indiana and Minnesota are estimated to use the Great Lakes.

For this analysis we assume craft and trip-related spending averages in Tables E1 and E2 apply to Great Lakes boaters. Great Lakes boat days are estimated by multiplying the number of boats using the Great Lakes by the average days of use for each segment (Table M7). Regionwide, an estimated 17 million boat days occurred on the Great Lakes and connecting waters in 2003, representing 18 percent of all boating in Great Lakes states<sup>8</sup>.

<sup>8</sup> Counting only Erie County in PA.

**Table E10. Economic Impacts of Craft Spending for Registered Boats Using the Great Lakes**

Sector/Spending Category	Sales \$ Millions	Jobs	Personal Income \$ Millions	Value Added \$ Millions
<b>Direct Effects</b>				
Slip	\$178	2,361	\$66	\$111
Yacht dues	\$40	523	\$15	\$25
Off season storage	\$53	703	\$20	\$33
Put in and haul out	\$56	747	\$21	\$35
Insurance	\$190	1,658	\$92	\$165
Repairs	\$398	2,912	\$78	\$204
Retail Trade	\$200	3,877	\$95	\$125
Wholesale trade	\$48	317	\$18	\$32
Local Manufacturer	\$40	244	\$10	\$12
<b>Total Direct Effects</b>	<b>\$1,203</b>	<b>13,341</b>	<b>\$416</b>	<b>\$742</b>
<b>Secondary Effects</b>				
	\$897	8,638	\$328	\$33
<b>Total Effects</b>	<b>\$2,100</b>	<b>21,979</b>	<b>\$ 744</b>	<b>\$1,275</b>
Multiplier	1.7	1.6	1.8	1.7

Spending by registered boaters using the Great Lakes and connecting waters in 2003 generated \$2.4 billion in trip-related spending (Table E7) and \$1.4 billion in craft-related spending. The economic impacts of this spending are estimated in the same way as for all boater spending. Results are reported in Tables E9 (trip) and E10 (craft).

### Impacts of Great Lakes Marinas

Results may be further narrowed to boats stored at Great Lakes marinas. The inventory of marinas serving the Great Lakes provides a reasonably firm estimate of the number of boats kept at Great Lakes marinas. The percentage of wet slips and moorings rented on a seasonal basis was determined from a survey of marinas in zip codes adjacent to the Great Lakes. An overall basin-wide occupancy rate of 93 percent (Mahoney 2003 – low water study) was applied to estimate the number of boats in Great Lakes seasonal slips in each state (Table M2). Occupied slips were distributed to boat size classes so that spending could be estimated within the four marina boat size categories (Table M4).

**SPENDING AND IMPACTS OF REGISTERED WATERCRAFT KEPT AT GREAT LAKES MARINAS**

**Table E11. Total Trip Spending for Registered Boats Kept at Great Lakes Marinas (\$ Millions)**

Spending Category	Marina Segment				Total
	Less than 21'	21-27'	28-40'	More than 40'	
Lodging	\$3.52	\$38.30	\$12.16	\$2.51	\$56.48
Marina services	\$0.57	\$13.52	\$23.93	\$6.62	\$44.63
Restaurant	\$6.97	\$64.19	\$42.52	\$10.30	\$123.98
Groceries	\$5.33	\$45.44	\$29.00	\$10.47	\$90.24
Boat fuel	\$9.08	\$101.73	\$50.39	\$16.26	\$177.46
Auto fuel	\$5.22	\$24.52	\$7.36	\$1.22	\$38.32
Repair/maintenance	\$4.32	\$24.39	\$11.66	\$4.02	\$44.37
Marine supplies	\$3.68	\$22.47	\$12.30	\$3.09	\$41.53
Recreation/entertainment	\$0.52	\$11.88	\$9.40	\$1.58	\$23.38
Shopping	\$0.98	\$11.91	\$8.01	\$3.31	\$24.20
<b>Total</b>	<b>\$40.17</b>	<b>\$358.33</b>	<b>\$206.71</b>	<b>\$59.37</b>	<b>\$664.58</b>

**Table E12. Total Craft Spending for Registered Boats Kept at Great Lakes Marinas (\$ Millions)**

Category	Marina Segment				Total
	Less than 21'	21-27'	28-40'	More than 40'	
Slip	\$12.40	\$82.22	\$63.81	\$16.69	\$175.12
Yacht dues	\$2.11	\$9.00	\$8.44	\$2.39	\$21.93
Off season storage	\$1.56	\$12.74	\$13.73	\$2.29	\$30.31
Put in and haul out	\$0.83	\$8.49	\$9.88	\$2.69	\$21.89
Insurance	\$3.79	\$21.67	\$20.89	\$6.80	\$53.15
Repairs	\$7.79	\$51.67	\$41.49	\$10.71	\$111.66
Equipment	\$7.29	\$49.84	\$36.67	\$8.81	\$102.61
Taxes	\$0.69	\$3.81	\$5.25	\$2.40	\$12.15
<b>Total</b>	<b>\$36.47</b>	<b>\$239.43</b>	<b>\$200.14</b>	<b>\$52.7 7</b>	<b>\$528.82</b>

More than half of all boats kept at marinas in Great Lakes states are stored at marinas providing access to the Great Lakes and connecting waters. An estimated 110,000 boats were kept at Great Lakes marinas in 2003, the majority in Michigan and Ohio. These boats spent \$665 million on trip-related expenses and \$529 million on craft-related items. The economic impacts of this spending on the Great Lakes region economy are reported in Tables E14 and E15.

Tables E20 and E21 summarize the boater spending and impact results for (1) all registered watercraft, (2) all registered watercraft using the Great Lakes and (3) all boats kept at Great Lakes marinas. Boats using the Great Lakes account for about a fourth of all registered boater

spending in the Great Lakes states. Boats kept at Great Lakes marinas account for about thirty percent of spending by boats using the Great Lakes.

**Table E13. Summary of Craft and Trip Related Expenses for Registered Boats at Great Lakes Marinas**

Spending Category	Marina Segment				Total
	Less than 21'	21-27'	28-40'	More than 40'	
Number of boats (000's)	14,176	63,271	28,152	4,705	110,304
Average days per boat	28.0	34.7	40.7	44.3	
Total boat days	397,494	2,193,170	1,146,916	208,216	3,945,797
Average spending per boat day	\$101	\$163	\$180	\$285	
Trip spending per boat per year	\$2,834	\$5,663	\$7,343	\$12,617	
Annual craft spending (\$ per boat)	\$2,573	\$3,784	\$7,109	\$11,214	
Total spending per boat per year	\$5,407	\$9,448	\$14,452	\$23,832	
Total craft spending (in Millions)	\$36	\$239	\$200	\$53	\$529
Total trip spending (in Millions)	\$40	\$358	\$207	\$59	\$665
Total spending (in Millions)	\$77	\$598	\$407	\$112	\$1,193
Pct of spending	6%	50%	34%	9%	100%

**Table E14. Economic Impacts of Trip Spending for Registered Boats Kept at Great Lakes Marinas**

Sector/Spending Category	Sales \$ Millions	Jobs	Personal Income \$ Millions	Value Added \$ Millions
<b>Direct Effects</b>				
Lodging	\$56.5	899	\$24.6	\$40.0
Marina services	\$44.6	591	\$16.6	\$27.9
Restaurant	\$124.0	3,206	\$52.6	\$59.3
Recreation/entertainment	\$23.4	310	\$8.7	\$14.6
Repair/maintenance	\$44.4	325	\$8.7	\$22.8
Food processing	\$14.1	59	\$2.4	\$3.7
Marine supplies	\$3.5	21	\$0.9	\$1.1
Petroleum refining	\$30.0	12	\$1.4	\$1.8
Retail trade	\$96.5	1,870	\$46.0	\$60.1
Wholesale trade	\$23.2	153	\$8.9	\$15.6
Other local production	\$2.6	21	\$0.8	\$1.2
Total Direct Effects	\$462.7	7,467	\$171.5	\$248.0
<b>Secondary Effects</b>				
Total Effects	\$865.7	11,130	\$296.1	\$366.6
Multiplier	1.9	1.5	1.7	1.5

**Table E15. Economic Impacts of Craft Spending for Registered Boats at Kept Great Lakes Marinas**

<b>Sector/Spending Category</b>	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Direct Effects</b>				
Slip	\$175	2,319	\$65	\$109
Yacht dues	\$22	290	\$8	\$14
Off season storage	\$30	401	\$11	\$19
Put in and haul out	\$22	290	\$8	\$14
Insurance	\$53	464	\$26	\$46
Repairs	\$112	817	\$22	\$57
Retail Trade	\$43	827	\$20	\$27
Wholesale trade	\$10	68	\$4	\$7
Local Manufacturer	\$9	52	\$2	\$3
<b>Total Direct Effects</b>	<b>\$476</b>	<b>5,529</b>	<b>\$167</b>	<b>\$295</b>
<b>Secondary Effects</b>	<b>\$363</b>	<b>3,522</b>	<b>\$133</b>	<b>\$216</b>
<b>Total Effects</b>	<b>\$839</b>	<b>9,051</b>	<b>\$300</b>	<b>\$512</b>
<b>Multiplier</b>	<b>1.8</b>	<b>1.6</b>	<b>1.8</b>	<b>1.7</b>

### State Level Impacts

Economic impacts can also be estimated for individual states. This analysis does not take into account some cross-state travel by boats registered in a different state than where the boat is used. State level impacts are estimated using a different input-output model for each state. The sum of impacts across states will be somewhat less than the previous basinwide impact results as state level multipliers are lower than basinwide multipliers. There are also some variations in job to sales ratios across states that affect the job estimates.

The following tables summarize impacts on state economies. For these tables total trip and craft spending for boats registered in each state are applied to input-output models for each state. The regionwide sum of state totals will differ some from the impacts reported for the Great Lakes region as a whole as job to sales ratios vary somewhat from state to state and multipliers for statewide regions are smaller than for the Great Lakes region as a whole. For Pennsylvania, spending only covers boats registered in Erie County and impacts are on the Erie County economy, not statewide.



**Table E16. Direct Economic Impacts of Registered Boats on State Economies**

	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Trip Spending</b>				
Illinois	\$662	9,887	\$242	\$356
Indiana	\$825	14,654	\$288	\$428
Michigan	\$1,421	24,582	\$515	\$760
Minnesota	\$1,315	23,257	\$465	\$689
New York	\$945	12,852	\$358	\$524
Ohio	\$709	11,830	\$253	\$374
Erie County (PA)	\$30	578	\$10	\$15
Wisconsin	\$932	17,770	\$326	\$484
<b>Total Trip Spending</b>	<b>\$6,838</b>	<b>115,411</b>	<b>\$2,457</b>	<b>\$3,629</b>
<b>Annual Craft Spending</b>				
Illinois	\$447	4,774	\$154	\$275
Indiana	\$539	6,621	\$181	\$322
Michigan	\$985	11,288	\$341	\$607
Minnesota	\$834	10,115	\$283	\$506
New York	\$706	6,910	\$247	\$440
Ohio	\$510	6,291	\$175	\$311
Erie County (PA)	\$20	317	\$7	\$12
Wisconsin	\$606	8,165	\$204	\$364
<b>Total Craft Spending</b>	<b>\$4,647</b>	<b>54,481</b>	<b>\$1,590</b>	<b>\$2,837</b>
<b>Trip and Craft Spending</b>				
Illinois	\$1,109	14,661	\$396	\$631
Indiana	\$1,364	21,275	\$469	\$750
Michigan	\$2,406	35,870	\$856	\$1,367
Minnesota	\$2,149	33,372	\$748	\$1,195
New York	\$1,651	19,762	\$605	\$964
Ohio	\$1,219	18,121	\$428	\$685
Erie County (PA)	\$50	895	\$17	\$27
Wisconsin	\$1,538	25,935	\$530	\$848
<b>Total</b>	<b>\$11,486</b>	<b>169,891</b>	<b>\$4,049</b>	<b>\$6,467</b>

**Table E17. Total Economic Impacts (Direct and Secondary) of Registered Boats on State Economies**

	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Trip Spending</b>				
Illinois	\$1,195	14,644	\$408	\$501
Indiana	\$1,357	20,362	\$435	\$542
Michigan	\$2,362	34,064	\$796	\$975
Minnesota	\$2,325	33,201	\$765	\$946
New York	\$1,605	18,246	\$572	\$705
Ohio	\$1,166	16,645	\$382	\$467
Erie County (PA)	\$42	759	\$14	\$17
Wisconsin	\$1,540	24,470	\$500	\$616
<b>Total Trip Spending</b>	<b>\$11,592</b>	<b>162,391</b>	<b>\$3,873</b>	<b>\$4,769</b>
<b>Annual Craft Spending</b>				
Illinois	\$763	7,762	\$270	\$462
Indiana	\$846	10,075	\$284	\$494
Michigan	\$1,543	17,265	\$546	\$937
Minnesota	\$1,384	15,859	\$481	\$829
New York	\$1,144	10,655	\$416	\$713
Ohio	\$793	9,503	\$274	\$473
Erie County (PA)	\$29	436	\$10	\$17
Wisconsin	\$953	12,170	\$325	\$560
<b>Total Craft Spending</b>	<b>\$7,455</b>	<b>83,725</b>	<b>\$2,605</b>	<b>\$4,486</b>
<b>Trip and Craft Spending</b>				
Illinois	\$1,958	22,407	\$678	\$963
Indiana	\$2,203	30,437	\$719	\$1,036
Michigan	\$3,905	51,329	\$1,342	\$1,913
Minnesota	\$3,709	49,060	\$1,247	\$1,775
New York	\$2,749	28,901	\$987	\$1,418
Ohio	\$1,959	26,148	\$656	\$939
Erie County (PA)	\$71	1,195	\$24	\$34
Wisconsin	\$2,493	36,640	\$825	\$1,177
<b>Total</b>	<b>\$19,047</b>	<b>246,117</b>	<b>\$6,479</b>	<b>\$9,255</b>

**Table E18. Direct Economic Impacts of Boats Using the Great Lakes by State of Registration**

	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Trip Spending</b>				
Illinois	\$135	2,037	\$50	\$73
Indiana	\$113	1,981	\$39	\$58
Michigan	\$561	9,714	\$204	\$300
Minnesota	\$161	2,850	\$57	\$84
New York	\$188	2,563	\$71	\$104
Ohio	\$200	3,382	\$72	\$105
Erie County (PA)	\$21	405	\$7	\$10
Wisconsin	\$250	4,768	\$87	\$129
<b>Total Trip Spending</b>	<b>\$1,629</b>	<b>27,701</b>	<b>\$588</b>	<b>\$865</b>
<b>Annual Craft Spending</b>				
Illinois	\$105	1,128	\$36	\$65
Indiana	\$75	896	\$25	\$45
Michigan	\$431	5,027	\$150	\$267
Minnesota	\$100	1,209	\$34	\$61
New York	\$141	1,373	\$49	\$88
Ohio	\$170	2,197	\$59	\$104
Erie County (PA)	\$14	229	\$5	\$9
Wisconsin	\$166	2,296	\$56	\$100
<b>Total Craft Spending</b>	<b>\$1,203</b>	<b>14,355</b>	<b>\$414</b>	<b>\$739</b>
<b>Trip and Craft Spending</b>				
Illinois	\$240	3,166	\$86	\$138
Indiana	\$188	2,877	\$65	\$104
Michigan	\$992	14,741	\$354	\$566
Minnesota	\$262	4,059	\$91	\$145
New York	\$329	3,936	\$121	\$192
Ohio	\$370	5,578	\$131	\$210
Erie County (PA)	\$35	634	\$12	\$19
Wisconsin	\$416	7,064	\$143	\$230
<b>Total</b>	<b>\$2,832</b>	<b>42,055</b>	<b>\$1,002</b>	<b>\$1,604</b>

**Table E19. Total Economic Impacts of Boats Using the Great Lakes by State of Registration**

	<b>Sales \$ Millions</b>	<b>Jobs</b>	<b>Personal Income \$ Millions</b>	<b>Value Added \$ Millions</b>
<b>Trip Spending</b>				
Illinois	\$245	3,017	\$84	\$103
Indiana	\$186	2,765	\$60	\$74
Michigan	\$934	13,473	\$316	\$386
Minnesota	\$286	4,074	\$94	\$115
New York	\$320	3,638	\$114	\$140
Ohio	\$329	4,749	\$109	\$132
Erie County (PA)	\$29	531	\$10	\$12
Wisconsin	\$413	6,570	\$134	\$165
<b>Total Trip Spending</b>	<b>\$2,742</b>	<b>38,817</b>	<b>\$920</b>	<b>\$1,126</b>
<b>Annual Craft Spending</b>				
Illinois	\$180	1,839	\$64	\$109
Indiana	\$118	1,377	\$40	\$69
Michigan	\$677	7,673	\$240	\$412
Minnesota	\$166	1,895	\$58	\$100
New York	\$228	2,119	\$83	\$142
Ohio	\$266	3,293	\$92	\$159
Erie County (PA)	\$21	314	\$7	\$12
Wisconsin	\$262	3,399	\$89	\$154
<b>Total Craft Spending</b>	<b>\$1,917</b>	<b>21,908</b>	<b>\$672</b>	<b>\$1,158</b>
<b>Trip and Craft Spending</b>				
Illinois	\$425	4,856	\$148	\$212
Indiana	\$304	4,143	\$99	\$143
Michigan	\$1,611	21,146	\$556	\$798
Minnesota	\$452	5,970	\$151	\$215
New York	\$548	5,758	\$197	\$282
Ohio	\$595	8,041	\$201	\$291
Erie County (PA)	\$50	845	\$17	\$24
Wisconsin	\$675	9,968	\$224	\$319
<b>Total</b>	<b>\$4,659</b>	<b>60,726</b>	<b>\$1,592</b>	<b>\$2,284</b>

Table E20. Summary of Spending by Registered Boats in the Great Lakes Region (\$ Millions)

Spending Category	All Registered Boats	All Boats Using Great Lakes	All Boats at Great Lakes Marinas	Pct Great Lakes	Pct of GL by Boats at Marinas
<b>Trip Spending</b>					
Lodging	\$1,031	\$223	\$56	22%	25%
Marina services	\$310	\$98	\$45	32%	46%
Restaurant	\$1,679	\$407	\$124	24%	30%
Groceries	\$1,392	\$324	\$90	23%	28%
Boat fuel	\$2,177	\$556	\$177	26%	32%
Auto fuel	\$1,181	\$240	\$38	20%	16%
Repair/maintenance	\$987	\$219	\$44	22%	20%
Marine supplies	\$655	\$157	\$42	24%	26%
Recreation/entertainment	\$278	\$73	\$23	26%	32%
Shopping	\$206	\$59	\$24	29%	41%
Trip Total	\$9,895	\$2,357	\$665	24%	28%
<b>Craft Spending</b>					
Slip	\$346	\$178	\$175	52%	98%
Yacht dues	\$117	\$40	\$22	34%	56%
Off season storage	\$167	\$53	\$30	32%	57%
Put in and haul out	\$216	\$56	\$22	26%	39%
Insurance	\$787	\$190	\$53	24%	28%
Repairs	\$1,676	\$398	\$112	24%	28%
Equipment	\$2,236	\$481	\$103	22%	21%
Taxes	\$187	\$46	\$12	24%	27%
Craft Total	\$5,731	\$1,441	\$529	25%	37%
<b>Trip and Craft Spending</b>					
Total	\$15,626	\$3,798	\$1,193	24%	31%

**Table E21. Summary of Economic Impacts of Boater Spending on the Great Lakes Region Economy**

	All Registered Boats	All Boats Using Great Lakes	All Boats at Great Lakes Marinas
<b>Direct Effects</b>			
<b>Trip Spending</b>			
Sales (\$ Millions)	\$6,838	\$1,629	\$463
Jobs	106,728	25,568	7,467
Personal Income (\$ Millions)	\$2,474	\$592	\$172
Value Added (\$ Millions)	\$3,652	\$869	\$248
<b>Craft Spending</b>			
Sales (\$ Millions)	\$4,647	\$1,203	\$476
Jobs	50,955	13,341	5,529
Personal Income (\$ Millions)	\$1,600	\$416	\$167
Value Added (\$ Millions)	\$2,855	\$742	\$295
<b>Total Direct Effects (Trip and Craft)</b>			
Sales (\$ Millions)	\$11,485	\$2,832	\$938
Jobs	157,683	38,909	12,996
Personal Income (\$ Millions)	\$4,074	\$1,007	\$338
Value Added (\$ Millions)	\$6,507	\$1,612	\$543
<b>Total Effects (Direct, Indirect and Induced)</b>			
<b>Trip Spending</b>			
Sales (\$ Millions)	\$12,696	\$3,030	\$866
Jobs	159,884	38,289	11,130
Personal Income (\$ Millions)	\$4,277	\$1,023	\$296
Value Added (\$ Millions)	\$5,330	\$1,271	\$367
<b>Craft Spending</b>			
Sales (\$ Millions)	\$8,095	\$2,100	\$839
Jobs	84,051	21,979	9,051
Personal Income (\$ Millions)	\$2,861	\$744	\$300
Value Added (\$ Millions)	\$4,902	\$1,275	\$512
<b>Total Effects (Trip and Craft)</b>			
Sales (\$ Millions)	\$20,791	\$5,131	\$1,705
Jobs	243,935	60,267	20,182
Personal Income (\$ Millions)	\$7,138	\$1,767	\$596
Value Added (\$ Millions)	\$10,232	\$2,546	\$878

Note: Impacts estimated by applying spending to an input-output model of the Great Lakes region economy (7 states and Erie County, PA).

## **Chapter 2**

# **The numbers and types of registered recreational boats in the Great Lakes states**

Boat registrations continue to be the primary source for determining numbers of recreational boaters in the Great Lakes. The Motor Boat Safety Act of 1958, amended in 1971 (USC 46, Ch. 123), requires states to register recreational vessels for boating safety and law enforcement purposes, and it authorizes the U.S. Coast Guard to annually track numbered recreational vessels for the purpose of allocating funds related to federally approved state boating safety programs. Fees associated with state boat registration also provide revenues to support the administration and maintenance of state boating and other recreational infrastructure.

### **Methods: Numbering versus Registering**

A consistent count of recreational boats in the U.S. Great Lakes region can be confounded by differences between the “numbering” and “registering” processes for recreational vessels. As noted above, the U.S. Motor Boat Safety Act authorizes the U.S. Coast Guard to annually track numbered recreational vessels for boating safety and law enforcement purposes, including the allocation of funds related to federally approved state boating safety programs. According to 33CFR, Section 173.11, numbering “applies to vessels equipped with propulsion machinery of any type used on waters subject to the jurisdiction of the United States.” Therefore, as mandated by 33CFR, the Coast Guard is only required to number and count recreational boats that are mechanically propelled. Individual states, on the other hand, may register non-motorized vessels as well. Whether these non-motorized craft are also numbered is a matter of state, rather than Coast Guard, administration. Thus, while all motorized craft must by law be numbered and registered, the particular mix of numbered versus registered boats varies from state to state. In short, all numbered vessels must be registered, but not all registered vessels must be numbered.

“Documented vessels” present a minor exception to this rule, but one that is worth noting nonetheless. Documented vessels are large boats (over five net tons; greater than 26 feet in length) that some people choose to register at the federal level through the Coast Guard. The reasons for federal documentation may vary but it is typically done to leave a paper trail of modifications made to the boat, for greater ease of tracking the vessel should it be stolen, and for establishing the basis for securing a lien for improvement loans through financial institutions.

Documented boats are not required by federal law to also be registered by the state of its principal use, but some states – for example, Ohio – do require it if the boat’s documented purpose is primarily recreational. In any case, the Coast Guard does not require documented vessels to be listed on its annual state reports, so an individual state may or may not include this

information on its annual report even if it does also register its documented vessels. As one boating expert noted, the number of documented vessels in any one Great Lakes state is so small as to be statistically insignificant to its overall count of recreational vessels.

Documented vessels aside, differences between vessel numbering and registration presents an inconsistent measure of recreational boats across the Great Lakes states. The state of New York requires neither numbering nor registration of non-motorized rowboats, canoes, and kayaks; Minnesota, on the other hand, registers and numbers all recreational vessels except non-motorized vessels under nine feet in length, documented vessels, seaplanes, rice boats and duck boats.

Similar kinds of contrasts may be drawn among all the Great Lakes states. Given these differences among the states' registration protocols, and given the need to establish a consistent basis for counting recreational vessels across the Great Lakes states, this study uses numbers provided on each state's annual Coast Guard reports as a starting point. Although discrepancies exist among the numbers reported by the jurisdictions, in the absence of other regionwide protocol, the Coast Guard numbers reflect the most consistently applied and, for this point-in-time, most accurate data obtainable for the regional entity.

### **Double Counting of Recreational Vessels**

The potential for "double counting" some recreational vessels can influence the overall number of recreational vessels reported for the region. Double counting refers to instances in which the same boat is counted more than once in the annual Coast Guard reports. The degree to which this actually occurs throughout the region, if at all, is not known. Some recreational boating experts suggest that the potential certainly exists for some double counting to occur, while others – for example, the Coast Guard statistician – counter that, regardless of whether the potential exists, any such errors would be corrected through numerous statistical checks and verification at the federal level.

The two most likely ways for a double count to occur include (1) overlap in registration between a boat currently registered to one state even after having been re-registered to a new state of principal use, and (2) boats that receive dual classification on Coast Guard reports. In the first example, double counting might occur if a boat remained registered in one state (for instance, in Michigan where registrations must be renewed every three years to remain active), but after one year the boat owner moved and re-registered the vessel to a new state of principal use. In this case, the question with respect to double counting is this: would the boat appear on both states' annual Coast Guard report until the expiration date had been reached for the first state?

According to 33CFR, Part 173.17, "when a vessel is removed to a new state of principal operation, the issuing authority of that state shall recognize the validity of the number issued by the original state for 60 days." Part 173.77 goes on to state that "a certificate of number is invalid 60 days after the day on which the vessel is no longer principally used in the state where the certificate was issued." According to one state's boating administrator, double counting would not occur in such cases because one state's registration automatically nullifies the previous state's. Other recreational boating experts, though, express reservations regarding whether the



initial state actually removes the registration from their files at that time, or if it is left “inactive” until the expiration date has passed. In this latter case a potential double count would occur. Regional data do not exist on this issue, so it is difficult to estimate the extent to which this kind of double counting actually occurs throughout the Great Lakes states. Future estimates of the number of recreational boats in the Great Lakes states will have to account for this potential double count.

In the second example, double counting might occur due to multiple classifications of the same vessel on the annual Coast Guard report. According to one state’s boating administrator, this is most likely to occur with respect to personal watercraft (PWC). The Coast Guard form used to tally each state’s registered boats includes a section titled “other boats,” including categories for rowboats, canoes, kayaks, non-mechanically powered sailboats and PWC. PWCs are motorized vessels and therefore are subject to numbering and registration requirements of 33CFR. Some states – Pennsylvania, for instance – choose to collapse their PWCs into the “under 16 foot/sterndrive” category of their annual Coast Guard reports. It is possible that when registering their boats some individual PWC owners may have already classified their PWCs as “under 16 foot/sterndrive” vessels, in which case those boats could potentially be double counted. As noted previously, though, the Coast Guard statistician disagrees that such double counting occurs to any great extent. His office seeks to identify such errors through statistical verification, and to the best of his knowledge, double counting has not been a significant problem.

## **Results**

According to the U.S. Coast Guard, there are almost 4.3 million recreational boats in the eight Great Lakes states. This comprises a third of all numbered U.S. recreational vessels, and represents a 1.3 percent increase over the five-year period between 1999 and 2003.

Nearly one-quarter of all recreational boats in the Great Lakes states belong to people residing in Great Lakes shoreline counties. Michigan, with its considerable Great Lakes coastline, leads the region with nearly one million recreational boats, 42 percent of which belong to people residing in its coastal counties. Indiana has the fewest recreational boats overall (216,145), while only 3 percent of Pennsylvania’s recreational boats belong to people residing in Erie County, its one Great Lakes coastal county.

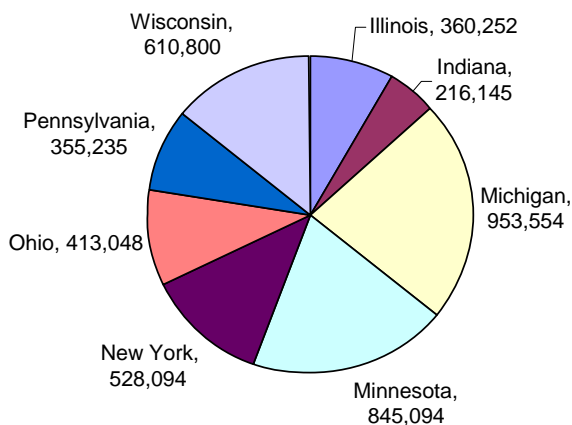
**Table R1. Watercraft Registration Trends in Great Lakes States**

Great Lakes States	Registered Boats					
	# of Boats 2003	# of Boats 2002	# of Boats 2001	# of Boats 2000	# of Boats 1999	% Change (1999 to 2003)
Illinois	360,252	398,431	369,626	372,162	372,618	-3.3%
Indiana	216,145	218,363	218,255	219,189	229,778	-5.9%
Michigan	953,554	1,000,337	1,003,947	1,000,049	985,732	-3.3%
Minnesota	845,379	834,974	826,048	812,247	793,107	6.6%
New York	528,094	529,732	526,190	525,436	524,326	0.7%
Ohio	413,048	413,276	414,658	416,798	407,347	1.4%
Pennsylvania	355,235	357,729	359,525	359,360	352,231	0.9%
Wisconsin	610,800	619,124	575,920	573,920	562,788	8.5%
All Great Lakes States	4,282,507	4,371,966	4,294,169	4,279,161	4,227,927	1.3%
All Other States	8,414,500	8,414,476	8,517,638	8,439,109	8,457,924	-0.5%

Source: National Marine Manufacturers Association developed from information provided by the U.S. Coast Guard.

Five of the Great Lakes have seen recreational boater numbers increase or remain stable. Wisconsin and Minnesota experienced the strongest growth with 8.5 percent and 6.6 percent respectively. Three states showed declines, including Michigan and Illinois which both lost some 3.3 percent.

**Figure R1. Number of Boats by Great Lakes State in 2003**



**Figure R2. Number of Boats in 2003**

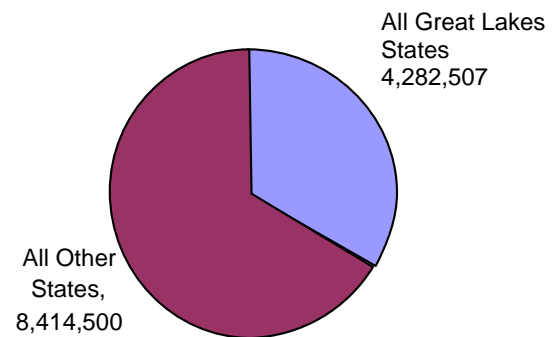


Table R2. Number of Currently Registered Watercraft by State of Registration and Boat Length, 2003 <sup>a</sup>

State where Boats are Registered									
Length in Feet	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	Total
Less than 12'	56,833 14.4%	84,892 15.1%	136,020 16.4%	64,830 7.5%	78,077 16.3%	78,981 19.0%	2,499 14.3%	47,325 7.7%	549,457
12 -15'	110,891 28.0%	227,383 40.6%	263,579 31.7%	282,099 32.7%	115,883 24.3%	117,100 28.2%	6,552 37.5%	260,904 42.7%	1,384,391
16 – 20'	178,195 45.1%	197,952 35.3%	297,002 35.7%	463,119 53.6%	168,463 35.3%	155,315 37.4%	5,536 31.7%	244,924 40.1%	1,710,506
21 – 27'	38,340 9.7%	43,675 7.8%	106,097 12.8%	47,349 5.5%	85,965 18.0%	51,555 12.4%	2,176 12.4%	49,820 8.1%	424,977
28 – 40'	9,740 2.5%	5,811 1.0%	25,325 3.0%	5,273 0.6%	27,040 5.7%	11,367 2.7%	674 3.9%	7,500 1.2%	92,730
More than 40'	1,525 0.4%	847 0.2%	2,908 0.3%	654 0.1%	2,362 0.5%	859 0.2%	46 0.3%	835 0.1%	10,036
Total <sup>b</sup>	395,524 9.5%	560,560 13.4%	830,931 19.9%	863,324 20.7%	477,790 11.5%	415,177 10.0%	17,483 0.4%	611,308 14.7%	4,172,097 100%

<sup>a</sup> Data used to develop this table was provided by Infolink. These are boats that were registered to operate in July 2003.

<sup>b</sup> The number of currently registered watercraft. The numbers differ from the U.S. Coast Guard reported registrations because of differences when the data was compiled and the bases for reporting the number of registered boats.

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Table R3. Number of Watercraft by State of Registration and Boat Type, 2003

State where Boats are Registered									
Boat Type	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	Total
Aluminum power < 16	62,296 15.8%	131,698 23.5%	168,419 20.3%	187,657 21.7%	67,043 14.0%	57,110 13.8%	3,242 18.5%	191,743 31.4%	869,208
Aluminum fishing 16'-24'	70,524 17.8%	47,940 8.6%	80,580 9.7%	205,190 23.8%	39,740 8.3%	40,830 9.8%	1,407 8.0%	119,648 19.6%	605,859
Aluminum fishing 25'-29'	128 0%	373 0.1%	318 0%	82 0%	412 0.1%	772 0.2%	39 0.2%	396 0.1%	2,520
Pontoon	32,101 8.1%	52,900 9.4%	140,730 16.9%	70,501 8.2%	11,074 2.3%	16,897 4.1%	175 1.0%	57,108 9.3%	381,486
Fiberglass power <16	18,598 4.7%	58,186 10.4%	38,703 4.7%	36,107 4.2%	28,562 6.0%	23,618 5.7%	1,443 8.3%	48,235 7.9%	253,452
Fiberglass runabout 16'-24'	90,312 22.8%	127,943 22.8%	170,590 20.5%	109,544 12.7%	163,647 34.3%	106,807 25.7%	3,981 22.8%	99,007 16.2%	871,831
Fiberglass yacht 30' +	5,535 1.4%	2,667 0.5%	15,258 1.8%	2,847 0.3%	15,574 3.3%	6,170 1.5%	359 2.1%	3,667 0.6%	52,077
Fiberglass Cruiser 25'-29'	7,256 1.8%	4,596 0.8%	18,767 2.3%	5,222 0.6%	25,939 5.4%	12,285 3.0%	532 3.0%	4,844 0.8%	79,441
Canoe/kayak/self -Propelled	40,033 10.1%	34,066 6.1%	9,176 1.1%	169,056 19.6%	15,109 3.2%	76,385 18.4%	3,557 20.3%	17,012 2.8%	364,394
Personal Water Craft	33,586 8.5%	39,071 7.0%	104,842 12.6%	41,901 4.9%	54,717 11.5%	42,189 10.2%	1,272 7.3%	34,673 5.7%	352,251
Sail	11,194 2.8%	9,159 1.6%	32,542 3.9%	17,829 2.1%	14,655 3.1%	11,819 2.8%	659 3.8%	13,500 2.2%	111,357
Inflatable	3,449 0.9%	2,158 0.4%	15,701 1.9%	4,157 0.5%	11,914 2.5%	7,139 1.7%	265 1.5%	4,004 0.7%	48,787
Jet boat	1,870 0.5%	1,537 0.3%	9,474 1.1%	2,509 0.3%	3,560 0.7%	3,496 0.8%	61 0.3%	3,109 0.5%	25,616
Ski	3,269 0.8%	8,008 1.4%	12,346 1.5%	4,653 0.5%	2,602 0.5%	3,699 0.9%	63 0.4%	6,023 1.0%	40,663
All other	15,373 3.9%	40,258 7.2%	13,485 1.6%	6,069 0.7%	23,242 4.9%	5,961 1.4%	428 2.4%	8,339 1.4%	113,155
<b>Total</b>	<b>395,524 9.5%</b>	<b>560,560 13.4%</b>	<b>830,931 19.9%</b>	<b>863,324 20.7%</b>	<b>477,790 11.5%</b>	<b>415,177 10.0%</b>	<b>17,483 0.4%</b>	<b>611,308 14.7%</b>	<b>4,172,097 100%</b>

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

**Table R4. Number of Watercraft Currently Registered to Residents of Great Lakes Counties in Great Lakes States, 2003**

State where Boats are Registered									
Length in Feet	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	Total
Less than 12'	14,497 17.3%	7,058 13.6%	58,291 16.7%	1,101 1.7%	15,754 15.2%	16,295 20.6%	2,398 13.8%	15,087 9.3%	130,481
12 – 15'	19,683 23.5%	19,219 37.2%	106,578 30.5%	24,301 38.2%	27,842 26.8%	18,368 23.2%	6,552 37.7%	68,548 42.3%	291,091
16 – 20'	33,639 40.1%	19,075 36.9%	119,569 34.2%	35,449 55.7%	40,965 39.5%	24,922 31.5%	5,536 31.8%	61,481 37.9%	340,636
21 – 27'	10,899 13.0%	4,879 9.4%	48,197 13.8%	2,524 4.0%	14,930 14.4%	14,246 18.0%	2,176 12.5%	13,577 8.4%	114,428
28 – 40'	4,509 5.4%	1,334 2.6%	14,909 4.3%	230 0.4%	4,039 3.9%	5,126 6.5%	674 3.9%	3,136 1.9%	33,957
More than 40'	695 0.8%	146 0.3%	1,582 0.5%	21 0%	239 0.2%	284 0.4%	46 0.3%	342 0.2%	3,355
<b>Total</b>	<b>83,922 9.2%</b>	<b>51,711 5.7%</b>	<b>349,126 38.3%</b>	<b>63,626 7.0%</b>	<b>103,769 11.4%</b>	<b>79,241 8.7%</b>	<b>17,382 1.9%</b>	<b>162,171 17.8%</b>	<b>910,948 100%</b>

**Table R5. Number of Watercraft Currently Registered to Residents of Non- Great Lakes States, 2003**

State where Boats are Registered									
Length in Feet	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	Total
Less than 12'	607 12.7%	524 13.6%	1779 15.2%	1456 4.8%	2156 13.0%	904 17.6%	-	639 8.7%	8,065
12 – 15'	1,117 23.3%	1,196 31.0%	3756 32.1%	9,526 31.3%	4,020 24.3%	1,202 23.4%	-	3,025 41.2%	23,842
16 – 20'	1,981 41.4%	1,504 39%	4052 34.6%	16,882 55.4%	5,912 35.7%	1,842 35.9%	-	2,595 35.4%	34,768
21 – 27'	737 15.4%	510 13.2%	1586 13.5%	2,401 7.9%	3,292 19.9%	845 16.4%	-	868 11.8%	10,239
28 – 40'	286 6.0%	99 2.6%	451 3.9%	173 0.6%	1,062 6.4%	309 6.0%	-	179 2.4%	2,559
More than 40'	57 1.2%	25 0.6%	85 0.7%	32 0.1%	106 0.6%	36 0.7%	-	34 0.5%	375
<b>Total</b>	<b>4,785 6.0%</b>	<b>3,858 4.8%</b>	<b>11,709 14.7%</b>	<b>30,470 38.2%</b>	<b>16,548 20.7%</b>	<b>5,138 6.4%</b>	<b>-</b>	<b>7,340 9.2%</b>	<b>79,848 100%</b>

Table R6. Number of Watercraft by State of Residence and Registration

State of Boat Registration	State of Residence								Non-Great Lake State
	MI	IN	IL	MN	NY	OH	Erie County (PA)	WI	
Illinois	257	555	389,031	96	35	72	0	688	4,790
Indiana	1,083	543,193	5,075	35	32	7,150	0	86	3,906
Michigan	784,293	10,817	11,264	179	231	11,462	0	974	11,709
Minnesota	675	1,287	2,936	819,499	240	511	0	5,563	32,613
New York	194	80	124	91	459,536	1,165	0	34	16,566
Ohio	657	596	137	38	92	408,406	0	54	5,197
Erie County, PA	0	0	0	0	27	1	17,455	0	0
Wisconsin	719	862	34,359	13,795	99	389	0	553,744	7,341
<b>Total</b>	<b>787,878</b>	<b>557,390</b>	<b>442,926</b>	<b>833,733</b>	<b>460,292</b>	<b>429,156</b>	<b>17,455</b>	<b>561,143</b>	<b>82,122</b>

Table R7. Registered Watercraft by Segment and State of Registration

Segment	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
<b>Non-Marina Boats</b>									
Less than 16'	166,928	311,698	397,372	346,285	190,553	193,435	9,016	307,780	1,923,066
16-20'	176,687	197,238	294,057	461,595	158,599	148,049	5,499	244,186	1,685,909
21-27'	31,784	41,220	83,374	44,721	53,558	27,894	1,915	46,547	331,013
28-40'	2,664	2,758	5,037	2,674	3,650	2,101	271	3,937	23,092
More than 40'	274	537	284	437	950	423	17	517	3,439
<b>Boats in Marinas</b>									
Less than 20'	2,358	1,453	5,238	2,325	13,347	10,415	72	1,704	36,912
21-27'	8,746	4,395	27,835	4,283	38,156	26,393	388	5,179	115,375
28-40'	4,892	1,121	15,185	950	17,665	6,598	276	1,690	48,377
More than 40'	1,251	310	2,624	218	1,413	440	29	318	6,603
<b>Total</b>	<b>395,584</b>	<b>560,730</b>	<b>831,006</b>	<b>863,487</b>	<b>477,890</b>	<b>415,748</b>	<b>17,483</b>	<b>611,858</b>	<b>4,173,786</b>

## **Chapter 3**

# **Marinas' contribution to recreational boating economic benefits**

Marinas serving Great Lakes boaters are obviously key generators of economic benefit to the region. These facilities are where a good share of boater spending takes place, where many jobs are supported and where much investment takes place by both the public and private sectors. To quantify the economic impact of Great Lakes marinas and better understand the importance of this marine sector, information was needed on the number of marina slips on the Lakes, including seasonal rental slips. It was also necessary to estimate and verify the number of registered boats kept in marinas.

### **Methods**

First, a listing of marinas in Great Lakes states was assembled from various sources including: (1) a national list of permitted marinas compiled by Marine Operators Association, (2) lists of marinas developed for a study of the impacts of low water on Lake Michigan marinas and (3) a 2002 inventory of marinas and yacht clubs operating in 2002 along Lake Ontario and the St. Lawrence River. The New York inventory conducted by Cornell University completed interviews with of 194 (94 percent of total) marinas and yacht clubs. The interviews inventoried services provided by each marina and yacht club and gathered GPS readings.

These different lists were compiled into a database of marinas in Great Lakes counties and also marinas located in Great Lakes adjacent zip code areas. A concern with the marina data was that many of the base lists were formed based on marina permits and previous inventories, some of which were up to five years old.

Recognizing this, a process was established to verify marinas in Great Lakes adjacent zip code areas that included: (1) identifying marina web sites and (2) searching electronic and yellow pages for marina listings. All marinas for which a telephone number could be identified were telephoned to verify that they were currently in operation, to ascertain the current total number of slips and number of seasonal slips available, and whether they also offered moorings.

Since New York marinas had been verified in 2002, that set was not verified again. Marinas for which there was an address but no telephone number were sent mail surveys to verify they were still in business. There was not sufficient time or financial resources to verify all marinas in Great Lake counties. However, a high percentage of these are located in Great Lakes adjacent zip codes.

**Results**

It is estimated that there are more than a quarter million marina slips available in Great Lakes states. About half (51 percent) of these slips are located in Great Lakes counties. Most (89 percent) are seasonal rental slips. It is estimated that there are approximately 115,000 seasonal rental slips in Great Lakes county marinas, boatyards, condominium and dockominium marinas, and yacht clubs.

**Table M1. Number of Marina Slips in Great Lakes States**

State	Number of Slips		Percent		Seasonal Slips		Occupied seasonal slips		
	Statewide	GL Slips	GL	Pct Seasonal Slips	Statewide	GL Slips	Occ. Rate	Statewide	GL Slips
Illinois	19,118	8,487	44%	97%	18,544	8,232	93%	17,246	7,656
Indiana	9,101	2,883	32%	86%	7,827	2,479	93%	7,279	2,306
Michigan	64,368	54,056	84%	85%	54,713	45,948	93%	50,883	42,731
Minnesota	8,990	607	7%	93%	8,361	565	93%	7,775	525
New York	83,491	18,047	22%	91%	75,977	16,423	93%	70,658	15,273
Ohio	55,646	39,915	72%	85%	47,299	33,928	93%	43,988	31,553
Erie County (PA)	10,378	3,224	31%	90%	9,340	2,902	93%	8,686	2,698
Wisconsin	11,247	8,287	74%	85%	9,560	7,044	93%	8,891	6,551
<b>Total</b>	<b>262,339</b>	<b>135,506<sup>a</sup></b>	<b>52%</b>	<b>88%</b>	<b>231,621</b>	<b>117,520</b>	<b>93%</b>	<b>215,407</b>	<b>109,294</b>

<sup>a</sup>Slips in marinas in Great Lakes counties. This includes slips in Great Lakes adjacent zip codes.

Based on previous Great Lakes marina studies and discussions during the summer of 2004 with over 800 Great Lakes marina owners and operators, it was estimated that an average of 93 percent of the accessible seasonal slips in Great Lakes counties were occupied the summer of 2004. That means that about 107,000 boats were kept in Great Lakes county marinas during the boating season.

The verification process identified 1,192 facilities in Great Lakes adjacent zip codes that provide wet slips for boats. About 68 percent are marinas, 12 percent are yacht clubs, 11 percent are boatyards and campgrounds, and 9 percent are either condominiums or dockominiums.

Eighty-two percent of the estimated 116,916 slips in these facilities marinas were verified. About 87 percent (101,500) of all slips in Great Lakes adjacent zip codes marinas are seasonal or condominium slips. This proportion is comparable to that in all Great Lakes county marinas. Nearly 45 percent of these facilities provide transient slips.

The verification process determined that about 3 percent of the marinas identified on various lists used to compile the database are no longer in operation, have been purchased and combined with



other marinas, or were never developed even though a permit was issued. Some of these marinas have been converted to other uses including residential and commercial development. This, combined with continuing affects of low water levels and reduced dredging, is reducing the number of available and accessible Great Lakes marina slips. Occupancy rates are increasing and in some locations it is more difficult and expensive to rent or purchase a slip.

**Table M2. Number of Marinas and Marina Slips in Great Lakes Adjacent Zip Codes**

Marinas in Zip Codes Adjacent to Great Lakes					
	Marina Facilities				
State	Marina	Yacht Club	Boatyard	Campground	Condominium
Illinois	7	0	1	0	0
Indiana	13	2	0	0	1
Michigan	436	58	33	36	79
Minnesota	4	0	0	0	0
New York	119	26	23	12	1
Ohio	176	47	5	21	26
Erie County (PA)	17	4	2	0	0
Wisconsin	53	7	0	3	0
<b>Totals</b>	825	144	64	72	107

	Slip Information					
States	Total Slips	Verified Slips <sup>a</sup>	Seasonal Slips (Y/N) <sup>b</sup>	Seasonal Slips (#) <sup>c</sup>	Transient Slips <sup>d</sup>	Moorings <sup>e</sup>
Illinois	5,900	5,884	6	5,744	5	1
Indiana	2,883	2,371	12	2,482	6	1
Michigan	49,271	36,411	343	41,922	241	52
Minnesota	276	276	4	258	4	1
New York	15,787	15,531	160	14,530	110	14
Ohio	35,367	28,552	154	30,000	129	4
Erie County (PA)	3,224	3,224	2	2,058	2	2
Wisconsin	6,683	5,936	47	5,871	46	5
<b>Totals</b>	119,391	98,185	728	100,807	543	80

<sup>a</sup>These slips were verified with contacts at the marinas.

<sup>b</sup>It was verified these marinas have seasonal slips.

<sup>c</sup>Estimated number of seasonal slips includes those marinas that were not verified.

<sup>d</sup>It was verified these marinas have transient slips.

<sup>e</sup>It was verified these marinas have moorings.

**Table M3. Number of Registered Boats Kept at Marinas by State of Registration and Size**

Length in Feet	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
Less than 12'	245	164	679	113	628	738	53	95	2,716
12-15'	574	526	1,579	592	2,826	2,199	294	627	9,218
16-20'	1,538	763	2,966	1,619	9,892	7,478	802	982	26,040
21-27'	8,746	4,395	27,758	4,283	38,156	26,393	1,202	5,179	116,112
28-40	4,892	1,121	15,143	950	17,665	6,598	321	1,690	48,379
More than 40'	1,251	310	2,617	218	1,413	440	27	318	6,593
<b>Total</b>	17,246	7,279	50,742	7,775	70,580	43,846	2,698	8,891	209,058

**Table M4. Registered Boats in Great Lakes Marinas by Length and State of Registration**

Length in Feet	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
Less than 12'	25	25	340	6	63	295	53	38	845
12-15'	57	79	950	30	283	880	294	251	2,823
16-20'	308	114	2,082	81	2,473	5,235	802	491	11,585
21-27'	3,936	1,318	23,103	214	9,157	21,114	1,202	4,039	64,085
28-40'	2,446	561	13,666	95	4,063	5,608	321	1,437	28,196
More than 40'	875	217	2,441	98	325	418	27	302	4,705
<b>Total</b>	<b>7,647</b>	<b>2,314</b>	<b>42,583</b>	<b>523</b>	<b>16,364</b>	<b>33,550</b>	<b>2,698</b>	<b>6,558</b>	<b>112,237</b>

**Table M5. Number of Boats Using the Great Lakes by Segment and State of Registration**

Segment	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
<b>Boats Not in Marinas</b>									
Less than 16'	20,866	15,585	99,343	17,314	28,583	24,179	5,222	55,400	266,493
16-20'	26,503	23,669	88,217	55,391	28,548	22,207	3,077	61,047	308,659
21-27'	5,562	10,305	29,181	11,180	13,390	4,881	826	16,292	91,616
28-40'	999	1,103	3,778	1,070	1,095	788	192	1,575	10,600
More than 40'	124	376	255	306	332	190	17	259	1,860
<b>Boats in Marinas</b>									
Less than 20'	472	218	3,143	232	3,337	6,249	1,149	852	15,652
21-27'	4,373	1,758	23,660	428	7,631	18,475	1,202	3,625	61,153
28-40'	3,424	673	13,666	238	3,533	5,543	321	1,437	28,833
More than 40'	1,000	248	2,441	65	283	374	27	302	4,740
<b>Total</b>	<b>63,323</b>	<b>53,934</b>	<b>263,684</b>	<b>86,225</b>	<b>86,731</b>	<b>82,887</b>	<b>12,033</b>	<b>140,787</b>	<b>789,605</b>
Pct Using GL	16%	10%	32%	10%	18%	20%	69%	23%	19%
Pct in GL Counties	21%	8%	41%	7%	23%	19%	100%	23%	21%

Table M6. Boat Days in Great Lakes States by Segment, Thousands of Boat Days

Segment	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
<b>Boats Not in Marinas</b>									
Less than 16'	2,956	5,520	7,038	6,133	3,375	3,426	160	5,451	34,059
16-20'	4,308	4,809	7,170	11,254	3,867	3,610	134	5,954	41,105
21-27'	1,062	1,377	2,786	1,494	1,790	932	64	1,555	11,061
28-40'	106	110	201	107	146	84	11	157	922
More than 40'	12	23	12	18	40	18	1	22	145
<b>Boats in Marinas</b>									
Less than 20'	66	41	147	65	374	292	2	48	1,035
21-27'	303	152	965	148	1,323	915	13	180	3,999
28-40'	199	46	619	39	720	269	11	69	1,971
More than 40'	55	14	116	10	63	19	1	14	292
<b>Total</b>	<b>9,068</b>	<b>12,092</b>	<b>19,053</b>	<b>19,269</b>	<b>11,696</b>	<b>9,564</b>	<b>397</b>	<b>13,449</b>	<b>94,589</b>

Table M7. Great Lakes Boat Days by Segment and State of Registration, Millions of Boat Days

Segment	State of Registration								Total
	IL	IN	MI	MN	NY	OH	Erie County (PA)	WI	
<b>Boats Not in Marinas</b>									
Less than 16'	313	234	1,490	260	429	363	81	831	4,000
16-20'	530	473	1,764	1,108	571	444	71	1,221	6,183
21-27'	167	309	875	335	402	146	43	489	2,767
28-40'	34	38	128	36	37	27	8	54	362
More than 40'	5	16	11	13	14	8	1	11	78
<b>Boats in Marinas</b>									
Less than 20'	13	6	88	7	93	175	2	24	408
21-27'	153	62	828	15	267	647	12	127	2,110
28-40'	140	28	560	10	145	227	10	59	1,179
More than 40'	44	11	107	3	12	16	1	13	209
<b>Total</b>	<b>1,400</b>	<b>1,176</b>	<b>5,853</b>	<b>1,786</b>	<b>1,970</b>	<b>2,053</b>	<b>230</b>	<b>2,828</b>	<b>17,296</b>
<b>% of boat days on GL<sup>1</sup></b>	<b>15%</b>	<b>10%</b>	<b>31%</b>	<b>9%</b>	<b>17%</b>	<b>21%</b>	<b>58%</b>	<b>21%</b>	<b>18%</b>

<sup>1</sup> The percent of boat days on the Great Lakes is the ratio of Great Lakes days to the total number of days in Table M6.

**Table M8. Characteristics of the Facilities in Great Lakes Zip Codes that Provide Seasonal and Transient Wet Slips and Moorings.**

Number of facilities in Great Lakes Region	1,192	
<b>Illinois</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	8	100%
<b>Type of Facility</b>		
Marina	7	87%
Yacht Club	0	--
Boatyard/Service Center	1	13%
Campground/Resort	0	--
Condominium	0	--
<b>Number of Wet Slips</b>		
Less than 25	1	13%
25 to 49	4	49%
50 to 99	0	--
100 to 199	0	--
200 to 299	1	13%
300 to 399	0	--
400 to 499	0	--
500 to 999	0	--
More than 1,000	2	25%
Average number of slips	738	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	6	75%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	5	63%
<b>Number &amp; Percentage that Provide Moorings</b>	1	13%
<b>Indiana</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	16	100%
<b>Type of Facility</b>		
Marina	13	81%
Yacht Club	2	13%
Boatyard/Service Center	0	--
Campground/Resort	0	--
Condominium	1	6%
<b>Number of Wet Slips</b>		
Less than 25	1	6%
25 to 49	1	6%
50 to 99	9	57%
100 to 199	2	13%
200 to 299	1	6%
300 to 399	0	--
400 to 499	0	--
500 to 999	1	6%
More than 1,000	1	6%
Average number of slips	180	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	12	75%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	6	38%
<b>Number that Provide Moorings</b>	1	6%

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Number of facilities in Great Lakes Region	1,192	
<b>Michigan</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	642	100%
<b>Type of Facility</b>		
Marina	436	68%
Yacht Club	58	9%
Boatyard/Service Center	33	5%
Campground/Resort	36	6%
Condominium	79	12%
<b>Number of Wet Slips</b>		
Less than 25	276	44%
25 to 49	103	16%
50 to 99	116	18%
100 to 199	83	13%
200 to 299	32	5%
300 to 399	16	2%
400 to 499	7	1%
500 to 999	8	1%
More than 1,000	1	--
Average number of slips	77	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	343	53%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	241	38%
<b>Number &amp; Percentage that Provide Moorings</b>	52	8%
<b>Minnesota</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	4	100%
<b>Type of Facility</b>		
Marina	4	100%
Yacht Club	0	--
Boatyard/Service Center	0	--
Campground/Resort	0	--
Condominium	0	--
<b>Number of Wet Slips</b>		
Less than 25	1	25%
25 to 49	1	25%
50 to 99	0	--
100 to 199	2	50%
200 to 299	0	--
300 to 399	0	--
400 to 499	0	--
500 to 999	0	--
More than 1,000	0	--
Average number of slips	69	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	4	100%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	4	100%
<b>Number that Provide Moorings</b>	1	25%

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Number of facilities in Great Lakes Region	1,192	
<b>New York</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	181	100%
<b>Type of Facility</b>		
Marina	119	65%
Yacht Club	26	14%
Boatyard/Service Center	23	13%
Campground/Resort	12	7%
Condominium	1	1%
<b>Number of Wet Slips</b>		
Less than 25	21	12%
25 to 49	48	27%
50 to 99	52	29%
100 to 199	39	22%
200 to 299	9	5%
300 to 399	5	3%
400 to 499	1	1%
500 to 999	0	--
More than 1,000	1	1%
Average number of slips <sup>a</sup>	87	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	160	88%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	110	61%
<b>Number &amp; Percentage that Provide Moorings</b>	14	8%
<b>Ohio</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	275	100%
<b>Type of Facility</b>		
Marina	176	64%
Yacht Club	47	17%
Boatyard/Service Center	5	2%
Campground/Resort	21	8%
Condominium	26	9%
<b>Number of Wet Slips</b>		
Less than 25	69	25%
25 to 49	41	15%
50 to 99	50	18%
100 to 199	62	23%
200 to 299	20	7%
300 to 399	14	5%
400 to 499	7	3%
500 to 999	11	4%
More than 1,000	1	--
Average number of slips	128	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	153	55%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	129	47%
<b>Number that Provide Moorings</b>	4	1%

<sup>a</sup>The average is based on 176 marinas with 15,312 wet slips. Not all marinas reported total of wet slips.

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Number of facilities in Great Lakes Region	1,192	
<b>Erie County (PA)</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	23	100%
<b>Type of Facility</b>		
Marina	17	74%
Yacht Club	4	17%
Boatyard/Service Center	2	--
Campground/Resort	0	--
Condominium	0	--
<b>Number of Wet Slips</b>		
Less than 25	4	17%
25 to 49	4	17%
50 to 99	5	22%
100 to 199	3	13%
200 to 299	4	17%
300 to 399	1	4%
400 to 499	1	4%
500 to 999	1	4%
More than 1,000	0	--
Average number of slips	140	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	2	9%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	2	9%
<b>Number &amp; Percentage that Provide Moorings</b>	2	9%
<b>Wisconsin</b>		
	<b>Number</b>	<b>Percentage</b>
<b>Number of Marinas</b>	63	100%
<b>Type of Facility</b>		
Marina	53	84%
Yacht Club	7	11%
Boatyard/Service Center	0	--
Campground/Resort	3	5%
Condominium	0	--
<b>Number of Wet Slips</b>		
Less than 25	15	24%
25 to 49	13	20%
50 to 99	13	20%
100 to 199	13	20%
200 to 299	6	10%
300 to 399	0	--
400 to 499	1	2%
500 to 999	1	2%
More than 1,000	1	2%
Average number of slips	106	
<b>Number &amp; Percentage that Rent Seasonal Wet Slips</b>	47	75%
<b>Number &amp; Percentage that Rent Transient Wet Slips</b>	46	73%
<b>Number that Provide Moorings</b>	5	8%



## **Chapter 4**

# **Case study of the economic impacts of a Great Lakes marina: Tower Marine**

To test the economic impact models and illustrate a specific application, detailed information was obtained for a Great Lakes commercial marina in southwest Michigan. Tower Marine is located in the twin communities of Saugatuck/Douglas, Michigan, in the natural harbor at the mouth of the Kalamazoo River. Tower's ownership enthusiastically volunteered to serve as a case study application of the spending profiles and economic impact model developed for this study.

Tower Marine is a full service marina with 400 deep water slips offering running water, electricity and telephone service. The marina provides fuel and pump-out service, picnic areas, children's playgrounds, paved parking, a fully stocked ship store, outdoor washrooms and a heated outdoor pool. They also have a year-round service and parts department and provide repair and installation of fiberglass, electrical systems, marine electronics, bottom coatings, running gear, transmission and drive systems and air conditioning systems. Tower Marine also provides cold storage facilities for boats during the off-season.

### **Methods**

Detailed information was gathered on the number and size wet slips at provided by the owner of Tower Marine and on the number and size of boats occupying the slips. In addition the owner provided the 2004 rates charged for each occupied slip. Tower Marine also provided financial operating information including various revenues and the number of employees and wages paid those employees. This information was used to verify the model's estimates.

The marina had 395 boats occupying slips during the summer of 2004. The number of boating days by different size boats at Tower Marine was first estimated using information in Tables M4 and M5. The average craft spending by different size boats kept at Great Lakes marinas was adjusted by replacing the general slip rental averages with rates for Tower Marine and omitting the yacht club fee category. Local multipliers were obtained and applied from an input-output model of the Allegan county economy using IMPLAN.

### **Results**

The 395 boats renting slips at Tower Marine spent \$2.85 million on annual craft expenses and another \$2.85 million on boating trips, accounting for 15,000 days of boating in 2004. The direct economic impacts of trip spending was \$1.8 million in sales, \$661,00 in wages and salaries and \$952,000 in value added to the local economy, supporting 37 jobs. Annual craft expenses

directly supported an additional 44 jobs from \$2.6 million in direct sales, \$834,000 in wages and salaries and \$1.5 million in value added.

The sales multiplier for the county is 1.3 yielding total sales, income and job impacts that are roughly 20-30 percent more than the direct effects. Total job impacts including trip and craft spending is 81 direct jobs and 102 total jobs including secondary effects. Roughly 30 of the direct jobs are in the marina and \$700,000 of the direct personal income represents the marina's payroll. These estimates are consistent with what the marina has reported.

The following tables demonstrate the application of the impact models to an individual marina. Results are based on the number and size of boats kept at the marina. The general trip spending averages for boats kept at marinas from Table E1 are applied to the 395 boats kept at Tower marina. Craft spending averages were adjusted for this application to exclude yacht club dues and average slip rates were adjusted to reflect actual rates at Tower Marine. Estimates of trip and craft spending were applied to an input-output model of the Allegan County, Michigan economy.

**Table CS1. Number of Boats and Boat Days at Tower Marine**

Length in feet	Boats	Average Boat Days	Total Boat Days
Less than 20'	10	28	280
21-28'	183	35	6,343
28-40'	144	41	5,867
More than 40'	58	44	2,567
<b>Total</b>	<b>395</b>	<b>38</b>	<b>15,057</b>

Note: Tower Marina, located in Saugatuck, Michigan, had 395 occupied slips during the summer of 2004.

**Table CS2. Average Annual Craft Expenses for Boats Kept at Tower Marine**

Spending Category	Length in feet			
	Less than 20'	21-28'	28-40'	More than 40'
Seasonal slip fees	\$1,200	\$2,960	\$3,580	\$4,695
Off season storage	\$110	\$201	\$488	\$487
Put in and haul out	\$59	\$134	\$351	\$571
Insurance	\$267	\$343	\$742	\$1,445
Repairs	\$550	\$817	\$1,474	\$2,276
Equipment	\$514	\$788	\$1,303	\$1,872
Taxes	\$49	\$60	\$186	\$510
<b>Total</b>	<b>\$2,750</b>	<b>\$5,302</b>	<b>\$ 8,123</b>	<b>\$11,856</b>

Note: General averages for slip fees from Table E2 are replaced by actual slip rates at Tower Marina in 2004. Yacht club dues are omitted and spending in other categories are assumed to be the same as in Table E2.

**Table CS3. Total Trip Spending for Boats Kept at Tower Marine (\$ Thousands)**

Spending Category	Length in feet				Total
	Less than 20'	21-28'	28-40'	More than 40'	
Lodging	\$2	\$111	\$62	\$31	\$206
Marina services	\$0	\$39	\$122	\$82	\$243
Restaurant	\$5	\$186	\$217	\$127	\$535
Groceries	\$4	\$131	\$148	\$129	\$413
Boat fuel	\$6	\$294	\$258	\$200	\$759
Auto fuel	\$4	\$71	\$38	\$15	\$127
Repair/maintenance	\$3	\$71	\$60	\$49	\$183
Marine supplies	\$3	\$65	\$63	\$38	\$169
Recreation/entertainment	\$0	\$34	\$48	\$19	\$102
Shopping	\$1	\$34	\$41	\$41	\$117
<b>Total (\$ 000's)</b>	<b>\$28</b>	<b>\$1,036</b>	<b>\$1,057</b>	<b>\$732</b>	<b>\$2,854</b>

**Table CS4. Total Craft Expenses for Boats Kept at Tower Marine (\$ Thousands)**

Spending Category	Length in feet				Total
	Less than 20'	21-28'	28-40'	More than 40'	
Slip	\$12	\$542	\$516	\$272	\$1,342
Off season storage	\$1	\$37	\$70	\$28	\$136
Put in and haul out	\$1	\$25	\$51	\$33	\$109
Insurance	\$3	\$63	\$107	\$84	\$256
Repairs	\$5	\$149	\$212	\$132	\$499
Equipment	\$5	\$144	\$188	\$109	\$445
Taxes	\$0	\$11	\$27	\$30	\$68
<b>Total</b>	<b>\$27</b>	<b>\$970</b>	<b>\$1,170</b>	<b>\$688</b>	<b>\$2,855</b>

**Table CS5. Summary of Boating Activity and Spending for Boats Kept at Tower Marine**

	Length in feet				Total
	Less than 20'	21-27'	28-40'	More than 40'	
Number of boats	10	183	144	58	395
Average days per boat	28.0	34.7	40.7	44.3	38.1
Total boat days	280	6,343	5,867	2,567	15,057
Average spending per boat day	\$101	\$163	\$180	\$285	\$190
Trip spending per boat per year	\$2,834	\$5,663	\$7,343	\$12,617	\$7,225
Craft spending per boat per year	\$2,750	\$5,302	\$8,123	\$11,856	\$7,228
Total spending per boat per year	\$5,583	\$10,966	\$15,466	\$24,473	\$14,453
Total craft spending (\$000's)	\$27	\$970	\$1,170	\$688	\$2,855
Total trip spending (\$000's)	\$28	\$1,036	\$1,057	\$732	\$2,854
Total spending (\$000's)	\$56	\$2,007	\$2,227	\$1,419	\$5,709

**Table CS6. Local Economic Impacts of Trip Spending for Boats Kept at Tower Marine**

Sector/Spending Category	Sales \$ 000's	Jobs	Personal Income \$ 000's	Value Added \$ 000's
<b>Direct Effects</b>				
Lodging	\$206	4.1	\$90	\$146
Marina services	\$243	4.8	\$78	\$131
Restaurant	\$535	15.0	\$212	\$239
Recreation/Entertainment	\$102	2.0	\$33	\$55
Repair/Maintenance	\$183	1.1	\$37	\$98
Food processing	\$26	-	-	-
Marine supplies	\$7	0.0	\$2	\$2
Petroleum Refining	\$61	-	-	-
Retail Trade	\$412	9.3	\$188	\$246
Wholesale Trade	\$50	0.6	\$19	\$32
Other Local Production of Goods	\$6	0.1	\$2	\$3
<b>Total Direct Effects</b>	<b>\$1,832</b>	<b>37.0</b>	<b>\$661</b>	<b>\$952</b>
<b>Secondary Effects</b>	<b>\$547</b>	<b>8.8</b>	<b>\$169</b>	<b>\$2</b>
<b>Total Effects</b>	<b>\$2,379</b>	<b>45.8</b>	<b>\$829</b>	<b>\$954</b>
<b>Multiplier</b>	<b>1.3</b>	<b>1.2</b>	<b>1.3</b>	<b>1.0</b>

Note: Economic Impacts are on the Allegan County, MI economy.

**Table CS7. Local Economic Impacts of Craft Expenses for Boats Kept at Tower Marine**

Sector/Spending category	Sales /\$ 000's	Jobs	Personal Income\$ 000's	Value Added \$ 000's
<b>Direct Effects</b>				
Slip	\$1,342	26.4	\$431	\$722
Off season storage	\$136	2.7	\$44	\$73
Put in and haul out	\$109	2.1	\$35	\$59
Insurance	\$256	5.2	\$124	\$222
Repairs	\$499	3.0	\$102	\$268
Retail Trade	\$185	4.2	\$84	\$111
Wholesale trade	\$22	0.2	\$8	\$14
Local Manufacturer	\$19	0.1	\$5	\$6
<b>Total Direct Effects</b>	<b>\$2,568</b>	<b>44.0</b>	<b>\$834</b>	<b>\$1,474</b>
<b>Secondary Effects</b>	<b>\$864</b>	<b>12.0</b>	<b>\$277</b>	<b>\$484</b>
<b>Total Effects</b>	<b>\$3,432</b>	<b>56.0</b>	<b>\$1,111</b>	<b>\$1,958</b>
<b>Multiplier</b>	<b>1.3</b>	<b>1.3</b>	<b>1.3</b>	<b>1.3</b>

Note: Economic Impacts are on the Allegan County, MI economy.

**Table CS8. Total Direct and Secondary Economic Effects of Tower Marine**

<b>Sector/Spending Category</b>	<b>Sales (\$ 000's)</b>	<b>Jobs</b>	<b>Personal Income (\$ 000's)</b>	<b>Value Added (\$ 000's)</b>
<b>Direct Effects</b>				
Trip spending	\$1,832	37	\$661	\$952
Craft spending	\$2,568	44	\$834	\$1,474
<b>Total Direct Effects</b>	<b>\$4,400</b>	<b>81</b>	<b>\$1,495</b>	<b>\$2,426</b>
<b>Secondary Effects</b>				
Trip spending	\$547	9	\$169	\$2
Craft spending	\$864	12	\$277	\$484
<b>Total Secondary effects</b>	<b>\$1,411</b>	<b>21</b>	<b>\$446</b>	<b>\$486</b>
<b>Total Economic Effects</b>	<b>\$5,811</b>	<b>102</b>	<b>\$1,941</b>	<b>\$2,912</b>



## **Chapter 5**

# **Boat sales and watercraft manufacturing in Great Lakes states**

A thorough analysis of economic benefits derived from Great Lakes recreational boating would not be complete without data on the region's resident watercraft manufacturing industry, its suppliers of engines and accessories, and the related sales and distribution activity. Manufacturers of recreational boating equipment can be found throughout the eight Great Lakes states, in large communities and small ones, involving large multinational corporations and small family owned businesses.

### **Methods**

A database of manufacturers that have been issued Manufacturer Identification Codes (MIC) was obtained in May 2004 from the Coast Guard. Prior to 1972 there were no federal or state regulations governing hull numbers. Recreational boats sold or imported into the United States are required to have a twelve character Hull Identification Number (HIN). The first three letters of that number are the Manufacturer's Identification Code (MIC). Manufacturers are required to apply in writing to the United States Coast Guard for assignment of a MIC.

The Coast Guard maintains a database of all recreational boat manufacturers in the United States, and U.S. importers of recreational boats. This database contains active, out of business and Canadian manufacturers. If a manufacturer goes out of business, the Coast Guard then retires the MIC for 10 years before re-issuing it to a new manufacturer.

A multi-step process was employed to identify manufacturers currently producing watercraft. This process involved: (1) searching the Internet for web sites of all manufacturers headquartered in Great Lakes states that were in the U.S. Coast Guard database of all recreational boat manufacturers, (2) searching electronic and published yellow pages for current listings of these manufacturers, (3) identifying powerboat manufacturers by any of these companies that were registered anywhere in the country during 2003, (4) making telephone calls to all manufacturers that were identified in steps 1-3 to verify that they are in business, and finally, (5) sending a mail survey to the 250 Great Lakes states manufacturers determined to be in business in 2004.

Among other information the survey collected the numbers of boats manufactured in 2003 and expected to be produced in 2004. Forty percent (101) of the 250 watercraft manufacturers completed this survey.

The National Marine Manufacturers Association also provided the most current available information on purchases of powerboats, trailers and accessories. In addition, information on 2003 boat sales was obtained with assistance of the National Marine Manufacturers Association

(NMMA) for 91 of the 250 watercraft manufacturers headquartered in the Great Lakes that produce powerboats.

An analysis of 2003 new boat registrations nationwide provided information on the different states where boats manufactured by these powerboat manufacturers were registered during 2003. This provides a very good indication of where boats produced by manufacturers headquartered in the Great Lakes are sold.

It is estimated that 182,700 watercraft were manufactured in 2003 by the 250 manufacturers with headquarters in Great Lakes states. An analysis of 2003 new boat registrations shows that 10 percent of the boats sold by 91 powerboat manufacturers headquartered in the Great Lakes region were registered/sold in the states where the manufacturers are headquartered; 29 percent were registered/sold in other Great Lakes states; and 61 percent were sold outside the Great Lakes region.

So, while there is a significant economic benefit from the export of watercraft manufactured in the regions, these manufacturers depend significantly on Great Lakes boaters and boating opportunities.

The survey of manufacturers revealed that the greatest percentage (44 percent) of these manufacturers are small businesses having five or fewer employees. Conversely, 13 percent employ more than 100 employees. Based on a weighted analysis of the survey results it is conservatively estimated that watercraft manufacturers in the Great Lakes states employ 18,500 persons.

**Table WM1. Types of Boats Produced by Great Lakes Marine (N=250)<sup>a</sup>**

Type of Boat Manufactured	Number of Great Lakes States Manufacturers <sup>a</sup>	Percentage of Great Lakes States Manufacturers <sup>a</sup>
ATV/Hovercraft	3	1.2%
Canoes/Kayaks	47	18.8%
Houseboats	2	0.8%
Inboard/Outboards	47	18.8%
Inboards	18	7.2%
Outboards	58	23.2%
Personal Watercraft	3	1.2%
Pontoon Boats	39	15.6%
Sailboats	23	9.2%
Thrill craft (e.g. jetboats, raceboats)	6	2.4%
Miscellaneous (e.g. electric launches, inflatable boats, water toys.)	31	12.4%

a. Some manufacturers manufacture more than one type of boat so the % do not add up to 100%



Information provided by the National Marine Manufacturers Association shows that residents of Great Lakes states represent almost a quarter (23.6 percent) of the 2003 nationwide purchases of new power boats, outboard motors, trailers and accessories.

About 27 percent of all outboard motor boats and 31 percent of jet drive boats sold in 2003 were bought by residents of Great Lakes states. More than a quarter (27.3 percent) of trailers purchased nationwide in 2003 were bought by residents of Great Lakes states. The boating opportunities on the Great Lakes generate significant sales of boats and boating accessories.

This process to identify Great Lakes watercraft manufacturers produced an up-to-date list of 250 recreational watercraft manufacturers currently in business in the Great Lakes states. Table WM8 (Appendix) provides the names of the manufacturers, their MICs and zip codes.

The majority of the manufacturers headquartered in Great Lakes states produce powerboats including outboards (58 manufacturers), inboards/outboards (47 manufacturers), pontoons (39 manufacturers) and inboards (18 manufacturers). There are also 47 canoe/kayak makers and 23 sailboat manufacturers. Some of these are very small, producing only 2 craft annually (e.g., specialty boats, canoes/kayaks). Forty nine percent manufactured 20 or less watercraft in 2003; conversely nine percent produces more than 3,000 craft.

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Table WM2. Number and Average Price of Power Boats Sold in the Great Lakes States, 2003

	Units Sold <sup>a</sup>								Total Units	
	Outboard Boats		Sterndrive Boats		Inboard Boats		Jet Drive Boats			
Average Retail Price	\$13,244		\$ 32,097		\$189,736		\$ 20,584			
<b>STATES</b>	#	%	#	%	#	%	#	%	#	%
Illinois	5,529	2.7%	1,973	2.9%	285	1.4%	136	2.4%	7,923	2.6%
Indiana	4,292	2.1%	1,176	1.7%	283	1.4%	47	0.8%	5,798	1.9%
Michigan	7,830	3.8%	3,141	4.5%	941	4.6%	546	9.7%	12,458	4.1%
Minnesota	13,095	6.3%	2,767	4.0%	350	1.7%	201	3.6%	16,413	5.4%
New York	5,920	2.9%	3,879	5.6%	640	3.1%	360	6.4%	10,799	3.6%
Ohio	4,523	2.2%	1,667	2.4%	337	1.7%	178	3.2%	6,705	2.2%
Erie County (PA)	4,300	2.1%	1,172	1.7%	214	1.0%	83	1.5%	5,769	1.9%
Wisconsin	11,116	5.4%	2,079	3.0%	466	2.3%	182	3.3%	13,843	4.6%
All Great Lake States	56,605	27.3%	17,854	25.8%	3,516	17.2%	1,733	30.9%	79,708	26.4%
All Other States	150,495	72.7%	51,346	74.2%	16,884	82.8%	3,867	69.1%	222,592	73.6%
STATES	\$ Sales								Total \$ Sales	
	Outboard Boats		Sterndrive Boats		Inboard Boats		Jet Drive Boats			
	\$	%	\$	%	\$	%	\$	%	\$	%
Illinois	\$73,225,904	0.0%	\$63,327,508	2.9%	\$54,074,732	1.4%	\$2,799,370	2.4%	\$193,427,513	2.2%
Indiana	\$56,843,115	2.1%	\$37,746,147	1.7%	\$53,695,260	1.4%	\$967,429	0.8%	\$149,251,951	1.7%
Michigan	\$103,700,277	3.8%	\$100,816,879	4.5%	\$178,541,482	4.6%	\$11,238,646	9.8%	\$394,297,283	4.4%
Minnesota	\$173,429,773	6.3%	\$88,812,577	4.0%	\$66,407,565	1.7%	\$4,137,304	3.6%	\$332,787,218	3.7%
New York	\$78,404,296	2.9%	\$124,504,512	5.6%	\$121,430,976	3.1%	\$7,410,096	6.4%	\$331,749,880	3.7%
Ohio	\$59,902,471	2.2%	\$53,505,806	2.4%	\$63,940,998	1.7%	\$3,663,881	3.2%	\$181,013,156	2.0%
Erie County (PA)	\$56,949,066	2.1%	\$37,617,759	1.7%	\$40,603,483	1.0%	\$1,708,439	1.5%	\$136,878,747	1.5%
Wisconsin	\$147,219,958	5.4%	\$66,729,796	3.0%	\$88,416,929	2.3%	\$3,746,215	3.2%	\$306,112,899	3.4%
All Great Lake States	\$749,674,860	24.7%	\$573,060,984	25.8%	\$667,111,425	17.2%	\$35,671,380	30.9%	\$2,025,518,647	22.6%
All Other States	1,993,151,100	75.3%	1,648,055,856	74.2%	3,203,500,935	82.8%	79,596,780	69.1%	6,924,304,673	77.4%

Source: National Marine Manufacturers Association's 2003 Recreational Boating Statistical Abstract.

Units Sold does not include PWCs sold in these states. The number of PWCs sold are as follows : IL-2,437, IN-1,392, MI-4,239, MN-2,806, OH-2,393, PA-1,381, NY-3,368.

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Table WM3. Number and Total Sales of New Power Boats, Outboard Motors, Trailer and Accessory Purchases in the Great Lakes States, 2003

STATES	New Power Boats		Outboard Motor		Boat Trailers		Marine Accessories		Total Expenditure	
	\$	%	\$	%	\$	%	\$	%	\$	%
Illinois	\$215,089	2.2%	\$66,184	2.6%	\$5,393	2.7%	\$49,005	2.3%	\$335,671	2.3%
Indiana	\$161,626	1.7%	\$42,880	1.7%	\$4,187	2.1%	\$35,675	1.7%	\$244,368	1.7%
Michigan	\$431,981	4.5%	\$110,970	4.3%	\$7,638	3.8%	\$94,121	4.4%	\$644,709	4.4%
Minnesota	\$357,732	3.7%	\$142,964	5.6%	\$12,773	6.3%	\$87,775	4.1%	\$601,244	4.1%
New York	\$361,689	3.7%	\$95,698	3.7%	\$5,775	2.9%	\$79,176	3.7%	\$542,337	3.7%
Ohio	\$202,282	2.1%	\$51,760	2.0%	\$4,412	2.2%	\$44,182	2.1%	\$302,636	2.1%
Erie County (PA)	\$149,159	1.5%	\$51,925	2.0%	\$4,194	2.1%	\$35,091	1.7%	\$240,370	1.7%
Wisconsin	\$322,705	3.3%	\$116,130	4.5%	\$10,843	5.4%	\$76,871	3.6%	\$526,549	3.6%
All Great Lake States	\$2,202,264	22.8%	\$678,511	26.6%	\$55,214	27.3%	\$501,896	23.6%	\$3,437,885	23.6%
All Other States	\$7,464,061	77.2%	\$1,876,023	73.4%	\$146,798	72.7%	\$1,621,744	76.4%	\$11,108,626	76.4%

Source: National Marine Manufacturers Association's 2003 Recreational Boating Statistical Abstract.

**Table WM4. Number of Watercraft Sold in the Great Lakes States by Manufactures Headquartered in the Great Lakes States, 2003 (N=91).<sup>a</sup>**

State	Units Sold <sup>b</sup>		Units Sold in the Manufacturer's State <sup>c</sup>		Units sold in other GL States (not mfg. state)		Units sold in non-Great Lakes States	
	Number Sold	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Illinois	3,630	3%	281	2%	928	3%	2,421	3%
Indiana	24,027	20%	1,005	8%	9,596	28%	13,426	19%
Michigan	17,483	15%	1,176	9%	3,790	11%	12,517	17%
Minnesota	34,249	29%	8,776	71%	9,636	28%	15,837	22%
New York	424	0%	27	0%	150	0%	247	0%
Ohio	1,104	1%	80	1%	345	1%	679	1%
Erie County (PA)	1	0%	0	0%	0	0%	1	0%
Wisconsin	37,546	32%	1,139	9%	9,634	29%	26,773	38%
<b>Total</b>	<b>118,464<sup>d</sup></b>	<b>100%</b>	<b>12,484</b>	<b>100%</b>	<b>34,079</b>	<b>100%</b>	<b>71,901</b>	<b>100%</b>

a. 91 powerboat manufacturers were identified through surveys conducted of all boat manufacturers in the Great Lakes states. A total of 250 watercraft manufacturers were verified to be producing craft in 2003. Units Sold includes PWCs.

b. Source: NMMA's 2003 Recreational Boating Statistical Abstract.

c. Source: NMMA's 2003 Recreational Boating Statistical Abstract.

d. On the basis of a survey of the 250 currently producing Great Lakes watercraft manufacturers that were identified (101 surveys were returned) and the information on the 91 powerboat manufacturers, it is estimated that 182,700 watercraft are sold by manufacturers headquartered in Great Lakes States. It is estimated that 71,253 are sold to residents of the Great Lakes states.





## **Chapter 6**

# **Economic impacts of Great Lakes charter fishing boats**

Sportfishing, with its strong ties to boating, is a major activity in the Great Lakes region. Surveys indicate that about half of all fishing the region is accomplished with the use of a boat.

According to the most recent five-year participation conducted by the U.S. Fish and Wildlife Service, more than 11 million anglers - 16 years old and older - fished both inland and Great Lakes waters in 1996. The region accounts for more than 36 percent of the national figure.

These anglers represent about 160,000 days of fishing, with the Great Lakes comprising 15 percent of the total. Regarding fishing trip and equipment expenditures related to freshwater fishing, the region's huge \$10 billion figure represents about 41 percent of the nation's freshwater total. The binational Great Lakes Fishery Commission estimates that all Great Lakes sportfishing accounts for up to \$4 billion in economic impact.

For non-boat owning anglers in the Great Lakes, and for visitors to the region, charter fishing operations have provided a welcome service. For the local economies of Great Lakes coastal communities – including many served only by shallow draft harbors – charter fishing boats generate significant economic impact. This impact has been studied extensively in recent years by the Great Lakes Sea Grant Network led by Ohio Sea Grant which coordinated a survey of charter boat captains, the findings of which are reported below.

The Recreational Marine Research Center gathered the data from Sea Grant and other similar charter fishing studies, and applied tourism spending profile models to paint an even broader picture of the basinwide economic impact of the Great Lakes charter fishing industry.

### **Methods: Sea Grant Survey**

Sea Grant conducted a comprehensive survey of the Great Lakes charter fishing industry in 2002. The survey provides information on the status, characteristics and economics of the charter fishing business. Out of an estimated total of 1,932 Great Lakes charter captains, 1,767 captains were surveyed, and 868 returned the survey with usable data.

**Table CF1. Survey Participants by Jurisdiction and Homeport**

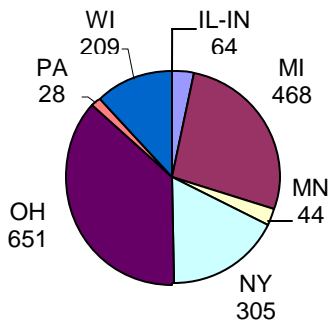
Jurisdiction	Homeport	
Ohio	41%	Lake Erie/St. Clair 42%
Michigan	24%	Lake Michigan 33%
New York	16%	Lake Ontario/Niagara River/St. Lawrence River 15%
Wisconsin	13%	Lake Huron and Lake Superior 5%
Illinois-Indiana	3%	
Minnesota	2%	
Pennsylvania	1%	

**Findings**

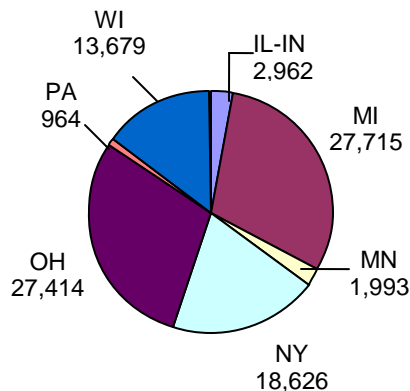
Following general statistics about the charter fishing industry were generated from the survey.

- 90% of the captains operate their own charter firm
- 89% of charter fishing businesses operate one charter boat
- Charter boats are typically 28.8 feet long and nearly 16 years old.
- Captains average 28.3 full-day and 25.1 half-day paid charter trips per year
- Average cost of the half-day lake trout and salmon charter is \$328 per boat (ranging from \$25 to \$560 across the region)
- The total population of active captains yields an estimated 93,209 charter trips (53% were full-day and 47% were half-day)
- Estimated annual revenues are \$19,782:  
 Net positive earnings of \$4,298 for firms making boat loan payments  
 Net positive earnings of \$8,339 for firms not making boat loan payments

**Figure CF1. Number of Active Charter Fishing Captains by State in 2002**



**Figure CF2. Number of Charter Fishing Trips by State in 2002**



To further define charter fishing’s impact on local economies in the Great Lakes region, shown below are average year expenditures for a charter boat captain. Business owning charter captains, totaling 1,746 in the Great Lakes, spend an average of \$11,443 annually on operating expenses for a total of \$19.98 million. By far the greatest proportion is spent in or near the coastal



communities where their boats are kept. The direct economic impacts of these charter boat operating expenses is \$15.4 million in sales, \$8.0 million in wages and salaries and \$12.6 million in value added to the local economy which supports 657 jobs. The largest, annual operating expenses for boat-owning captains were fuel and oil, dockage, hired labor and equipment and repair. Table CF2 presents the average annual operating costs by expenditure item, i.e. fuel, dockage, labor, equipment repair, etc.

**Table CF2. Average Annual Operating Costs for Great Lakes Boat-Owning Captains**

Item	Expense	# of Respondents
Fuel/Oil	\$2,282	635
Dockage	\$1,417	637
Labor (hired)	\$1,288	624
Equipment Repair	\$1,083	636
Advertising	\$897	627
Miscellaneous	\$823	632
Insurance	\$785	637
Boating Maintenance & Repair	\$772	635
Office & Communications	\$628	626
Boat Storage Fees	\$620	636
Boat Repair Not Covered by Insurance	\$355	636
License Fees	\$162	632
Drug Testing/Professional Dues	\$125	638
Boat Launch Fees	\$53	635
Total Operating Costs	\$11,443	614

Operational expenditures totals for the Great Lakes region are presented in Table CF3. These totals are calculated by multiplying average annual expenses for boat-owning captain with the estimated number of Great Lakes charter captains for 2002 (1,746 firms). This table indicates that aside from the net income of the charter fishing business alone, the charter fishing industry in 2002 is estimated to put \$19.7 million dollars into the Great Lakes regional economy.

**Table CF3. Estimated Annual Operational Expenditure Totals for the U.S. Great Lakes Region**

Item	Expenditure Totals (in millions)
Fuel/Oil	\$4.0
Dockage	\$2.5
Labor (hired)	\$2.2
Equipment Repair	\$1.9
Advertising	\$1.6
Miscellaneous	\$1.4
Insurance	\$1.4
Boating Maintenance & Repair	\$1.3
Office & Communications	\$1.1
Boat Storage Fees	\$1.1
Boat Repair Not Covered by Insurance	\$0.6
License Fees	\$0.3
Drug Testing/Professional Dues	\$0.2
Boat Launch Fees	\$0.1
Total Operating Costs	\$19.7

Charter fishing firms brought in estimated total sales of \$34.5 million. Table CF4 presents total sales average income, and average cost and net profits by state.

**Table CF4. Average Income, Average Economic Cost, Estimated Net Profit or Loss for Great Lakes Charter Businesses by State**

Region/Water Body	Est. # of Businesses	Ave. Income/Business	Ave. Economic Cost/Business*	Net Return (Profit or Loss)	Est. Total Sales (in millions)
All GL States <i>689 respondents</i>	1,746	\$19,782	\$20,573 or \$15,704	\$(-791) or \$4,078	\$34.5 <sup>1</sup>
IL-IN <i>20 respondents</i>	64	\$15,484	\$21,277 or \$18,430	\$(-5,793) or \$(-2,946)	\$1.0
MI <i>183 respondents</i>	468	\$22,200	\$22,317 or \$17,386	\$(-117) or \$4,814	\$10.4
MN <i>24 respondents</i>	44	\$13,983	\$16,973 or \$14,333	\$(-2,990) or \$(-350)	\$0.6
NY <i>124 respondents</i>	305	\$22,907	\$18,594 or \$14,741	\$4,313 or \$8,166	\$7.0
OH <i>213 respondents</i>	651	\$15,956	\$20,381 or \$14,585	\$(-4,426) or 1,370	\$10.4
PA <i>12 respondents</i>	28	\$13,312	\$10,427 or \$9,427	\$2,885 or \$3,885	\$0.4
WI <i>85 respondents</i>	209	\$22,340	\$21,599 or \$16,482	\$741 \$5,912	\$4.7

\*The average economic cost calculated with and without depreciation costs.

<sup>1</sup> The combined estimates for the individual lakes do not equal the estimates for all the Great Lakes states because of missing data and differing estimation methodologies.

**Economic Impacts of Charter Fishing by State:  
Illinois-Indiana**

- 64 active captains; 64 licensed captains
- 100% of the captains operate their own charter firm
- 91% of charter fishing businesses operate one charter boat
- Charter boats are typically 31.7 feet long and nearly 21.5 years old
- Captains average 6.5 full-day and 40 half-day paid charter trips per year
- Averaged cost of the half-day lake trout and salmon charter trip – the most popular trip - is \$380 per boat, (ranging \$240 to \$520)
- The active captains in Illinois-Indiana yield an estimated 2,962 charter trips (14% were full-day and 86% were half-day)
- Estimated annual revenues are \$15,484: with a net cash flow of - \$2,434 for firms making boat loan payments and net cash flow of \$1,966 for firms not making boat loan payments.
- Charter fishing firms brought in estimated total sales of \$1 million

**Table CF5. Average Annual Operating Costs for Illinois-Indiana’s Boat-Owning Captains**

Item	Expense	IL-IN Total <sup>1</sup>
Fuel/Oil	\$2,014	\$128,896
Dockage	\$2,272	\$145,408
Equipment Repair	\$1,159	\$74,176
Boating Maintenance & Repair	\$1,138	\$72,832
Boat Storage Fees	\$1,047	\$67,008
Labor	\$979	\$62,656
Insurance	\$897	\$57,408
Miscellaneous	\$553	\$35,392
Office & Communications	\$374	\$23,936
Boat Repair Not Covered by Insurance	\$298	\$19,072
License Fees	\$222	\$14,208
Drug Testing/Professional Dues	\$105	\$6,720
Boat Launch Fees	\$18	\$1,152
<b>Total Operating Costs</b>	<b>\$13,518</b>	<b>\$708,864</b>

<sup>1</sup>Expenses multiplied by the number of active captains (64) in 2002.

**Economic Impacts of Charter Fishing by State:  
Michigan**

- 468 active captains; 468 licensed captains
- 95% of the captains operate their own charter firm
- 89% of charter fishing businesses operate one charter boat
- Charter boats are typically 29.5 feet long and nearly 17 years old
- Captains average 18.3 full-day and 40.9 half-day paid charter trips per year
- Average cost of the half-day lake trout and salmon charter is \$338 per boat (ranging \$70 to \$560)
- Captains in Michigan yield an estimated 27,715 charter trips (31% were full-day and 69% were half-day)
- Estimated annual revenues are \$22,200, with a net cash flow of \$5,090 for firms making boat loan payments and net cash flow of \$9,705 for firms not making boat loan payments
- Charter fishing firms brought in an estimated total sales of \$10.1 million

**Table CF6. Average Annual Operating Costs for Michigan’s Boat-Owning Captains**

Item	Expense	MI Totals <sup>1</sup>
Fuel/Oil	\$2,361	\$1,104,948
Labor	\$1,965	\$919,620
Dockage	\$1,668	\$780,624
Equipment Repair	\$1,159	\$542,412
Boat Maintenance and Repair	\$885	\$414,180
Miscellaneous	\$829	\$387,972
Advertising	\$763	\$357,084
Boat Storage Fees	\$760	\$355,680
Insurance	\$759	\$355,212
Office and Communications	\$588	\$275,184
Boat Repair Not Covered by Insurance	\$335	\$156,780
Drug Testing/Professional Dues	\$143	\$66,924
License Fees	\$185	\$86,580
Boat Launch Fees	\$94	\$43,992
<b>Total Operating Costs</b>	<b>\$12,495</b>	<b>\$5,847,192</b>

<sup>1</sup>Expenses multiplied by the number of active captains (468) in 2002.

**Economic Impacts of Charter Fishing by State:**  
**Minnesota**

- 44 active captains; 44 licensed captains
- 100% of the captains operate their own charter firm
- 84% of charter fishing businesses operate one charter boat
- Charter boats are typically 27.8 feet long and nearly 22 years old
- Captains average 9 full-day and 36 half-day paid charter trips per year.
- Average cost of the half-day lake trout and salmon charter is \$282 per boat (ranging \$25 to \$385)
- Captains in Minnesota yield an estimated 1,993 charter trips (20% were full-day and 80% were half-day)
- Estimated annual revenues are \$13,983 with a net cash flow of \$56 for firms making boat loan payments and a net cash flow of \$2,819 for firms not making boat loan payments
- Charter fishing firms brought in estimated total sales of \$615,260.

**Table CF7. Average Annual Operating Costs for Minnesota’s Boat-Owning Captains**

<b>Item</b>	<b>Expense</b>	<b>MN Totals<sup>1</sup></b>
Equipment Repair	\$1,992	\$87,648
Fuel/Oil	\$1,473	\$64,812
Labor	\$1,399	\$61,556
Advertising	\$1,093	\$48,092
Miscellaneous	\$960	\$42,240
Boat Maintenance and Repair	\$907	\$39,908
Dockage	\$904	\$39,776
Insurance	\$785	\$34,540
Office and Communications	\$700	\$30,800
Boating Storage Fees	\$391	\$17,204
License Fees	\$297	\$13,068
Boat Repair Not Covered by Insurance	\$134	\$5,896
Drug Testing/Professional Dues	\$118	\$5,192
Boat Launch Fees	\$11	\$484
<b>Total Operating Costs</b>	<b>\$11,164</b>	<b>\$491,216</b>

<sup>1</sup>Expenses multiplied by the number of active captains (44) in 2002.

**Economic Impacts of Charter Fishing by State:  
New York**

- 305 active captains; 305 licensed captains
- 99% of the captains operate their own charter firm
- 81% of charter fishing businesses operate one charter boat
- Charter boats are typically 26.7 feet long and nearly 15 years old
- Captains average 50 full-day and 11.1 half-day paid charter trips per year
- Average cost of the full-day lake trout and salmon charter, the most popular trip, is \$407 per boat (ranging \$200 to \$507)
- Captain in New York yield an estimated 18,626 charter trips (82% were full-day and 18% were half-day)
- Estimated annual revenues are \$22,907 with a net cash flow of \$8,038 for firms making boat loan payments and a net cash flow of \$11,814 for firms not making boat loan payments
- Charter fishing firms brought in estimated total sales of \$7 million

**Table CF8. Average Annual Operating Costs for New York’s Boat-Owning Captains**

Item	Expense	NY Totals <sup>1</sup>
Fuel/Oil	\$1,895	\$577,975
Advertising	\$1,200	\$366,000
Labor	\$1,168	\$356,240
Equipment Repair	\$1,115	\$340,075
Dockage	\$1,096	\$334,280
Miscellaneous	\$901	\$274,805
Insurance	\$831	\$253,455
Boat Maintenance and Repair	\$717	\$218,685
Office and Communications	\$531	\$161,955
Boating Storage Fees	\$429	\$130,845
Boat Repair Not Covered by Insurance	\$276	\$84,180
Drug Testing/Professional Dues	\$92	\$28,060
License Fees	\$91	\$27,755
Boat Launch Fees	\$33	\$10,065
<b>Total Operating Costs</b>	<b>\$11,093</b>	<b>\$3,164,375</b>

<sup>1</sup>Expenses multiplied by the number of active captains (305) in 2002.

**Economic Impacts of Charter Fishing by State:  
Ohio**

- 651 active captains; 794 licensed captains
- 82% of the captains operate their own charter firm
- 91% of charter fishing businesses operate one charter boat
- Charter boats are typically 28.6 feet long and nearly 13 years old
- Captains average 36 full-day and 6 half-day paid charter trips per year.
- Average cost of the full-day walleye charter, the most popular trip, is \$404 per boat (ranging \$66 to \$675)
- Captains in Ohio yield an estimated 27,414 charter trips (85% were full-day and 15% were half-day)
- Estimated annual revenues are \$15,956 with a net cash flow of \$815 for firms making boat loan payments and a net cash flow of \$5,327 for firms not making boat loan payments
- Charter fishing firms brought in estimated total sales of \$10.97 million

**Table CF9. Average Annual Operating Costs for Ohio’s Boat-owning Captains**

Item	Expense	OH Totals <sup>1</sup>
Fuel/Oil	\$2,453	\$1,596,903
Dockage	\$1,396	\$908,796
Equipment Repair	\$975	\$634,725
Labor	\$907	\$590,457
Advertising	\$798	\$519,498
Insurance	\$787	\$512,337
Miscellaneous	\$785	\$511,035
Boat Maintenance and Repair	\$714	\$464,814
Office and Communications	\$692	\$450,492
Boating Storage Fees	\$513	\$333,963
Boat Repair Not Covered by Insurance	\$298	\$193,998
License Fees	\$134	\$87,234
Drug Testing/Professional Dues	\$129	\$83,979
Boat Launch Fees	\$42	\$27,342
<b>Total Operating Costs</b>	<b>\$10,629</b>	<b>\$6,915,573</b>

<sup>1</sup>Expenses multiplied by the number of active captains (651) in 2002.

**Economic Impacts of Charter Fishing by State:  
Pennsylvania**

- 28 active captains; 28 licensed captains
- 100% of the captains operate their own charter firm
- 92% of charter fishing businesses operate one charter boat
- Charter boats are typically 25.4 feet long and nearly 14.2 years old
- Captains average 24.9 full-day and 9.5 half-day paid charter trips per year.
- Average cost of the full-day walleye charter, the most popular trip, is \$429 per boat (ranging \$300 to \$650)
- Captains in Pennsylvania yield an estimated 964 charter trips (72% were full-day and 28% were half-day).
- Estimated annual revenues are \$13,312 with a net cash flow of \$2,042 for firms making boat loan payments and a net cash flow of \$6,620 for firms not making boat loan payments
- Charter fishing firms brought in estimated total sales of \$372,750

**Table CF10. Average Annual Operating Costs for Pennsylvania’s Boat-Owning Captains**

Item	Expense	PA Total <sup>1</sup>
Fuel/Oil	\$1,443	\$40,404
Dockage	\$803	\$22,484
Equipment Repair	\$672	\$18,816
Miscellaneous	\$659	\$18,452
Advertising	\$651	\$18,228
Office and Communications	\$617	\$17,276
Insurance	\$614	\$17,192
Boating Storage Fees	\$357	\$9,996
Labor	\$319	\$8,932
Boat Maintenance and Repair	\$290	\$8,120
License Fees	\$83	\$2,324
Drug Testing/Professional Dues	\$79	\$2,212
Boat Repair Not Covered by Insurance	\$33	\$924
Boat Launch Fees	\$0	\$0
Total Operating Costs	\$6,620	\$185,360

<sup>1</sup> Expenses multiplied by the number of active captains (28) in 2002.



**Economic Impacts of Charter Fishing by State:  
Wisconsin**

- 209 active captains; 258 licensed captains
- 81% of the captains operate their own charter firm
- 79% of charter fishing businesses operate one charter boat
- Charter boats are typically 30.6 feet long and nearly 19.4 years old.
- Captains average 9.7 full-day and 55.7 half-day paid charter trips per year
- The average cost of the half-day lake trout and salmon charter, the most popular trip, is \$332 per boat (ranging from \$75 to \$550)
- Captains in Wisconsin yield an estimated 13,679 charter trips (15% were full-day and 85% were half-day)
- Estimated annual revenues are \$22,340 with a net cash flow of \$8,240 for firms making boat loan payments and a net cash flow of \$10,678 for firms not making boat loan payments
- Charter fishing firms brought in estimated total sales of \$4.8 million

**Table CF11. Average Annual Operating Costs for Wisconsin's Boat-Owning Captains**

Item	Expense	WI Total <sup>1</sup>
Fuel/Oil	\$2,562	\$535,458
Dockage	\$1,343	\$280,687
Labor	\$1,046	\$218,614
Advertising	\$1,009	\$210,881
Equipment Repair	\$956	\$199,804
Boating Storage Fees	\$851	\$177,859
Miscellaneous	\$850	\$177,650
Insurance	\$767	\$160,303
Office and Communication	\$726	\$151,734
Boat Maintenance and Repair	\$676	\$141,284
Boat Repair Not Covered by Insurance	\$410	\$85,690
License Fees	\$251	\$52,459
Drug Testing/Professional Dues	\$135	\$28,215
Boat Launch Fees	\$39	\$8,112
<b>Total Operating Costs</b>	<b>\$11,662</b>	<b>\$2,428,750</b>

<sup>1</sup>Expenses multiplied by the number of active captains (209) in 2002.

## **Methods: Recreational Marine Research Center**

A similar approach to the one employed for recreational boating was utilized to estimate the economic impacts of charter fishing in the Great Lakes states. Various information were used to develop the estimates including the results of a comprehensive survey of the charter fishing industry of the Great Lakes fall of 2002 and winter of 2003 conducted by Sea Grant.

These surveys provided the most current information on: (1) the number of charter fishing boats operating in Great Lakes states, (2) the average number of charter trips by boats operating in different states, (3) the total number of charter trips in each state, (4) the estimated revenue per boat and, (5) details on average annual operating expenses.

Estimates of the number of persons comprising charter fishing parties, the proportion of day and overnight charter fishing related trips, and the number of overnight trips using different types of lodging (e.g., motels, campgrounds) were derived from previous studies of charter fishing conducted in Michigan, Ohio and New York.

Spending profiles for day trips and overnight trips by charter fishing customers were developed based on tourism spending profiles developed for the Michigan Tourism Economic Impact Model (MITEIM). The MITEIM model employs visitor spending profiles for a set of travel segments to estimate visitor spending and a set of sector-specific multipliers.

A database of spending profiles for different tourism market segments have been developed for use with the MITEIM model. The tourist spending averages yield total spending consistent with the state's lodging room use tax collections and selected other sources. Recent work to estimate state and local area tourism satellite accounts has also produced estimates that are consistent with the MITEIM model.

The MITEIM average spending profiles for day trips and overnight trips were adjusted to reflect the makeup of charter fishing parties (i.e., more parties comprised of friends rather than all family members) and the distribution of trip spending (i.e., more spending on entertainment, food and more rooms rented per party).

## **Results**

It is estimated that charter fishing in the Great lakes states produces in excess of 81,000 party days/nights of travel to communities near where the charter boats are kept. About two thirds are day trips. Local average spending per party on day trips is estimated to be \$197 including restaurants, takeout food and beverages, entertainment and shopping. Charter parties on overnight trips that stay in motels average \$449 of local spending per day. This averages \$112 per person per day. These local trip spending estimates do not include what is paid for in charter fees or tips.

It is also estimated that direct spending in Great Lakes coastal communities by charter fishing customers is \$20.57 million not counting charter fees. Charter customers on day trips spend approximately \$10 million and those on overnight trips spend another \$10 million. This does not

include spending at home in preparation for the trip or spending on route to Great Lakes coastal communities where the boats are docked.

The direct economic impact of charter customer trip spending is \$16.7 million in sales, \$6.9 million in wages and salaries and \$9.2 million in value added to the local economy, sustaining 331 jobs.

**Table CF12. Spending by Charter Boat Customers in Local Communities by Trip Segment<sup>1</sup>**

	Trip Segment				Total
	Day Trip	Motel	Camp	Other Overnight	
Average spending (\$ Per party day)	\$197	\$449	\$218	\$195	\$253
Party days/nights (000's)	53,240	17,722	3,840	6,646	81,448
Total spending (\$ Millions)	\$10.47	\$7.97	\$0.84	\$1.30	\$20.57
Pct of party days	65%	22%	5%	8%	100%
Pct of spending	51%	39%	4%	6%	100%

<sup>1</sup>Does not include Charter fees or tips

**Table CF13. Average Trip Spending by Charter Boat Parties<sup>1</sup> in Local Communities**

Spending Category	Spending per Party per Day				Spending per Person per Day			
	Day Trip	Motel	Camp	Other Overnight	Day Trip	Motel	Camp	Other Overnight
Motel, hotel cabin or B&B	\$0.00	\$160.00	\$0.00	\$0.00	\$0.00	\$40.00	\$0.00	\$0.00
Camping fees	\$0.00	\$0.00	\$15.99	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00
Restaurants & bars	\$90.00	\$136.00	\$90.00	\$90.00	\$22.50	\$34.00	\$22.50	\$22.50
Groceries, take-out food/drinks	\$45.00	\$60.00	\$45.00	\$45.00	\$11.25	\$15.00	\$11.25	\$11.25
Gas & oil	\$13.07	\$16.17	\$15.31	\$12.45	\$3.27	\$4.04	\$3.83	\$3.11
Other vehicle expenses	\$0.44	\$1.57	\$1.92	\$0.23	\$0.11	\$0.39	\$0.48	\$0.06
Local transportation	\$1.40	\$6.70	\$2.96	\$0.67	\$0.35	\$1.67	\$0.74	\$0.17
Recreation/Entertainment	\$18.00	\$26.00	\$18.00	\$18.00	\$4.50	\$6.50	\$4.50	\$4.50
Souvenirs and other expenses	\$28.81	\$43.00	\$28.81	\$28.81	\$7.20	\$10.75	\$7.20	\$7.20
<b>Total Local Spending</b>	<b>\$196</b>	<b>\$449</b>	<b>\$217</b>	<b>\$195</b>	<b>\$49</b>	<b>\$112</b>	<b>\$54</b>	<b>\$48</b>

<sup>1</sup>Does not include Charter fees or tips

**Table CF14. Total Trip Spending by Great Lakes Charterboat Customers in Local Communities<sup>1</sup> (\$000's)**

Spending Category	Segment				Total	Percent
	Day Trip	Motel	Camp	Other Overnight		
Motel, hotel cabin or B&B	\$0	\$2,836	\$0	\$0	\$2,836	14%
Camping fees	\$0	\$0	\$61	\$0	\$61	0%
Restaurants & bars	\$4,792	\$2,410	\$346	\$598	\$8,146	40%
Groceries, take-out food/drinks	\$2,396	\$1,063	\$173	\$299	\$3,931	19%
Gas & oil	\$696	\$287	\$59	\$83	\$1,124	5%
Other vehicle expenses	\$23	\$28	\$7	\$2	\$60	0%
Local transportation	\$75	\$119	\$11	\$4	\$209	1%
Recreation/Entertainment	\$958	\$461	\$69	\$120	\$1,608	8%
Shopping	\$1,534	\$762	\$111	\$191	\$2,598	13%
<b>Total Spending</b>	<b>\$10,473</b>	<b>\$7,965</b>	<b>\$837</b>	<b>\$1,297</b>	<b>\$20,573</b>	<b>100%</b>

**Table CF15. Economic Impacts of Charter Boat Customer Spending on the Great Lakes Region Economy<sup>1</sup>**

<b>Sector/Spending Category</b>	<b>Sales (\$ 000's)</b>	<b>Jobs</b>	<b>Personal Income (\$ 000's)</b>	<b>Value Added (\$ 000's)</b>
Motel, hotel cabin or B&B	\$2,836	44.1	\$1,237	\$2,008
Camping fees	\$61	0.4	\$9	\$21
Restaurants & bars	\$8,146	206.0	\$3,454	\$3,895
Admissions & fees	\$1,608	20.8	\$599	\$1,005
Gambling	-	-	-	-
Other vehicle expenses	\$60	0.4	\$12	\$28
Local transportation	\$209	6.1	\$109	\$122
Retail Trade	\$2,446	46.3	\$1,165	\$1,523
Wholesale Trade	\$543	3.5	\$208	\$365
Local Production of Goods	\$860	3.6	\$151	\$227
<b>Total Direct Effects</b>	<b>\$16,769</b>	<b>331.3</b>	<b>\$6,944</b>	<b>\$9,195</b>
Secondary Effects	\$15,743	139.5	\$5,309	\$8,974
<b>Total Effects</b>	<b>\$ 32,512</b>	<b>470.8</b>	<b>\$ 12,253</b>	<b>\$ 18,169</b>
Multiplier	1.94	1.4	1.76	1.98

<sup>1</sup>Excludes charter fees as this is covered in charterboat operations spending.

The sales multiplier for the Great Lakes region is 1.94. The direct and secondary impacts of charter fishing on Great Lakes communities are approximately \$61 million in sales, \$25 million in salaries and wages and \$37 million in value added. The total employment impact of charter fishing in Great Lakes states is 1, 266 jobs.

**Table CF16. Economic Impacts of Great Lakes Charter Boats**

<b>Sector/Spending Category</b>	<b>Sales (\$ Millions)</b>	<b>Jobs</b>	<b>Personal Income (\$ Millions)</b>	<b>Value Added (\$ Millions)</b>
<b>Direct Effects</b>				
Operating Expenses	\$ 15.40	657	\$ 8.00	\$ 12.58
Customer Spending	\$ 16.77	331	\$ 6.94	\$ 9.20
<b>Total Direct Effects</b>	<b>\$ 32.17</b>	<b>988</b>	<b>\$ 14.95</b>	<b>\$ 21.78</b>
<b>Total Effects</b>				
Operating Expenses	\$ 28.58	795	\$ 12.68	\$ 19.40
Customer Spending	\$ 32.51	471	\$ 12.25	\$ 18.17
<b>Total Effects</b>	<b>\$ 61.09</b>	<b>1,266</b>	<b>\$ 24.93</b>	<b>\$ 37.57</b>

Table CF17. Summary of Great Lakes Charter Boat Activity and Spending in the Great Lakes Region

State	Licensed Boats	Charters	Operating Expenses (\$ Millions)	Customer Trip Spending (\$ Millions)	Total Spending (\$ Millions)
Illinois/Indiana	64	2,962	\$0.68	\$0.65	\$1.33
Michigan	468	27,715	\$4.95	\$6.11	\$11.06
Minnesota	44	1,993	\$0.46	\$0.44	\$0.90
New York	305	18,626	\$3.22	\$4.10	\$7.32
Ohio	794	27,414	\$8.39	\$6.04	\$14.43
Erie County (PA)	28	964	\$0.30	\$0.21	\$0.51
Wisconsin	258	13,679	\$2.73	\$3.02	\$5.75
Total	1,961	93,353	\$20.72	\$20.57	\$41.29

## Chapter 7

# The multi-faceted value of recreational harbors on the Great Lakes

Section 10 of the Rivers and Harbors Act of 1899, authorized the U.S. Army Corps of Engineers (the Corps) to maintain navigable waterways of the United States. Specifically, this Act prohibited the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and required the approval of the Corps of Engineers for excavation or fill within navigable waters (33 USC. Section 403). Section 622 of Title 33 (Chapter 12, subchapter V) further authorizes the Secretary of the Corps to “have dredging and related work done by contract if he determines private industry has the capability to do such work and it can be done at reasonable prices and in a timely manner.”

Since its initial passage in the late 1800s, the Rivers and Harbors Act has been amended and funds appropriated dozens of times to construct and maintain the region’s many shallow draft harbors. This piecemeal history of identifying areas and authorizing the Corps to engage in construction and permitting, and appropriating funds to carry out these authorizations has established the region’s shallow draft harbors as the responsibility of the federal government.

### Harbor Depth and Function

According to the Corps, there are four types of harbors: commercial, recreational, harbors of refuge and subsistence harbors. (See insert.) From this perspective, harbors are seen from a standpoint of functionality and service, rather than depth. However, depth does play a role in functionality. Because shallow draft harbors cannot serve large commercial vessels that require deep draft, they can only be used for recreational purposes. For this reason, the term recreational harbor is often used interchangeably with shallow draft harbor. However, the two are not synonymous. All shallow draft harbors are recreational harbors, but not all recreational harbors are necessarily shallow draft harbors. The difference is primarily because some deep draft harbors once used for commerce no longer support commercial activities. These harbors are likely to benefit from their former commercial status to the extent that they will likely not require dredging for many years, if ever, to continue to serve recreational needs. In the Great Lakes, 11 federally authorized recreational harbors are also deep draft harbors: seven in Lakes Michigan, Superior and Huron (Detroit and Chicago Districts) and four in Lake Ontario and St. Lawrence River (Buffalo District). Table RH1 identifies the deep draft, recreational harbors. Corps policy states that shallow draft is any harbor that has a depth of less than 14 feet; deep draft is 14 feet or deeper.

#### Types of Harbors

**Commercial:** must receive or ship a commodity tonnage

**Recreational:** anything not commercial

**Harbors of Refuge:** built to provide shelter from storms; some are deep, some are shallow

**Subsistence:** no roads; must rely on ships to bring in goods to community



**Table RH1. List of Deep Draft Recreational Harbors**

Lake Superior	Lake Michigan	Lake Huron	Lake Ontario	St Lawrence River/Connecting Waterways
Grand Marais Harbor, MI	Kewaunee Harbor, WI	Cheboygan Harbor, MI	Great Sodus Bay Harbor, NY	Cape Vincent Harbor, NY
Grand Marais Harbor, MN	Oconto Harbor, WI		Little Sodus Bay Harbor, NY	Morristown Harbor, NY
Port Wing Harbor, WI	Sheboygan Harbor, WI			

**Recreational Harbors Around the Great Lakes**

Eighty-seven recreational harbors have been federally authorized around the Great Lakes. Responsibility for construction and maintenance of the 87 federally-authorized Great Lakes recreational harbors and channels is shared among three U.S. Army Corps of Engineers Districts: Chicago, Buffalo and Detroit. The Chicago District, which covers the Illinois and Indiana shores of Lake Michigan technically has only one federally-authorized recreational harbor within its jurisdiction: Burns Waterway Small Boat Harbor. In practice, however, four of the eight harbors maintained by the Chicago District are primarily recreational harbors. Sixty-five federally authorized recreational harbors (58 harbors active) are the responsibility of the Detroit District, which covers Lakes Superior, Michigan and Huron (the shores along the states of Michigan, Minnesota and Wisconsin). The Buffalo District is responsible for 21 recreational (20 active) harbors along the shores of Lake Erie and Ontario (shores of states of Ohio, Pennsylvania and New York).

In practice, the actual number of operating recreational harbors around the Great Lakes is 78 because some were never built, have been deauthorized, or are classified as inactive. Four recreational harbors were authorized, but never built, including: Kelly’s Island (Lake Erie); Black River/Alcona (Lake Huron); Cross Village (Lake Michigan); and Northport Harbor, (Lake Michigan). Another four recreational harbors have been deauthorized or are classified as inactive: Beaver Bay and Lutsen Harbors (Lake Superior) and St. Joseph River and Washington Island (Lake Michigan). Additionally, one recreational harbor—Little Lake, Michigan—is an

**Recreational Activities in Commercial Harbors  
The Chicago Example**

Although harbors may be classified as a commercial harbor, many may have a significant amount of recreational activity. The harbors in the Chicago region illustrate this phenomenon. The Chicago Harbor is officially a commercial harbor; however, it is no longer maintained by the Chicago District. The only commercial activity is barge traffic, and the majority is used for recreational boats. The Michigan City Harbor has been authorized as a commercial harbor because it was once a big fishing port. It is officially recognized as a commercial harbor, but is more commonly known as a recreational harbor. Although the Waukegan Harbor is classified as a commercial harbor, it contains two recreations marinas. This harbor needs environmental clean-up, but the chances of that happening is low, which may drive the change of the harbor's status to recreational.

inland harbor and not on the Great Lakes. Of these 78 active recreational harbors, 15 are found on Lake Superior, 22 on Lake Michigan, 14 on Lake Huron, 10 on Lake Erie, 8 on Lake Ontario, 2 on the St. Lawrence River and 7 on the connecting waterways. Table RH2 lists the recreational harbors by body of water.

**Table RH2. List of Active Recreational Harbors by Lake and Connecting Channel**

Lake Superior	Lake Michigan	Lake Huron	Lake Erie	Lake Ontario	St Lawrence River/Connecting Waterways
Bayfield Harbor, WI	Burns Waterway Small Boat Harbor, IN	Au Sable Harbor, MI	Barcelona Harbor, NY	Great Sodus Bay Harbor, NY	Cape Vincent Harbor, NY
Big Bay Harbor, MI	Algoma Harbor, WI	Bayport Harbor, MI	Cattaraugus Creet Harbor, NY	Irondequoit Bay Harbor, NY	Morristown Harbor, NY
Black River Harbor, MI	Arcadia Harbor, MI	Caseville Harbor, MI	Cooley Canal Harbor, OH	Little Sodus Bay Harbor, NY	Mackinac Island Harbor, MI
Chippewa, Harbor, MI	Big Suamico Harbor, WI	Cheboygan Harbor, MI	Port Clinton Harbor, OH	Oak Orchard Harbor, NY	Mackinaw City Harbor, MI
Cornucopia Harbor, WI	Fox River, WI	Detour Harbor, MI	Rocky River Harbor, OH	Olcott Harbor, NY	Belle River, MI
Eagle Harbor, MI	Greilickville Harbo, MI	Hammond Bay Harbor, MI	Sturgeon Point Harbor, NY	Port Ontario Harbor, NY	Black River (Port Huron), MI
Grand Marais Harbor, MI	Kewalinee Harbor, WI	Harrisville Harbor, MI	Toussaint River, OH	Sackets Harbor, NY	Point River, MI
Grand Traverse Bay Harbor, MI	Leland Harbor, MI	Inland Route, MI	Vermilion Harbor, OH	Wilson Harbor, NY	Clinton River, MI
Knife River Harbor, MN	Les Cheneaux Island, MI	Lexington Harbor, MI	West Harbor, OH		Little River, NY
La Pointe Harbor, WI	Manistique Harbor, MI	Point Lookout Harbor, MI	Bolles Harbor, MI		
Lac La Belle, MI	New Buffalo Harbor, MI	Port Austin Harbor, MI			
Port Wing Harbor, W	Oconto Harbor, WI	Port Sanilac Harbor, MI			
Saxon Harbor, WI	Pensaukee Harbor, WI	Sebewaing River, MI			
Whitefish Point Harbor, MI	Pentwater Harbor, WI	Tawas Bay Harbor, MI			
	Petoskey Harbor, MI				
	Portage Lake Harbor, MI				
	Saugatuck Harbor, MI				
	Sheboygan Harbor, WI				
	South Haven Harbor, MI				
	St. James Harbor, Beaver Island, MI				
	Washington Island, WI				
	White Lake Harbor, MI				

### **Recreational Harbor Dredging: the Federal Policy**

Because of diminishing federal funds for dredging activities, dredging priorities in recent years has focused on maintaining commercial navigation channels. Recreational and shallow draft harbors are getting dredged less frequently or not at all. In light of limited funds, federal policy for dredging recreational harbors has become increasingly piecemeal and reactionary. Recreational harbor dredging is usually done in the areas of greatest need, where specifically directed by Congress, or where it is conveniently located near a commercial dredging operation. The perceived rationale is that commercial navigation is clearly in the federal interest, while recreational boating activities are not.

### **Beneficial services provided by recreational harbors:**

#### **Harbors of Refuge**

Recreational harbors provide more than just places that allow people to use and protect private watercraft. Many also provide harbors of refuge—places for boaters to go to escape from severe weather events. Without them, the increase in boating accidents and fatalities would likely escalate as would the costs paid by taxpayers for the U.S. Coast Guard which performs search and rescue operations. The costs of dredging and maintaining harbors of refuge are a preventative measure against the loss of life and property from severe weather events. Of the 78 active federally authorized recreational harbors in the Great Lakes managed by the Corps (including the inland lake, Little Lake Harbor, Mich.), 17 or more than one fifth (21%), are also harbors of refuge, including 7 on Lakes Superior, Michigan and Huron (5 in the Detroit District; 1 in Chicago District) and 3 on Lake Erie and Ontario (Buffalo District).

**Table RH3. Great Lakes Recreational Harbors that are also Harbors of Refuge**

Lake Superior	Lake Michigan	Lake Huron	Lake Erie	Lake Ontario
Big Bay Harbor, MI	Burns Waterway Small Boat Harbor, IN	Au Sable Harbor, MI	Barcelona Harbor, NY	Oak Orchard Harbor, NY
Black River Harbor, MI		Point Lookout Harbor, MI		Port Ontario Harbor, NY
Chippewa Harbor, MI		Port Austin Harbor, MI		
Eagle Harbor, MI		Port Sanilac Harbor, MI		
Grand Traverse By Harbor, MI		Hummond Bay Harbor, MI		
Lac La Belle, MI				
Whitefish Point Harbor, MI				

**U.S. Coast Guard Facilities**

Another national service provided by several recreational harbors is that they are home to Coast Guard Search and Rescue facilities. Five U.S. Coast Guard search and rescue facilities are located within recreational harbors on the Great Lakes (4 in Detroit District, and 1 in Buffalo District). In other words, 6.4 percent of Great Lakes recreational harbors also allow the U.S. Coast Guard to provide its search and rescue missions. If these harbors were not dredged periodically and otherwise adequately maintained so that Coast Guard vessels could have shelter from and access to deeper unprotected waters, the search and rescue operations of the Coast Guard would be compromised in these locations. Except for Great Sodus Bay Harbor, NY, the status of dredging needs for these harbors have yet to be determined. Great Sodus Bay Harbor was dredged in 2004, and thus its dredging needs have been met for the present (2004).

**Table RH4. Great Lakes Recreational Harbors Housing U.S. Coast Guard Search and Rescue Facilities**

Lake Superior	Lake Michigan	Lake Huron	Lake Ontario
Bayfield Harbor, MI	Portage Lake Harbor, MI Sheboygan Harbor, WI	Tawas Bay Harbor, MI	Great Sodus Bay Harbor, NY

**Ferry and Other Transportation Services**

At least ten harbors are identified as locations for ferry and transportation services. Out of the ten, one harbor (Washington Island, Wisconsin) is classified as inactive by the Corps. Still, nine recreational harbors serve as a means of transportation, locally and or regionally. As on land, the federal government should consider the value of these transportation routes to service regional populations, as part of the nation’s multi-modal federal transportation network.

**Table RH5. Great Lakes Recreational Harbors with Ferry and Other Transportation Services**

Lake Superior	Lake Michigan	Straits of Mackinac	Lake Huron	Lake Erie	St. Lawrence River
Bayfield Harbor, WI	Saugatuck Harbor, MI	Mackinac Island Harbor, MI	Cheboygan Harbor, MI	Port Clinton Harbor, OH	Morristown Harbor, NY
	St. James Harbor, Beaver Island, MI	Mackinaw City Harbor, MI	Detour Harbor, MI		
	Washington Island, WI (inactive)				

Interestingly, these national services--harbors of refuge, home to the U.S. Coast Guard search and rescue facilities, or harbors with ferry and excursion services--are each located in different recreational harbors around the Great Lakes. Together, they account for 32 of the 78 active recreational harbors—41 percent of Great Lakes recreational harbors.

**Subsistence Harbors**

Five of the 87 federally-authorized recreational harbors provide a unique service to subsistence communities. Although technically not subsistence harbors, Whitefish Point and Little Lake (the only federally-authorized inland recreational dredging project in the region) are both known areas for Native American fishing. Washington Island, St. James Harbor at Beaver Island and Mackinac Island are subsistence harbors. The federal government has an important role in maintaining waterborne access to and from subsistence-based communities who depend on access to Great Lakes waters and/or fishing for their livelihood, particularly those that serve Native American communities and reservations where the federal government has had an historic role.

**District Data Analyses**

**Chicago District**

As noted above, the Chicago District manages eight harbors: Burns Waterway Harbor, Burns Waterway Small Boat Harbor, Calumet Harbor and River, Chicago Harbor, Chicago River, Indiana Harbor, Michigan City Harbor and Waukegan Harbor. Half of the eight harbors are used primarily for recreational traffic. By classification, only one recreational harbor, the Burns Waterway Boat Small Harbor, exists under the district’s jurisdiction. Additionally, it serves as a harbor of refuge.

Dredging needs for the harbors under the Chicago District’s authority have for the most part been met with the exception of Indiana Harbor. Indiana Harbor, a commercial harbor, has not

been dredged since 1972 due to concerns about contaminated sediments. The Burns Waterway Small Boat Harbor has been dredged in 2000 and is projected to be dredged in 2006. The dredging frequency needs of the other three harbors that serve recreational activities, Michigan City Harbor, Waukegan Harbor and Chicago Harbor (no longer maintained by the Corps), have been met to date and there is no unmet need for the foreseeable future (as of December, 2004).

### **Detroit District**

The Detroit Districts supports 65 federally authorized recreational harbors, but only 58 active recreational harbors. Data related to future (FY2005) funding and cubic yard shortfalls was only minimally available--for 6 of the 58 active recreational harbors (10 percent) as of 2004. Based on this data, the anticipated shortfall for these 6 harbors is 110,000 cubic yards, at an estimated cost of \$1,727,000. Complaints related to inadequate dredging depths have been recorded at least 6 of the 58 harbors. There is insufficient data to project unmet dredging needs in terms of funding and cubic yard shortfalls into the future.

### **Buffalo District**

The Buffalo District supports 21 federally authorized recreational harbors, but only 20 active recreational harbors. (One recreational harbor, Kelly's Island Harbor in Ohio, is yet to be constructed.) Of the active recreational harbors, 77 percent of those located on Lake Erie have unmet dredging needs. Three harbors (Barcelona, Cuttaraugus and Port Clinton) that require dredging on a 10-year basis have not been dredged as needed. Four of the six harbors with that require dredging on a cycle of every four years or less also have unmet dredging needs. Half—50 percent (4 out of 8) of the recreational harbors located on Lake Ontario also have unmet dredging needs. The dredging frequency needs of these harbors range from unknown, 4 to 5 year or 10 years. The Buffalo District estimates that, in FY05 alone there remains about 200,000 cubic yards of material that needs to be dredged to fully maintain shallow draft harbors, but for which funding is not available. The cost to complete the unmet dredging needs in these 20 recreational harbors in FY05 alone is estimated at \$710,000.

### **Projected Dredging Needs and Funding Shortfalls**

Obtaining data on projected cubic yard shortfalls was particularly challenging and data that was obtained by each of the Corps Districts projects was uneven. While data was available for the only recreational harbor in the Chicago District, Burns Harbor, data was much less available in the other two Great Lakes Districts. For instance, the Buffalo District identified 13 of its 20 active recreation harbors (65 percent) as having dredging shortfalls. However, data on cubic yard or funding shortfalls was only available for 8 of those 13 recreational harbors. Data from the Detroit District on dredging shortfalls was only available for six of its 58 active recreational harbors (10%). Thus, the data for the Great Lakes at large were not sufficient to provide an accurate reflection of future needs for the region.

Lack of funding for recreational harbors coupled with a lack of authority to reprogram funds from other projects presents a serious problem for Great Lakes recreational harbors. District personnel indicate that recreational harbors suffer from the "squeaky wheel syndrome" whereby requests are made to Members of Congress who then put specific harbor names and dollar amounts into legislation to respond to the dredging need (e.g., request).

Despite the difficulties in obtaining consistent data across the Great Lakes, the collective data available to date (December, 2004) show that many recreational harbors are going longer periods

of time between dredging, or are not being dredged at all and the ability to use recreational harbors—for recreation as well as the other important federal services note above—is being compromised.

Table RH6. Other utilization of Great Lakes Recreational Harbors

Recreational Harbor	Lake Basin	District	Excursion/Ferry Services	Harbor of Refuge?	Coast Guard Facility?
<a href="#">BURNS WATERWAY SMALL BOAT HARBOR, IN</a>	Michigan	Chicago	N	Y	N
<a href="#">BARCELONA HARBOR, NY</a>	Erie	Buffalo	N	Y	N
<a href="#">CAPE VINCENT HARBOR, NY</a>	St. Lawrence River	Buffalo	N	N	N
<a href="#">CATTARAUGUS CREEK HARBOR, NY</a>	Erie	Buffalo	N	N	N
<a href="#">COOLEY CANAL HARBOR, OH</a>	Erie	Buffalo	N	N	N
<a href="#">GREAT SODUS BAY HARBOR, NY</a>	Ontario	Buffalo	N	N	Y
<a href="#">IRONDEQUOIT BAY HARBOR, NY</a>	Ontario	Buffalo	N	N	N
<a href="#">KELLY'S ISLAND HARBOR, OH</a>	Erie	Buffalo	N	N	N
<a href="#">LITTLE RIVER, NY</a>	Niagara River	Buffalo	N	N	N
<a href="#">LITTLE SODUS BAY HARBOR, NY</a>	Ontario	Buffalo	N	N	N
<a href="#">MORRISTOWN HARBOR</a>	St. Lawrence River	Buffalo	Y	N	N
<a href="#">OAK ORCHARD HARBOR, NY</a>	Ontario	Buffalo	N	Y	N
<a href="#">OLCOTT HARBOR, NY</a>	Ontario	Buffalo	N	N	N
<a href="#">PORT CLINTON HARBOR, OH</a>	Erie	Buffalo	Y	N	N
<a href="#">PORT ONTARIO HARBOR, NY</a>	Ontario	Buffalo	N	Y	N
<a href="#">ROCKY RIVER HARBOR, OH</a>	Erie	Buffalo	N	N	N
<a href="#">SACKETS HARBOR, NY</a>	Ontario	Buffalo	N	N	N
<a href="#">STURGEON POINT HARBOR, NY</a>	Erie	Buffalo	N	N	N
<a href="#">TOUSSAINT RIVER, OH</a>	Erie	Buffalo	N	N	N
<a href="#">VERMILION HARBOR, OH</a>	Erie	Buffalo	N	N	N
<a href="#">WEST HARBOR, OH</a>	Erie	Buffalo	N	N	N
<a href="#">WILSON HARBOR, NY</a>	Ontario	Buffalo	N	N	N
<a href="#">ALGOMA HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">ARCADIA HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">AU SABLE HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">BAYFIELD HARBOR, WI</a>	Superior	Detroit	Y	N	Y
<a href="#">BAYPORT HARBOR, MI</a>	Huron	Detroit	N	N	N
<a href="#">BEAVER BAY HARBOR, MN</a>	Superior	Detroit	N	Y	N
<a href="#">BELLE RIVER, MI</a>	St. Clair River	Detroit	N	N	N
<a href="#">BIG BAY HARBOR, MI</a>	Superior	Detroit	N	Y	N
<a href="#">BIG SUAMICO HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">BLACK RIVER (PORT HURON), MI</a>	St. Clair River	Detroit	N	N	N
<a href="#">BLACK RIVER HARBOR(GOGEVIC), MI</a>	Superior	Detroit	N	Y	N
<a href="#">BLACK RIVER (ALCONA)</a>		Detroit	N	N	N
<a href="#">BOLLES HARBOR, MI</a>	Erie	Detroit	N	N	N
<a href="#">CASEVILLE HARBOR, MI</a>	Huron	Detroit	N	N	N
<a href="#">CEDAR RIVER HARBOR MICH 1965 ACT</a>	Michigan	Detroit	N	N	N
<a href="#">CHEBOYGAN HARBOR, MI</a>	Huron	Detroit	Y	N	N
<a href="#">CHIPPEWA HARBOR, MI</a>	Superior	Detroit	N	Y	N
<a href="#">CLINTON RIVER, MI</a>	Lake St. Clair	Detroit	N	N	N
<a href="#">CORNUCOPIA HARBOR, WI</a>	Superior	Detroit	N	N	N
<a href="#">CROSS VILILAGE HARBOR, MI</a>	Michigan	Detroit	N	N	N



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Recreational Harbor	Lake Basin	District	Excursion/Ferry Services	Harbor of Refuge?	Coast Guard Facility?
<a href="#">DETOUR HARBOR, MI</a>	Huron	Detroit	Y	N	N
<a href="#">EAGLE HARBOR, MI</a>	Superior	Detroit	N	Y	N
<a href="#">FOX RIVER, WI</a>	Michigan	Detroit	N	N	N
<a href="#">GRAND MARAIS HARBOR, MI</a>	Superior	Detroit	N	N	N
<a href="#">GRAND MARAIS HARBOR, MN</a>	Superior	Detroit	N	N	N
<a href="#">GRAND TRAVERSE BAY HARBOR, MI</a>	Superior	Detroit	N	Y	N
<a href="#">GREILICKVILLE HARBOR, MI (formerly Traverse City Harbor)</a>	Michigan	Detroit	N	N	N
<a href="#">HAMMOND BAY HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">HARRISVILLE HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">INLAND ROUTE, MI</a>	Huron	Detroit	N	N	N
<a href="#">KEWAUNEE HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">KNIFE RIVER HARBOR, MN</a>	Superior	Detroit	N	N	N
<a href="#">LA POINTE HARBOR, WI</a>	Superior	Detroit	N	N	N
<a href="#">LAC LA BELLE, MI</a>	Superior	Detroit	N	Y	N
<a href="#">LELAND HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">LES CHENEUX ISLAND, MI</a>	Michigan	Detroit	N	N	N
<a href="#">LEXINGTON HARBOR, MI</a>	Huron	Detroit	N	N	N
<a href="#">LITTLE LAKE HARBOR, MI</a>	inland lake	Detroit	N	Y	N
<a href="#">LUTSEN HARBOR, MN</a>	Superior	Detroit	N	Y	N
<a href="#">MACKINAC ISLAND HARBOR, MI</a>	Straits of Mackinac	Detroit	Y	N	N
<a href="#">MACKINAW CITY HARBOR MI</a>	Straits of Mackinac	Detroit	Y	N	N
<a href="#">MANISTIQUE HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">NEW BUFFALO HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">NORTHPORT HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">OCONTO HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">PENSANKEE HARBOR, WI</a>	Michigan	Detroit	N	N	N
<a href="#">PENTWATER HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">PETOSKEY HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">PINE RIVER, MI</a>	St. Clair River	Detroit	N	N	N
<a href="#">POINT LOOKOUT HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">PORT AUSTIN HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">PORT SANILAC HARBOR, MI</a>	Huron	Detroit	N	Y	N
<a href="#">PORT WING HARBOR, WI</a>	Superior	Detroit	N	N	N
<a href="#">PORTAGE LAKE HARBOR, MI</a>	Michigan	Detroit	N	N	Y
<a href="#">SAUGATUCK HARBOR, MI</a>	Michigan	Detroit	Y	N	N
<a href="#">SAXON HARBOR, WI</a>	Superior	Detroit	N	N	N
<a href="#">SEBEWAING RIVER, MI</a>	Huron	Detroit	N	N	N
<a href="#">SHEBOYGAN HARBOR, WI</a>	Michigan	Detroit	N	N	Y
<a href="#">SOUTH HAVEN HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">ST JAMES HARBOR, BEAVER ISLAND, MI</a>	Michigan	Detroit	Y	N	N
<a href="#">ST JOSEPH RIVER, MI</a>	Michigan	Detroit	N	N	N
<a href="#">TAWAS BAY HARBOR, MI</a>	Huron	Detroit	N	N	Y
<a href="#">WASHINGTON ISLAND, WI (HARBORS AT)</a>	Michigan	Detroit	Y	N	Y
<a href="#">WHITE LAKE HARBOR, MI</a>	Michigan	Detroit	N	N	N
<a href="#">WHITEFISH POINT HARBOR, MI</a>	Superior	Detroit	N	Y	N

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Table RH7. Dredging status of Great Lakes Recreational Harbors

Recreational Harbor	Current Status: active/inactive/deauthorized*	Dredging Frequency*	Last Dredged Date	Projected Dredging Date*	Frequency Needs Met*	FY05 Budget Shortfall*	FY05 Cubic Yards Shortfall*	FY05 Undredged*	Draft
<a href="#">BURNS WATERWAY SMALL BOAT HARBOR, IN</a>	Active	?	2000	2006	?	?	?	?	Shallow
<a href="#">BARCELONA HARBOR, NY</a>	Active	10 Yrs	1999	Not Scheduled	No	\$370K	17,050	Yes	Shallow
<a href="#">CAPE VINCENT HARBOR, NY</a>	Active	10 Yrs	Never	Not Scheduled	No	Unknown	Unknown	Unknown	Deep
<a href="#">CATTARAUGUS CREEK HARBOR, NY</a>	Active	10 Yrs	Never	Not Scheduled	No*	\$420K*	45,000	Yes	Shallow
<a href="#">COOLEY CANAL HARBOR, OH</a>	Active	1-2 Yrs	2004	Not Scheduled	No	\$0K	0	No	Shallow
<a href="#">GREAT SODUS BAY HARBOR, NY</a>	Active	Unknown	2004	Not Scheduled	No	\$0K	0	No	Deep
<a href="#">IRONDEQUOIT BAY HARBOR, NY</a>	Active	5 yrs	2000	Not Scheduled	No	\$370K	18,500	Yes	Shallow
<a href="#">KELLY'S ISLAND HARBOR, OH</a>	Not Constructed	N/A	N/A	Not Scheduled	N/A	N/A	N/A	N/A	Shallow
<a href="#">LITTLE RIVER, NY</a>	Active	10 Yrs	Never	Not Scheduled	No	\$370K	15,000	Yes	Shallow
<a href="#">LITTLE SODUS BAY HARBOR, NY</a>	Active	Unknown	1994	Not Scheduled	No	\$370K	21,000	Yes	Deep
<a href="#">MORRISTOWN HARBOR</a>	Active	10 Yrs	Never	Not Scheduled	Unknown	Unknown	Unknown	Unknown	Deep
<a href="#">OAK ORCHARD HARBOR, NY</a>	Active	4 Yrs	2004	Not Scheduled	Yes	\$0K	0	No	Shallow
<a href="#">OLCOTT HARBOR, NY</a>	Active	10 Yrs	1997	Not Scheduled	Yes	\$300K	8,000	Yes	Shallow
<a href="#">PORT CLINTON HARBOR, OH</a>	Active	10 Yrs	Unknown	Not Scheduled	No	\$370K	26,000	Yes	Shallow
<a href="#">PORT ONTARIO HARBOR, NY</a>	Active	10 Yrs	Never	Not Scheduled	No	\$370K	4,000	Yes	Shallow
<a href="#">ROCKY RIVER HARBOR, OH</a>	Active	4 Yrs	2004	Not Scheduled	No	\$0K	0	No	Shallow
<a href="#">SACKETS HARBOR, NY</a>	Active	10 Yrs	Never	Not Scheduled	Yes	\$0K	0	No	Shallow
<a href="#">STURGEON POINT HARBOR, NY</a>	Active	1 yr	by Stakeholders*	Not Scheduled	Yes	\$20K*	10,000	Yes	Shallow
<a href="#">TOUSSAINT RIVER, OH</a>	Active	1 Yr	2004	Not Scheduled	No*	\$320K	20,000	Yes	Shallow
<a href="#">VERMILION HARBOR, OH</a>	Active	4 Yrs	2004	Not Scheduled	Yes	\$0K	0	No	Shallow
<a href="#">WEST HARBOR, OH</a>	Active	4 Yrs	2004	Not Scheduled	No	\$0K	0	No	Shallow
<a href="#">WILSON HARBOR, NY</a>	Active	10 Yrs	1997	Not Scheduled	Yes	\$370K	12,500	Yes	Shallow
<a href="#">ALGOMA HARBOR, WI</a>	Active	20 years	1993	2013					Shallow
<a href="#">ARCADIA HARBOR, MI</a>	Active	one year	2004	2005	no	\$75,000	5,000	yes	Shallow
<a href="#">AU SABLE HARBOR, MI</a>	Active	10 years	2001	2011					Shallow
<a href="#">BAYFIELD HARBOR, WI</a>	Active	41 years	1973	2014					Shallow
<a href="#">BAYPORT HARBOR, MI</a>	Active	13 years	1992	2005	no	\$1,000,000	30,000	yes	Shallow
<a href="#">BEAVER BAY HARBOR, MN</a>	never built; deauthorized in '95								

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Recreational Harbor	Current Status: active/inactive/deauthorized*	Dredging Frequency*	Last Dredged Date	Projected Dredging Date*	Frequency Needs Met*	FY05 Budget Shortfall*	FY05 Cubic Yards Shortfall*	FY05 Undredged*	Draft
<a href="#">BELLE RIVER, MI</a>	Active	127 years	1889	2026					Shallow
<a href="#">BIG BAY HARBOR, MI</a>	Active	5 years	2000	2005	no	\$196,000	28,000	yes	Shallow
<a href="#">BIG SUAMICO HARBOR, WI</a>	Active	9 years	2002	2011					Shallow
<a href="#">BLACK RIVER (PORT HURON), MI</a>	Active	13 years	2003	2016					Shallow
<a href="#">BLACK RIVER HARBOR(GOGEVIC), MI</a>	Active	6 years	2001	2007					Shallow
<a href="#">BLACK RIVER (ALCONA)</a>	never built			none					Shallow
<a href="#">BOLLES HARBOR, MI</a>	Active	5 years	2004	2009					Shallow
<a href="#">CASEVILLE HARBOR, MI</a>	Active	5 years	2000	2005	no	\$255,000	20,000	yes	Shallow
<a href="#">CEDAR RIVER HARBOR MICH 1965 ACT</a>	Active	8 years	1999	2007					Shallow
<a href="#">CHEBOYGAN HARBOR, MI</a>	Active	50 years	1976	2026					Deep
<a href="#">CHIPPEWA HARBOR, MI</a>	naturally deep	100 years	1958	2058					Shallow
<a href="#">CLINTON RIVER, MI</a>	Active	7 years	2000	2005					Shallow
<a href="#">CORNUCOPIA HARBOR, WI</a>	Active	5 years	2001	2006					Shallow
<a href="#">CROSS VILILAGE HARBOR, MI</a>	never built								
<a href="#">DETOUR HARBOR, MI</a>	Active	27 years	1981	2008					Shallow
<a href="#">EAGLE HARBOR, MI</a>	Active	39 years	1973	2012					Shallow
<a href="#">FOX RIVER, WI</a>	Active	100 years	1925	2025					Shallow
<a href="#">GRAND MARAIS HARBOR, MI</a>	Active	50 years	1973	2023					Deep
<a href="#">GRAND MARAIS HARBOR, MN</a>	Active	50 years	1975	2025					Deep
<a href="#">GRAND TRAVERSE BAY HARBOR, MI</a>	Active	4 years	2003	2007					Shallow
<a href="#">GREILICKVILLE HARBOR, MI (formerly Traverse City Harbor)</a>	Active	75 years	1951	2026					Shallow
<a href="#">HAMMOND BAY HARBOR, MI</a>	Active	15 years	1994	2009					Shallow
<a href="#">HARRISVILLE HARBOR, MI</a>	Active	5 years	2000	2006					Shallow
<a href="#">INLAND ROUTE, MI</a>	Active	14 years	1994	2008					Shallow
<a href="#">KEWAUNEE HARBOR, WI</a>	Active	7 years	1999	2006					Deep
<a href="#">KNIFE RIVER HARBOR, MN</a>	Active	7 years	1976	2016					Shallow
<a href="#">LA POINTE HARBOR, WI</a>	Active	40 years	1992	2007					Shallow
<a href="#">LAC LA BELLE, MI</a>	Active	15 years 12 years	1994	2006					Shallow
<a href="#">LELAND HARBOR, MI</a>	Active	1 year	2004	2005	no	\$90,000	15,000	yes	Shallow
<a href="#">LES CHENEUX ISLAND, MI</a>	Active	50 years	1971	2021					Shallow

GREAT LAKES RECREATIONAL BOATING ECONOMIC BENEFITS STUDY

Recreational Harbor	Current Status: active/inactive/deauthorized*	Dredging Frequency*	Last Dredged Date	Projected Dredging Date*	Frequency Needs Met*	FY05 Budget Shortfall*	FY05 Cubic Yards Shortfall*	FY05 Undredged*	Draft
<a href="#">LEXINGTON HARBOR, MI</a>	Active	5 years	2003	2008					Shallow
<a href="#">LITTLE LAKE HARBOR, MI</a>	Active	2 years	2004	2006					Shallow
<a href="#">LUTSEN HARBOR, MN</a>	never built; deauthorized in '95								
<a href="#">MACKINAC ISLAND HARBOR, MI</a>	No Fed Channel--subsistence harbor								No Channel
<a href="#">MACKINAW CITY HARBOR MI</a>	Active	50 years	1968	2018					Shallow
<a href="#">MANISTIQUE HARBOR, MI</a>	Active	50 years	1967	2017					Shallow
<a href="#">NEW BUFFALO HARBOR, MI</a>	Active	5 years	2003	2008					Shallow
<a href="#">NORTHPORT HARBOR, WI</a>	Not Constructed								
<a href="#">OCONTO HARBOR, WI</a>	Active	15 years	1992	2007					Deep
<a href="#">PENSAUKEE HARBOR, WI</a>	Active	17 years	1993	2010					Shallow
<a href="#">PENTWATER HARBOR, MI</a>	Active	1year	2004	2005	no	\$110,000	12,000	yes	Shallow
<a href="#">PETOSKEY HARBOR, MI</a>	No Fed Channel								No Channel
<a href="#">PINE RIVER, MI</a>	Active	113 years	1899	2012					Shallow
<a href="#">POINT LOOKOUT HARBOR, MI</a>	Active	8 years	2001	2009					Shallow
<a href="#">PORT AUSTIN HARBOR, MI</a>	Active	38 years	2004	2042					Shallow
<a href="#">PORT SANILAC HARBOR, MI</a>	Active	7 years	2003	2010					Shallow
<a href="#">PORT WING HARBOR, WI</a>	Active	4 years	2002	2006					Deep
<a href="#">PORTAGE LAKE HARBOR, MI</a>	Active	9years	2002	2011					Shallow
<a href="#">SAUGATUCK HARBOR, MI</a>	Active	3 years	2004	2007					Shallow
<a href="#">SAXON HARBOR, WI</a>	Active	2 years	2001	2013					Shallow
<a href="#">SEBEWAING RIVER, MI</a>	Active	10 years	1996	2006					Shallow
<a href="#">SHEBOYGAN HARBOR, WI</a>	Not Active Dredging		1991						Deep
<a href="#">SOUTH HAVEN HARBOR, MI</a>	Active	6 years	2002	2008					Shallow
<a href="#">ST JAMES HARBOR, BEAVER ISLAND, MI</a>	subsistence harbor	75 years	1957	2032					Shallow
<a href="#">ST JOSEPH RIVER, MI</a>	Inactive								Shallow
<a href="#">TAWAS BAY HARBOR, MI</a>	Active		never	2014					Shallow
<a href="#">WASHINGTON ISLAND, WI (HARBORS AT)</a>	Inactive--subsistence harbor	100 years	1939	2039					Shallow
<a href="#">WHITE LAKE HARBOR, MI</a>	Active	8 years	2001	2009					Shallow
<a href="#">WHITEFISH POINT HARBOR, MI</a>	Active	7 years	2000	2011					Shallow

**References for Table RH-7**

**Class Change** - Has harbor status changed from commercial to recreational? (yes/no)

**Current status:** Is the harbor project currently active/inactive/deauthorized?

**Dredging Frequency** - How often the harbor needs to be dredged to maintain the harbor's intended purpose

**Projected Dredging Date** - Based on funding availability and priorities, future date of dredging is estimated

**Frequency Needs Met** - Are the dredging needs of the harbor being met according to the desired frequency? (Yes/No)

**FY05 Budget Shortfall** - The difference between the funding needs to adequately dredge and the funds allocated for FY05 to dredge

**FY05 Cubic Yards Shortfall** - The amount of material that will go undredged due to FY05 budget shortfalls

**FY05 Undredged** - Is the harbor not dredged due to FY05 budget shortfalls (Yes/No)

Notes:

1. Only the Burns Waterway Small Boat Harbor is authorized as

a recreational harbor.

2. \*Dredging in Cattaraugus Creek Harbor and Toussaint require

non-federal cost sharing.

Dredging in Sturgeon Point is performed by the local cost-share

partner with some Federal funding. Fed funding is cut starting

in FY05.

## Glossary

### Terms used in this study

**Sales:** Sales of firms within the region to boaters.

**Jobs:** The number of jobs in the region supported by the boater spending. Job estimates are not full time equivalents, but include part time and seasonal positions. Four seasonal jobs for three months each counts as one job on an annual basis, whether part time or full time.

**Personal income:** Wage and salary income, sole proprietor's income and employee benefits.

**Value added:** Personal income plus rents and profits and indirect business taxes. As the name implies, it is the value added by the region to the final good or service being produced. It can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production. Value added is the best measure of the contribution of an industry or region to gross state or national product.

**Economic Impacts** are the changes in sales, income, value added and jobs in the region associated with boating activity. A pure impact analysis would assess the net changes with versus without the given activity. In the absence of boating opportunities in the Great Lakes people would substitute other activities or travel to other locations for boating. Sales, income and jobs associated with boating would be shifted to other regions or sectors of the economy. The analysis reported here does not attempt to sort out these substitutions. Impact estimates therefore measure the size and importance of boating to the region's economy, not impacts in a "with versus without" sense.

**Direct effects:** Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the boater spending.

**Secondary effects:** Secondary effects are the changes in the economic activity in the region that result from the re-circulation of the money spent by boaters. Secondary effects capture the sum of indirect and induced effects.

**Indirect effects:** Changes in sales, income and jobs from industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from boater spending at lodging establishments.

**Induced effects:** Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.

**Total effects:** Sum of direct, indirect and induced effects. Direct effects accrue largely to boating and tourism-related business in the area. Indirect effects accrue to a broader set of economic sectors that serve these firms. Induced effects are distributed widely across a variety of economic sectors.

**Margining of retail purchases:** Boater purchases of goods (gas, groceries, equipment, clothing, etc.) are handled in input-output models by assigning retail margins to the retail trade sector, wholesale margins to wholesale trade sector and the remaining producer price to the appropriate manufacturing sector. Impacts of the manufacturers share of these purchases are only included if the good is made within the region.

**Great Lakes boating activity** includes boating use of the Great Lakes and connecting waters. Connecting waters include the St. Mary's River, St. Clair River, Lake St. Clair, Detroit River, Niagara River and St. Lawrence River as well as other lakes, rivers and streams that provide direct access to the Great Lakes.

**Registered boats:** For Pennsylvania, only craft registered in Erie County, PA are included.

**Trip spending** includes all expenses made while on boating trips, e.g. auto and boat fuel, food, lodging, shopping, etc.

**Craft spending** covers annual expenses associated with maintaining and storing the boat. This does not include new or used boat purchases, but includes equipment, repairs, insurance, slip and storage fees and other expenses.

**Boat day** is the use of a boat under power or sail for any part of a day.

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