

**Economic Activity Associated With the  
2013 Progressive Insurance Miami International Boat Show**

*Prepared by*

**Thomas J. Murray & Associates, Inc.**

September 2013

*On behalf of*

**National Marine Manufacturers Association "NMMA" Boat Shows**

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## **EXECUTIVE SUMMARY**

### ***Major Findings***

Sales of boats and other marine products at the *2013 Progressive Insurance Miami International Boat Show* (“the Show”) brought the world’s most serious buyers together with leading suppliers to generate sales.

- The Show generated \$597 million in total economic output throughout the State of Florida as a result of the infusion of out-of-state purchases and expenditures at the Show.
- 6,592 full time jobs are associated with the economic output of \$597.0 million throughout Florida.
- Total estimated sales by Florida companies during the Show reached \$312.2 million. Dade County companies contributed more than \$29.7 million in estimated sales of marine products.
- Total excise and sales tax generated within Florida, as a result of the Show was \$30.4 million.
- Statewide in Florida, labor income impacts of \$216.6 million were associated with the economic activity stemming from the 2013 Show.
- Total Value Added of \$351.7 million was contributed throughout Florida by the boating related industry as a result of the Show.

***Boat show visitors bring in new dollars to the region and the State.***

- 102,118 visitors attended the Show.
- 36% of the visitors were from outside Florida.

- The average expenditure by out-of-town visitors (hotels, restaurants, retail spending, local transportation, etc.) at the Show was \$225.50 per day; while foreign attendees expended \$302.69 per day.
- Such visitor expenditures totaled an estimated \$63.6 million.

***Boat Show exhibitors spend to promote and show their company or products.***

- 33.0% of exhibitors were Dade, Broward or Palm Beach county companies in 2013.
- 35.0% of exhibitors were from outside the State of Florida.
- Exhibitors expended \$18.9 million on local goods and services, such as hotels, restaurants, retail and local transportation. Such expenditures were the beginning of economic impacts throughout the County, the region and the State.

***Economic Impact Compared to What?***

The 2012 Super Bowl was reported to generate an overall economic impact of \$323.8 million to the host region. The comparable figure for the Show reflected in this analysis was \$379.6 million increase in economic output to the region.

## INTRODUCTION

The Miami Boat Show has been held annually for 71 years. The 2013 five-day 2013 *Progressive Insurance Miami International Boat Show* (“the Show”), is owned and operated by the National Marine Manufacturers Association, Inc. (“NMMA”).<sup>1</sup>

This study has been completed on behalf of the NMMA to evaluate the economic activity and impacts arising from the show at three levels (“study areas”):

- Dade County;
- The “Tri-County” (Dade, Broward, & Palm Beach) region;
- The State of Florida

Based upon the information gathered from NMMA, the author’s knowledge of the region’s marine industry, and implementation of conventional input-output modeling techniques, we have analyzed the economic impacts of the Show.

### ***The Show***

The 2013 Show attracted over 100,000 attendees and displayed in excess of 3,000 boats. The types and values of vessels have greatly increased over the years. The intent of this study is to prepare current estimates of the economic impacts of the “2013 Progressive Insurance Miami International Boat Show”, which arose from the following sources:

- Expenditures by visitors and exhibitors at the Show
- Sales of boats and other marine products as a result of the Show

The 2013 Show was widely reported to be a success. The overall level and scope of business generated at the Show are better understood by assessing the large number and types of boating-related businesses that invested in exhibiting at the Show.

The Show centered around three principal venues representing over 2.3 million square feet of exhibit space:

- Miami Beach Convention Center housed the major powerboat, engine, electronics, and accessories display. Both indoors and outdoors were located an array of powerboats

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<sup>1</sup> The current address of the Progressive Insurance Miami International Boat Show NMMA Boat Shows, Inc. is 9050 Pembroke Pines Boulevard, Suite 305, Pembroke Pines, Florida 33024.

from family “bow-riders” to high performance racers and luxury motor yachts. Also extensive exhibits provided recreational boat owner and operator education and information on water related charter and vacation options.

- The New Yacht & Power Boat Show at Sea Isle Marina location displayed a diverse in-water powerboat fleet of 300 vessels of up to 80'. Additional displays of marine engines, marine gear and accessories were also found here.
- Strictly Sail Miami at Miamarina at Bayside where 200 exhibitors displayed 150 sailboats in-water from many of the world’s leading manufacturers. A 40,000 square-foot exhibition tent featured sailing accessories and charter company information.

### ***Economic Impact Analysis***

Economic impact analysis begins with introducing a change in the output of goods and using the multiplier model to analyze the effects on a region’s economic base. The standard input-output model estimates the direct, indirect, and induced economic implications of some basic economic activity. The secondary effects (the indirect and induced impacts), along with the basic economic activity estimates, provide an estimate of the “multiplier” effects from the basic activity (direct impact).

In the standard input-output model, measures of aggregate economic activity are used as a basis for estimating the total economic impact of the subject activity. For example, measures of direct employment or total sales in an industry are obtained, and these are then used as a basis for evaluating the total impact. In this report estimates of the primary sales by category were obtained and used as the base measure of the “direct impact” of the industry.

Given this measure of the direct purchases of the boat-related industry, an estimate is made of the indirect impacts using information on the interactions between these industry sectors and other economic sectors that are, to varying extent, dependent upon such boat-related industry.

For example, suppliers of materials into the boat-related products manufacturing, transportation, storage, marketing and distribution are also dependent upon the sales of boat-related goods and services. These added sales or impacts are referred to as the “indirect impacts.” Such “indirectly” dependent sectors include hundreds of other types of

manufacturing and trades, for which industrial classifications range from “Boat Building and Repairing” to “Veneer and Plywood.”

Ultimately, the direct sales activity and the resulting indirect activity, generate some increases in the general level of employment and income in the study area. The extra income generated in this way leads to a third “wave” of economic impact through greater household expenditures on goods and services. Much of this additional responding will also occur within the study area, further expanding economic activity. These effects are referred to as the “induced impacts” of the industry. (See *Economic Impact Definitions* section).

## **ECONOMIC INPUT-OUTPUT MODEL APPLICATION**

Most regional input-output studies attempt to characterize either the economic impacts of specified changes in final demand for a given set of products, services, and industries, or the economic significance of specific industries in a regional and national economy. The research described herein accomplishes the latter task. It assesses the economic significance of the Show upon boat-related industries located in Dade County, the “Tri-County” area, and the State of Florida.

Because of the interrelationships among the many sectors of an economy, any new basic economic activity (such as sales induced by the Show) will generate additional waves of economic impact. By stimulating the expenditures by out-of-region visitors and the export sale of marine products, the Show initiates such rounds of economic impact.

For example, the marketing of boat-related goods and services from these regions calls forth additional activity among the suppliers of necessary inputs as well as among distributors of boat-related products, warehouses, and retailers. The impact of the sale of a dollar of boat-related goods and services, generates activity not only for the retail sector, but also indirectly generates economic activity for suppliers, accountants and programmers whose employment supports the operation of the retail enterprise. In an analogous way, the activities of boat-related marketers and consumers will generate multiple rounds of economic activity.

As mentioned above, economic impact analysis is an attempt to provide an estimate of the total impact of any economic activity in any region, including, not only the primary economic impact, but also secondary and tertiary impacts.

### ***The Implan Model***

Many economic impact studies use information from the regional inter-industry impact models such as “IMPLAN.” This model was developed using a combination of direct survey data obtained through national surveys of inter-industry interaction, and then, “sharing down” the inter-industry relationships to the local or regional level, based upon the structure or employment structure of industries in the state or region. The IMPLAN model used herein includes industry linkages specific to Dade, Broward, and Palm Beach Counties, as well as the state of Florida.

From these government derived regional inter-industry relationships, output, income and employment multipliers are estimated.



Thus, in terms of simple analysis of the aggregate impacts of activity on the regional economy, published government estimates of the multiplier are used. The use of the “IMPLAN” multipliers for the present analysis is considered reasonable.

To perform the impact analysis, initial information on the level of primary or “basic” economic activity, for the industry studied is needed. As mentioned above, measuring the total economic impact of any product or service such as the Boat Show first requires an estimate of the volume of the goods sold by virtue of the Show.

The direct economic impact begins with the infusion of “outside” dollars into the region. Again, for the sake of this study there are three economic *study regions* modeled: Dade County; Dade, Broward and Palm Beach Counties (Tri-County) as a region; and, the state of Florida. As outlined above these dollars come from two sources:

- Purchases of marine products from companies within these regions, and
- Expenditures of non-local visitors and exhibitors associated with the Show.

### ***Marine Product Sales***

The total value of marine product sales at the Show in 2013 was estimated to be \$312.2 million for all Florida exhibitors. Exhibitors located in the study regions made much of those sales, with Dade County companies contributing in excess of \$29.7 million in sales of marine products.<sup>2</sup> 33% of exhibitors were South Florida companies with an estimated \$168.5 million in marine product sales; and overall 65% were located in Florida generating estimated statewide sales of \$312.2 million.

It is important to understand that not all of these sales generate economic impact in the study regions. In view of the fact that over 1/3 of the exhibitors were from outside the study regions, sales by those firms do not have the same impact as sales by similar types of firms within the study regions. For example, the sale of a new vessel by a boat manufacturer from North Carolina does not stimulate Florida’s economy as does an equal dollar sale by a Florida boat manufacturer.

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<sup>2</sup> Mail, telephone and in-person surveys administered by NMMA, Inc. personnel and the authors were conducted following the Show. The survey on Show-generated marine product sales had a response rate of 11.0% (209) of the 1,900 exhibitors and dealers at the 2013 Show. Reported sales were further stratified based upon company annual sales. The results noted here is an expansion of that stratified survey information, which reported \$98.5 million in Show sales including non-Florida companies.

Similarly, the fact that the sale of a fabricated good is made by a firm within the study area does not mean that all of the impacts of the sale accrue to that region. The IMPLAN model assesses the industry sector, and computes from the gross output, or sales amount, how much of the necessary expenditures to produce the good are locally acquired for the sake of multiplier analysis. The purchases of inputs from outside the study area, in a sense, are “leakages” from the local economy.

Information on origin of Show sales was utilized to adjust the gross Show sales information for economic impact assessment. Such a “sharing” of sales to within and outside of the study areas is required for realistic estimates of net impacts on local areas, such as the three regions used herein.

<b>TABLE 1: SALES ATTRIBUTED TO THE 2013 SHOW BY REGION (\$ MILLIONS)</b>			
<b>Sector</b>	<b>Dade County</b>	<b>Tri-County</b>	<b>Florida</b>
Total Show Sales	\$29.7	\$168.5	\$312.2

### ***Expenditures by Exhibitors and Non-Local Visitors to the Show***

As shown in Table 2, Show exhibitors expended an estimated \$18.9 million on travel-related goods and services such as hotel rooms, meals, local transportation, etc. Adding to this direct expenditure impact, as reflected in Table 3, was another \$63.6 million in similar expenditures by visitors attending the Show.<sup>3</sup> Together with the marine product sales, these sources of “new dollars” were estimated to generate \$83.6 million in direct output in Dade County; \$225.5 million of direct output for the Tri-County region; and total direct output of \$369.3 million throughout Florida.<sup>4</sup>

<sup>3</sup> Data on average visitor expenditures was provided by the “Greater Miami Convention and visitors Bureau”. (2) The typical domestic overnight visitor to Miami and the Beaches spends 5 nights (international 7 nights). Non-local boat show visitors here were assumed to spend 4 nights and local visitors no overnights, based upon earlier surveys conducted as part of the author’s evaluation of the 2005 Miami International Boat Show. (1) Exhibitor expenditure data was collected as a part of the 2013 Show survey.

<sup>4</sup> For allocation of the marine product sales by region the location of the exhibitors was provided by show management and relative sales were obtained from the 2013 survey responses.

<b>TABLE 2: 2013 EXPENDITURES BY SHOW EXHIBITORS / BY TYPE OF SPENDING</b>	
<b>Category</b>	<b>Total</b>
Lodging	\$9,295,549
Meals & Entertainment	\$5,786,878
Local Transportation	\$1,105,593
Part Time Help	\$1,429,118
Other (Local Ads., Etc.)	\$1,372,531
<b>TOTAL EXHIBITOR EXPENDITURES</b>	<b>\$18,989,668</b>

<b>TABLE 3: 2013 EXPENDITURES BY SHOW VISITORS / BY TYPE OF SPENDING</b>	
<b>Category</b>	<b>Total</b>
Lodging	\$18,847,930
Meals & Entertainment	\$20,503,492
Local Transportation	\$3,884,202
Shopping	\$20,439,816
<b>TOTAL VISITOR EXPENDITURES</b>	<b>\$63,675,440</b>

### ***Direct Economic Impacts of the Boat Show***

The direct economic impacts of the Show manifest themselves in other economic growth measures as well. As shown in Table 4, total direct employment (full-time equivalent jobs) associated with the output was 1,222 in Dade County; 2,707 for the Tri-County region; and 4,233 for the state.

Similarly, the direct impacts include increases in labor incomes earned throughout the region. For the same regions, the labor income associated with the Show sales activity was \$31.8 million in Dade County; \$74.2 million in the Tri-County area; and \$123.0 million statewide.

By virtue of the fact that businesses receive increased sales, and households receive increased incomes, more taxes are paid. The overall measure of “Indirect Business Taxes” includes items such as sales taxes, and reflects the business generated by the Show. These direct taxes initially amounted to \$7.2 million in Dade County; \$13.4 million in the Tri-County region; and \$19.8 million for the State as a whole.

Table 4 summarizes these types of direct economic impacts of the Show, and further distributes, as a hierarchy, the impacts to each the three study regions using six traditional economic base indicators. For all measures the impacts of the smaller region are “nested” in the larger region. For example, the Florida measured impacts include the Tri-County region impacts.

<b>TABLE 4: DIRECT ECONOMIC IMPACTS OF THE 2013 MIAMI INTERNATIONAL BOAT SHOW / BY REGION / \$ MILLIONS</b>			
<b><i>Impact Type</i></b>	<b><i>Dade County</i></b>	<b><i>Tri-County</i></b>	<b><i>Florida</i></b>
Output	\$83.6	\$225.5	\$369.3
Employment ( # FTES)	1,222.0	2,706.8	4,233.3
Labor Income	\$31.8	\$74.2	\$123.0
Total Value-Added	\$53.2	\$125.5	\$209.1
Business Taxes	\$7.2	\$13.4	\$19.8

To summarize, in addition to direct impacts, two other types of impacts are estimated:

- *indirect* impacts which measure the change in output production in “backward linked” industries caused by the changing input needs of directly affected industries;
- *induced* impacts that measure the change in regional household expenditure patterns caused by changes in household in the direct and indirect sectors.

### ***Indirect Economic Impacts of the Boat Show***

Having calculated the first (“direct”) effects of the Show on various measures noted above, the further “ripple” effect of the initial change can be quantified using the input-output model.

Based upon information on the interrelationships among the sectors of the regional economy, the values of the inter-industry “multipliers” are generated by the IMPLAN. That is, quantifying from which industries the subject sector buys its production inputs, and to which sectors its final products are sold, enables estimates of the multiplier effects to be made. Understanding both the purchases of inputs and sale of goods and services by the marine products sectors allows the “forward” and “backward” linking of the sector’s economic activity. This permits the tracing of expenditures as they “multiply” throughout directly and indirectly impacted sectors. Table 5 depicts such indirect impacts by impact measure and location.

<b>TABLE 5: INDIRECT IMPACTS OF THE 2013 MIAMI INTERNATIONAL BOAT SHOW / BY REGION / \$ MILLIONS</b>			
<b>Impact Type</b>	<b>Dade County</b>	<b>Tri-County</b>	<b>Florida</b>
Output	\$14.2	\$33.4	\$44.7
Employment (FTES)	114.6	232.1	338.0
Labor Income	\$5.1	\$11.3	\$15.2
Total Value-Added	\$8.8	\$19.6	\$26.4
Indirect Business Taxes	\$0.7	\$1.4	\$1.9

As reflected in Table 8, the “indirect” impacts are realized across many economic sectors. Businesses such as “Other Business Services” (clerical), “Wholesale Trade,” “Banking,” “Real Estate” etc. all are impacted by the direct activity in the boat-related sectors.

### ***Induced Economic Impacts***

As a result of the added employees’ compensation directly generated from Show sales, and similar growth in the indirect (supply) industries, overall household incomes throughout the region rise. That growth in disposable household incomes then further “induces” consumer expenditures and economic activity through retail purchases, financing, and sales of added goods and services. The third level (“induced”) impacts are reported in Table 6.

<b>TABLE 6: INDUCED ECONOMIC IMPACTS OF THE 2013 MIAMI INTERNATIONAL BOAT SHOW / BY REGION / \$ MILLIONS</b>			
<b>Impact Type</b>	<b>Dade County</b>	<b>Tri-County</b>	<b>Florida</b>
Output	\$57.4	\$120.7	\$182.9
Employment (FTES)	623.4	1,255.6	2,020.6
Labor Income	\$26.0	\$52.0	\$78.5
Total Value-Added	\$37.4	\$77.3	\$116.1
Indirect Business Taxes	\$2.6	\$5.8	\$8.7

Again, Table 8 illustrates the induced increases in household incomes which bring about economic activity in non-boating sectors such as *Owner-Occupied Dwellings, Eating & Drinking Establishments, Banking, Hospitals, Real Estate, etc.*

## TOTAL ECONOMIC IMPACT OF THE 2013 SHOW

In reality, most of the input-output model's 528 sectors are either directly, indirectly or through induced expenditures, impacted by the boat industry related business resulting at the Show.

Summing up the direct, indirect and induced impacts, an estimate for the total economic impact of the Show in 2013 is illustrated in Table 7.

<b>TABLE 7: TOTAL ECONOMIC IMPACTS OF THE 2013 MIAMI INTERNATIONAL BOAT SHOW / BY REGION / \$ MILLIONS</b>			
<b><i>Impact Type</i></b>	<b><i>Dade County</i></b>	<b><i>Tri-County</i></b>	<b><i>Florida</i></b>
Output	\$155.1	\$379.6	\$597.0
Employment (FTES)	1,960.1	4,194.6	6,591.9
Labor Income	\$62.9	\$137.5	\$216.6
Total Value-Added	\$99.5	\$222.3	\$351.7
Indirect Business Taxes	\$10.6	\$20.6	\$30.4

### ***Qualifications and Conclusions***

Any estimate of economic impact is only as good as the basic information entered into the input-output model. In performing the research, the best information available was used to attempt to fully characterize the level and mix of spending generated by the Show. There is nothing more detrimental to the overall value of research of this nature than exposure to claims of partiality or subjectivity, or the appearance of deliberate bias. To maintain the integrity of this study, the authors have been careful to impart a downward bias to our estimated Show impacts.

While attempting to account for all potential spending generated by the Show, caution was exercised in order not to artificially bias the estimated economic activity upward with unrealistic assumptions and unfounded assumptions.

Perhaps one of the major problems with utilizing “off-the-shelf” models such as IMPLAN and others, is the lack of specificity to account for sectors such as Florida's boat dealers. For example, IMPLAN allocates boat dealers to the “Auto Dealers & Service Stations” sector. Such aggregation may understate the local economic impacts of relatively specialized merchandising such as recreational boat dealers.

Another aspect of the Show's positive impact, which is not in the Model, is the role of the Show for promotions. Numerous respondents suggested that they do not intend to sell at the Show, but rather attend to obtain quality leads for follow-up in the following months. Certain respondents with sales at the Show indicated that beyond the Show sales, the meaningful contacts would lead to greater sales in the future.

Additionally, a number of respondents felt it was difficult to quantify the Show sales so soon after the Show.

While the analysis is in a sense a "snapshot" of the economic activity which arises due to the Show, its economic significance to the industry and the community is clearly demonstrated.

Compare these findings on the Show with Super Bowl XLVI held in Indianapolis Indiana February 2012. A study of that event concluded that the 2012 Super Bowl had an overall economic impact of \$323.8 million to the region. (4) As detailed above, the comparable figure for the Miami Show was \$379.6 million increase in economic output in that region.

**TABLE 8: FLORIDA INDUSTRY IMPACTS ARISING FROM THE 2013 MIAMI INTERNATIONAL BOAT SHOW**

<b><i>Industry (Aggregated) Output Impact (\$)</i></b>	<b><i>Non-Local Direct</i></b>	<b><i>Non-Local Indirect</i></b>	<b><i>Non-Local Induced</i></b>	<b><i>Local Direct</i></b>	<b><i>Total</i></b>
Ag, Forestry, Fish & Hunting	\$0	\$207,091	\$716,252	\$0	\$923,343
Mining	\$0	\$56,056	\$137,896	\$0	\$193,952
Utilities	\$0	\$1,535,570	\$3,384,030	\$0	\$4,919,599
Construction	\$0	\$714,933	\$21,269,493	\$0	\$21,984,426
Manufacturing	\$92,225,385	\$8,215,012	\$10,008,554	\$136,676,358	\$247,125,309
Wholesale Trade	\$1,649,764	\$4,434,132	\$8,397,715	\$2,444,920	\$16,926,531
Transportation & Warehousing	\$3,428,867	\$3,184,390	\$4,930,963	\$2,103,864	\$13,648,084
Retail trade	\$39,542,468	\$666,625	\$17,244,280	\$49,754,271	\$107,207,644
Information	\$0	\$2,716,306	\$5,383,732	\$0	\$8,100,038
Finance & insurance	\$0	\$3,118,957	\$13,598,141	\$0	\$16,717,097
Real estate & rental	\$0	\$5,608,873	\$9,922,728	\$0	\$15,531,600
Professional- scientific & tech services	\$697	\$4,514,775	\$9,633,016	\$1,032	\$14,149,521
Management of companies	\$0	\$3,397,202	\$1,748,761	\$0	\$5,145,964
Administrative & waste services	\$680,604	\$2,221,154	\$4,358,880	\$708,467	\$7,969,104
Educational services	\$0	\$21,963	\$1,725,720	\$0	\$1,747,683
Health & social services	\$0	\$2,574	\$19,332,340	\$0	\$19,334,914
Arts- entertainment & recreation	\$4,303,822	\$347,288	\$2,118,198	\$1,723,834	\$8,493,142
Accommodation & food services	\$27,338,623	\$758,393	\$7,428,767	\$6,132,388	\$41,658,170
Other services	\$0	\$915,763	\$6,917,420	\$0	\$7,833,183
Government & non NAICs	\$249,773	\$2,129,994	\$34,652,624	\$370,160	\$37,402,552
<b>Total</b>	<b>\$169,420,003</b>	<b>\$44,767,052</b>	<b>\$182,909,511</b>	<b>\$199,915,295</b>	<b>\$597,011,860</b>



## ECONOMIC IMPACT DEFINITIONS & GLOSSARY OF TERMS

***Terms are presented in groups within a logical rather than alphabetical order***

**Region** defines the geographic area for which impacts are estimated. Regions are generally an aggregation of one or more counties. This analysis includes estimates for individual counties and the state of Florida.

**Sector** is a grouping of industries that produce similar products or services. Most economic reporting and models in the U.S. are based on the Standard Industrial Classification system (SIC code) or the North American Industrial Classification System (NAICS).

**Impact analysis** estimates the impact of a change in output or employment resulting from a change in final demand to households, governments or exports.

**Input-output (I-O) model.** An input-output model is a representation of the flows of economic activity between industry sectors within a region. The model captures what each business or sector must purchase from every other sector in order to produce its output of goods or services. Using such a model, flows of economic activity associated with any change in spending may be traced either forwards (e.g., spending generates employee wages which induces further spending) or backwards (e.g., purchases of plants that leads growers to purchase additional inputs -- fertilizers, containers, etc.). Multipliers for a region may be derived from an input-output model of the region's economy.

**IMPLAN** is a micro-computer-based input output modeling system and Social Accounting Matrix (SAM). With IMPLAN, one can estimate I-O models of up to 528 sectors for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model. The current version of the software is *IMPLAN Pro 2.0*.

**Final Demand** is the term for sales to final consumers (households or government). Sales between industries are termed **intermediate sales**. Economic impact analysis generally estimates the regional economic impacts of final demand changes.

**Direct effects** are the changes in economic activity during the first round of spending.

**Secondary effects** are the changes in economic activity from subsequent rounds of re-spending. There are two types of secondary effects: **Indirect effects** are the changes in sales, income or employment within the region in backward-linked industries supplying goods and services to businesses. For example, the increased sales in input supply firms resulting from more nursery industry sales is an indirect effect. **Induced effects** are the increased sales within the region from household spending of the income earned in the Boating Industry and supporting industries. Employees in the Boating Industry and supporting industries spend the income they earn on housing, utilities, groceries, and other consumer goods and services. This generates sales, income and employment throughout the region's economy. **Total effects** are the sum of direct, indirect and induced effects.

**Multipliers** capture the size of the secondary effects in a given region, generally as a ratio of the total change in economic activity in the region relative to the direct change. Multipliers may be expressed as ratios of sales, income or employment, or as ratios of total income or employment changes relative to direct sales. Multipliers express the degree of interdependency between sectors in a region's economy and therefore vary considerably across regions and sectors. **Type I** multipliers include only direct and indirect effects. **Type II** multipliers also include induced effects. **Type SAM** multipliers used by IMPLAN additionally account for capital investments and transfer payments such as welfare and retirement income. A **sector-specific multiplier** gives the total changes to the economy associated with a unit change in output or employment in a given sector. **Aggregate multipliers** sum multiplier effects across many sectors with a single number. They are based on an assumed distribution of spending across these economic sectors, i.e., a weighted average of sector specific multipliers with the percentage of spending in each sector as the weighting factor.

**Purchaser prices** are the prices paid by the final consumer of a good or service. **Producer prices** are the prices of goods at the factory or production point. For manufactured goods the purchaser price equals the producer price plus a retail margin, a wholesale margin, and a transportation margin. For services, the producer and purchaser prices are equivalent.

**Margins.** The retail, wholesale and transportation margins are the portions of the purchaser price accruing to the retailer, wholesaler, and grower, respectively. Only the retail margins of many goods purchased by consumers accrue to the local region, as the wholesaler, shipper, and manufacturer often lie outside the local area.

**Measures of economic activity.** **Sales or output** is the dollar volume of a good or service produced or sold. **Final Demand** is sales to final consumers, including households, governments, and exports. **Intermediate sales** are sales to other industrial sectors. **Income** is the money earned within the region from production and sales. Total income includes personal income (wage and salary income, including income of sole proprietor's profits and rents). **Jobs** or employment is a measure of the number of jobs required to produce a given volume of sales/production, usually expressed as full time equivalents, or as the total number including part time and seasonal positions. **Value Added** is the sum of total income and indirect business taxes. Value added is the most commonly used measure of the contribution of a region to the national economy, as it avoids double counting of intermediate sales and captures only the "value added" by the region to final products.

**Non-resident /Non-local revenues/expenditures:** When outside or new revenues flow into a local economy either from the sale of locally produced goods and services to points outside the study area, or from expenditures by non-local visitors to the study area, additional economic repercussions occur through indirect and induced (multiplier) effects.

## **RESEARCH CITED:**

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