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Louisiana's Green Industry: Evaluation of its Economic Contribution (Research Information Sheet #108)

Roger A. Hinson

Raul Pinel

David W. Hughes

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Louisiana's Green Industry: Evaluation of its Economic Contribution

Roger A. Hinson, Raul Pinel and David W. Hughes





Roger A. Hinson, Professor
LSU Agricultural Center

Raul Pinel, Former Graduate Assistant
LSU Agricultural Center

David W. Hughes, Extension Specialist
West Virginia University

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Introduction and Objective

The green industry is the production, sale and maintenance of ornamental plants and related products. As used here, the term includes farm production of plant materials and the services industry that provides design, installation and/or maintenance of home lawns and gardens, and public and commercial grounds. The purpose of this study was to estimate the impact of the green industry on Louisiana's economy.

A study using a database updated to 1995 (Hughes and Hinson, 1996), with a similar objective, estimated the industry's total impact at \$1.3 billion. An up-to-date estimate was needed because brisk growth in the

U.S. economy during the late 1990s. Most demographic groups experienced substantial increases in income. For a variety of reasons, consumers used a portion of this income to improve homes, including lawns and gardens. This was particularly evident as the 'baby boomer' generation became more interested in home improvement activities like gardening and changed lifestyles and consumption patterns accordingly. The rapid pace of new residential, commercial and public construction was among other factors favorable to the green industry. In Louisiana, like most of the rest of the country, the producer and service industries experienced significant output growth.



Methodology

Estimates of economic impact presented here are based on the input/output approach, as estimated by a widely used software package called IMPLAN (IMPLAN, 2002). The database included in the package has estimates of total sales for 525 industries at the national and state levels. It also has information about the value of inputs required to produce goods and services, often called the production function. For any industry or firm, making a product ready for sale involves the use of inputs from many other industries. For example, when \$1 of product value is sold by the Greenhouse, Nursery and Sod Producers industry, part of that dollar comes from purchased inputs such as chemicals, fertilizers, machinery and labor. Estimates of the value of these inputs, by industry, are part of the database. IMPLAN's most recent database was for 1999.

Choosing industries and sectors for the model. Choosing relevant industries and sectors is the first step in creating an IMPLAN model. In this case, the industries and segments were:

- the *Producer industries*, composed of
 - Greenhouse, Nursery and Sod Producers (GNSP) - these are field and container growers of woody ornamentals; greenhouse producers of flowering, foliage and bedding plants; and sod farmers.
 - Landscape and Horticultural Services (LHS) – these are providers of services, including contractors who design, install and maintain landscapes. Businesses whose activities are 50 percent or more LHS are placed in this industry.
- the *Golf industry*, a major recreational component of the green industry. A broad approach that included revenues and expenses from all sources was the basis for impacts.
- the *Related Horticultural Activities* (RHA) sector, where we pull together horticultural services activities within industries whose dominant output is something other than landscape installation and maintenance. This is necessary because in the standard classifications of industrial output, all of an industry's output is classified according to the major activity. Thus, some horticultural activity is mis-classified. In RHA, a portion of this mis-classified output is identified and credited to the green industry. Examples of these industries include:

- construction industries (private and public) and real estate. In these industries are employees with horticultural responsibilities, such as grounds maintenance.

- activities by a variety of public and private institutions, such as churches, schools and other public agencies, that involve landscape installation and maintenance.

- the *Retail sector*, the sale of green industry products to the final consumer, is a major source of economic impact. This includes sales of green and hard goods by retail garden centers, mass merchants and farm supply stores, and sales by florists.

- an *Overall model* presents the combined impacts from all sources discussed above.

Neither the golf sector nor RHA is a separate industry in the IMPLAN structure.

Data collection procedures

This model of Louisiana's green industry was customized from the IMPLAN database. In this process, information was collected to confirm the validity of IMPLAN's data or to provide a valid alternative. Survey-based information was collected from Louisiana sources, and information was found in existing data collected for other purposes and in published materials. IMPLAN data were compared to these sales and production function values. A brief description of the process is provided below, and a detailed discussion is available (Pinel, 2003). Some production function values for Louisiana were estimated by surveying appropriate target populations and, in other cases, were found in studies conducted in states whose characteristics were more similar to Louisiana's than were the national averages.

Sales estimates

The value included in the model for sales of nursery, greenhouse and sod products by Louisiana growers was about \$120 million (Louisiana Summary, 2001). This was substantially higher than the IMPLAN value of about \$73 million. The upward adjustment was justified on the basis of comment by experts that the IMPLAN value was low and on the basis of two estimates that placed

the value at the approximate value given above. For landscape and horticultural services (LHS), the sales value in the IMPLAN database (about \$266 million) was used because there was no valid alternative estimate.

The sales value for Golf (which was not reported separately in IMPLAN) was estimated from a combination of sources. Information on average revenue per course for 18 hole courses was taken from a National Golf Foundation Survey (NGF, 2001). Since courses may have fewer or more than 18 holes, information on size and kind (public, semi-private and private) of courses in Louisiana was collected from public and Internet listings. A South Carolina golf industry study (1995) provided estimates of the proportions of revenue and costs incurred by 9- and 27-hole courses. A procedure developed to incorporate this information generated a sales estimate of \$151 million.

Related Horticultural Activities (RHA) expenditures on horticultural activities within a sector were used as a proxy for sales. Primary data collection activities were the source of estimates of expenditures for several components. The data collection methodology for survey-based data was based on Dillman's procedures. Listings of the relevant target populations were identified and obtained from state/federal agencies, private organizations and from the Internet. Questionnaires appropriate to the Producers industries were adapted from those used in previous studies such as Leones and Ralph (1995) and Barkley et al. (1985) and from input by research and extension professionals. The instruments were pre-tested, and feedback was incorporated into the final draft as appropriate.

A first mailing contained the survey instrument, letter(s) of support and a business reply envelope. It was followed in two weeks by a reminder postcard and followed three weeks later by a second mailing of the complete packet. The e-mail survey procedures followed Dillman's regular mail procedures. Follow-up efforts to increase response rates were conducted for all groups. These efforts included re-sending the e-mail messages, supplemented as appropriate by telephone and fax. These

procedures generated a database to estimate the following values for RHA expenditures - churches and cemeteries (\$30.03 million), public schools (\$6.67 million), public colleges and universities (\$3.81 million), all private schools (\$8.65 million), parish/city grounds (\$39.18 million), state parks (\$571,046) and airports (\$490,485). Expenditures on road shoulder and median maintenance (\$11.42 million) were obtained from the Louisiana Department of Transportation's budget.

RHA expenditures in the residential, industrial and government construction industries were estimated at \$246 million and in real estate at \$187 million. These were calculated from the IMPLAN database.

The procedure to estimate Retail sales value included several data sources. Average retail expenditures by Louisiana households on green industry goods and services were reported in a National Gardening Association survey (NGA, 2001). For households in the southern region, average annual expenditure for materials and equipment on lawn care and garden activities was estimated at \$408.82. Multiplication by the number of households in Louisiana (1.67 million) yielded a retail sales estimate of \$676 million. To avoid double-counting, cost of goods was subtracted by using an appropriate margin adjustment (Census of Retail, 1997), resulting in an estimate of \$326 million. After a similar adjustment, the value for florist sales was \$42 million.

Determining appropriate production functions

The data collection effort generated sufficient information to make moderate adjustments to the production function for the GNSP industry. For the LHS industry, the golf sector and the RHA sector, response rates were low. Since there was not adequate information to justify changes, the existing IMPLAN production function was used. In other words, the model was built on the assumption that the LHS cost structure is appropriate for the Golf industry and the RHA segment (including construction, real estate and the public and private segments for which data were collected).

Discussion of the IMPLAN output

Measures of output. After the datasets had been updated, the IMPLAN software calculated estimates of impacts. Economic impact is an assessment of change in overall economic activity as a result of change in one or several specific industries or sectors of the economy, and

it is commonly measured by Gross Sales, Total Personal Income, Gross State Product and Employment. Definitions of these terms are provided to help understand subsequent tables and charts:

- Gross sales is the sum of sales in all sectors resulting from the output of a specified industry or sector.

- Personal income represents all employment income and is the sum of employee compensation and proprietor income.

- Gross state product (also called value-added in IMPLAN) is employment compensation, proprietorship income, other proprietary income and indirect business taxes. Indirect business taxes are excise and other taxes paid during normal operation of industry.

- Employment is the number of part- and full-time jobs and includes self-employment.

The IMPLAN database combines Standard Industrial Classifications of economic activity into 525 separate industries. Procedures have been developed to combine or aggregate results across similar industries into useful summaries. The most general level combines industries into 10 sectors, as shown in Table 1; however, there are 12 rows in the table. This discrepancy results from the modeling process. The Producer industries (GNSP and LHS) are the basic or primary industries of the model. They normally would be included in the 'agricultural, forestry, fishery services' but were removed from that sector so they could be explicitly modeled. The total of 10 sectors, with two industries broken out of Agriculture, Forestry and Fisheries Services, yields the 12 rows of the table.

Table 1. Aggregated¹ Output Multipliers from the Green Industry Model, 1999 IMPLAN database updated to 2001.

Industry	Type I Multiplier	Type II Multiplier
Greenhouse, Nursery and Sod Products	1.20	1.60
Agricultural, Forestry, Fishery Services	1.26	1.72
Landscape and Horticultural Services	1.25	1.64
Mining	1.63	1.84
Construction	1.42	1.67
Manufacturing	1.46	1.62
Transportation, Communication and Utilities (TCU)	1.32	1.72
Trade	1.19	1.55
Finance, Insurance and Real Estate (FIRE)	1.19	1.41
Services	1.24	1.61
Government	1.31	1.44
Other	1.21	1.44

¹ IMPLAN'S one digit aggregation level procedure.

To better understand the interactions within the IMPLAN model, some examples of the kinds of transactions involved may be useful. Purchases of supplies such as chemicals or fertilizers by GNSP or LHS firms, or their purchases of equipment, would be transactions between the green industry and the Trade sector. When GNSP or LHS firms use the services of banks or purchase insurance, those would be transactions with the Finance, Insurance and Real Estate sector. A sample transaction in the Retail sector might involve the sale of plants, seeds or garden rakes to the consumer or the purchase of roses at a florist.

Multipliers. Multipliers describe impacts generated by economic activity in an industry. For a dollar of spending in an industry (the GNSP sector, for example), they show the impact of that dollar as it works its way through the economy. The 'direct effect' is the sale of a product (which might be a container-grown bush or flower, or a balled-and-burlapped tree) that brings dollars into the industry. The 'indirect effects' are impacts on income and jobs as growers purchase goods and services, such as fertilizers or irrigation equipment, from other industries. Finally, 'induced effects' are the impacts of expenditures by households and firms outside the industry. When a dollar in wages is received by a green industry household, that dollar might be used to purchase a variety of goods and services from other industries. Some examples might be purchases of clothing or automobiles.

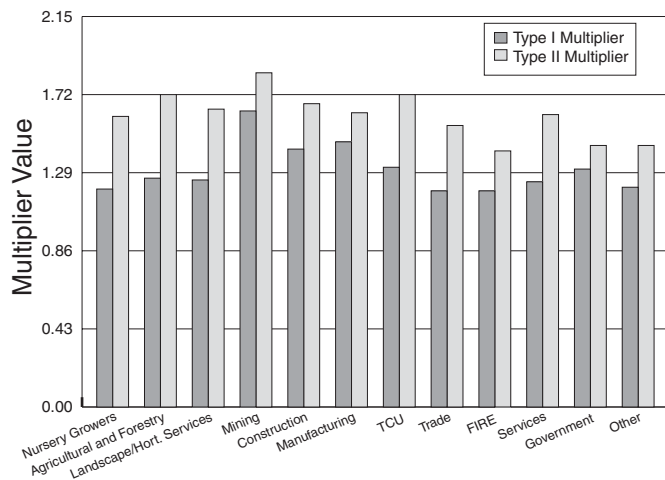
These output multipliers commonly are grouped as follows:

- The Type I multiplier is the sum of the direct and indirect effects. It is the original expenditure resulting from the direct impacts, plus the indirect effects of industries buying from other industries.

- The Type II multiplier is the Type I multiplier plus the induced effect.

The multiplier's size indicates the impact on the economy if another dollar of sales occurs. The Type I multipliers ranged from 1.19 for Trade to about 1.6 for Mining (Table 1 and Figure 1). The highest multipliers were for Mining, Construction and Manufacturing, and they were lowest for Trade and FIRE, though GNSP was barely higher. The Type II multipliers, by definition, were larger and ranged from about 1.4 for FIRE to 1.85 for Mining. The low group included Government in addition to FIRE. While Mining was highest, others including GNSP, AFFS and LHS moved from the lower range of the group, when measuring direct and indirect

Figure 1. Type I and II Multipliers for the La. Green Industry.



effects, to the middle of the group when adding induced effects, suggesting that these agricultural sectors and industries are relatively strong contributors in terms of induced effects. There is a large labor component in these industries and perhaps a higher propensity to spend.



Industry and/or Sector Impacts

The Producer Industries model

The two primary industries in this model are GNSP and LHS, as defined above. Sales by these two were about \$386 million, a significant contribution to agriculture and the general economy (Table 2 and Figure 2). The total gross sales impact of these industries was about \$605 million. Recalling that Gross Sales is the total impact on production of goods and services in the economy from the output of an industry or sector, the value in the Trade row indicates that \$41.1 million in economic activity in that sector resulted from the \$386 million in sales by GNSP and LHS. Other values in this column would have the same interpretation. For the values in the Total Personal Income (TPI) and the Gross State Product (GSP) columns, interpretations would be obtained by substituting the appropriate definition and value. TPI, for example, is the sum of employee compensation and proprietor income, so the value in the Trade row indicates that there was additional economic activity of \$18.2 million resulting from sales by GNSP and LHS. GSP, or value-added, is employment compensation, proprietorship income, other proprietary income and indirect business taxes. Again using the Trade row as an ex-

Table 2. Producer Sector Impacts on Louisiana's Economy, Green Industry Model, Updated 1999 IMPLAN Database.

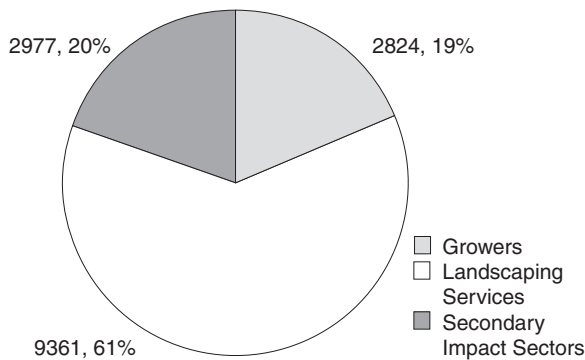
Industry	Gross Sales	Total Personal Income	Gross State Product	Employment
	— million dollars —			jobs
Greenhouse and Nursery Products	119.9	55.8	87.3	2,824
Agricultural, Forestry, Fishery Services	2.2	1.1	1.4	87
Landscape and Horticultural Services	266.1	110.5	166.0	9,361
Mining	3.0	0.7	2.0	12
Construction	10.3	4.9	5.2	152
Manufacturing	21.4	3.3	5.6	79
Transportation, Communication and Utilities (TCU)	28.9	7.8	16.4	189
Trade	41.1	18.2	30.1	894
Finance, Insurance and Real Estate (FIRE)	41.9	8.0	28.7	296
Services	64.3	33.7	40.2	1,169
Government	4.2	1.3	1.8	31
Other	0.4	0.4	0.4	47
Total	605.0	246.2	385.6	15,162

Bolded lines indicate the industry or industries modeled.

ample, there was additional value added of just more than \$30 million as the result of sales by the producers industries. In addition, these Producer industries were responsible for the employment of more than 15,000 workers.

Primary impacts. The Producers industries accounted for about 64 percent of the Gross Sales impacts, about 67 percent of total per-

Figure 2. Producers Industries Employment Impacts.



sonal income (TPI) and 66 percent of gross state product (GSP). The other 10 sectors, then, accounted for 36 percent of the GS impact.

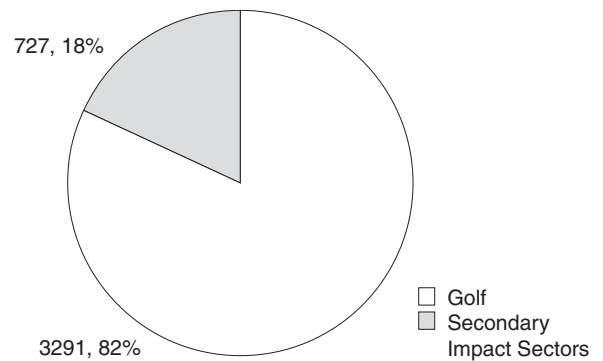
Secondary sectors impacts. In addition to the direct and indirect contributions of the Producers industries, Table 2 provides information about the relative importance of economic linkages with other sectors. Four sectors - ‘services,’ ‘financial, insurance and real estate’ (FIRE), ‘trade’ and ‘transportation, communication and utilities’ (TCU) - were responsible for a large portion of the indirect impacts. These sectors are combinations of related individual industries as defined by an IMPLAN procedure. Of the \$219 million not accounted for by the Producers industries, these four sectors were responsible for about \$179 million or 29 percent of total GS impacts. In addition, these four indirect impact sectors accounted for 27 percent of TPI and 30 percent of GSP. The other aggregated sectors were much less important in terms of these measures of impact.

Employment Impacts. Total impact by the Producers industries on employment was estimated at 15,162 jobs (Figure 2). GNSP accounted for 2,824 jobs and LHS accounted for 9,361 jobs, or about 80 percent of employment impacts. The remaining 2,977 jobs were generated in other sectors, largely ‘services’ and ‘trade.’

The Golf Industry model

Primary impacts. Total industry output by the Golf Industry was estimated at \$151 million. The total impacts on GS, TPI, GSP and employment were estimated at \$202 million, \$86 million, \$122 million and 4,019 jobs, respectively (Table 3 and Figure 3). Golf’s proportions of industry output were 75 percent for GS, 78 percent for TPI and 75 percent for GSP.

Figure 3. Golf Industry Employment Impacts.



Secondary impacts. The combined impact of the secondary sectors on GS was about \$51 million or 25 percent of the total impacts, and impacts on other output measures were similar in percentage terms. The sectors with larger secondary impacts were Services, Trade and FIRE.

Employment Impacts. The Golf industry created 3,291 jobs or 82 percent, and jobs created in all other industries were about 18 percent of the employment total (Figure 3). Services and Trade were the sectors with larger employment impacts.

The Retail Sector model

Primary impacts. The Retail sales economic impact (\$368 million) was modeled as part of the Trade sector because Retail is an individual industry within the Trade sector. Total retail sales were estimated at \$398 million (Table 4 and Figure 4). The impacts of the Trade sector on GS, TPI, GSP and employment were estimated at \$557 million, \$249 million, \$420 million and 14,219 jobs, respectively. Retail sector impacts on these output measures were 71 percent, 78 percent, 78 percent and 87 percent, respectively, of the total direct contribution of the sector to Louisiana’s economy.

Secondary impacts. Among the more important secondary impacts sectors were Services, FIRE and TCU. When combined, the secondary impacts accounted for between 20 percent and 25 percent of the totals.

Employment Impacts. The Retail sector was responsible for an estimated employment of 12,339 or 87 percent of total employment impacts (Figure 4), which would be expected given the labor-intensive nature of retailing. Employment created by the remaining sectors was estimated at about 13 percent of the total.

Table 3. Impact of the Golf Industry on Louisiana's Economy, Green Industry Model, Updated 1999 IMPLAN Database.

Industry	Gross Sales	Total Personal Income	Gross State Product	Employment
	million dollars			jobs
Greenhouse and Nursery Products	0.03	0.02	0.03	1
Agricultural, Forestry, Fishery Services	0.02	0.01	0.01	1
Landscape and Horticultural Services	0.07	0.03	0.04	2
Mining	0.46	0.11	0.31	2
Construction	1.42	0.55	0.57	17
Manufacturing	3.98	0.61	1.01	18
Transportation, Communication and Utilities (TCU)	4.98	1.25	2.85	29
Trade	11.29	5.11	8.37	277
Finance, Insurance and Real Estate (FIRE)	11.09	1.68	7.83	58
Services	16.25	8.63	10.07	311
Government	1.04	0.30	0.42	7
Golf	151.48	68.46	90.53	3,291
Total	202.44	86.84	122.15	4,019

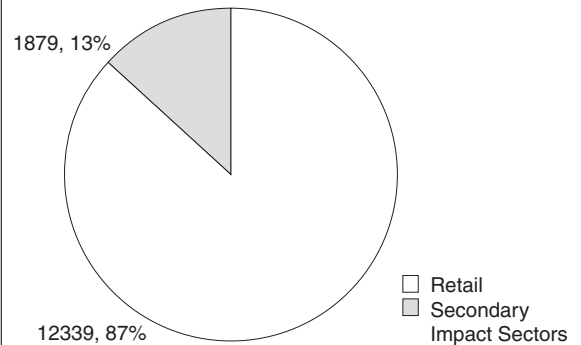
Boldface line indicates the industry modeled.

Table 4. Impact of the Retail Sector on Louisiana's Economy, Green Industry Model, Updated 1999 IMPLAN Database.

Industry	Gross Sales	Total Personal Income	Gross State Product	Employment
	million dollars			jobs
Greenhouse and Nursery Products	0.1	0.1	0.1	3
Agricultural, Forestry, Fishery Services	0.1	0.0	0.0	2
Landscape and Horticultural Services	0.4	0.2	0.2	13
Mining	1.7	0.4	1.1	6
Construction	7.0	3.1	3.2	95
Manufacturing	15.8	2.9	4.4	85
Transportation, Communication and Utilities (TCU)	23.8	6.9	13.4	138
Trade (Retail)	398.3	195.7	327.8	12,339
Finance, Insurance and Real Estate (FIRE)	41.7	6.9	29.1	251
Services	62.6	32.1	38.2	1,188
Government	4.4	1.5	2.0	35
Other	0.4	0.4	0.4	48
Total	557.2	249.6	420.4	14,219

Boldface line indicates the industry modeled.

Figure 4. Retail (and Trade) Employment Impacts.



The Related Horticultural Activities sector

The industry sales value estimated for RHA (\$534 million) was obtained from a combination of

- surveys for expenditures by institutions such as churches and by parishes and cities, and
- the IMPLAN database to estimate the appropriate shares of output of the construction and the real estate industries to credit to the green industry.

The construction and real estate industries are large components of overall economic output. While RHA was a small component of the output of these industries, construction and real estate still were the largest contributors to industry output in this model.

Primary impacts. RHA had an estimated impact of \$872 million in GS, \$577 million in TPI, \$774 million in GSP and more than 23,800 jobs created (Table 5 and Figure 5). Primary impacts accounted for 61 percent of GS, 79 percent of TPI and 73 percent of GSP.

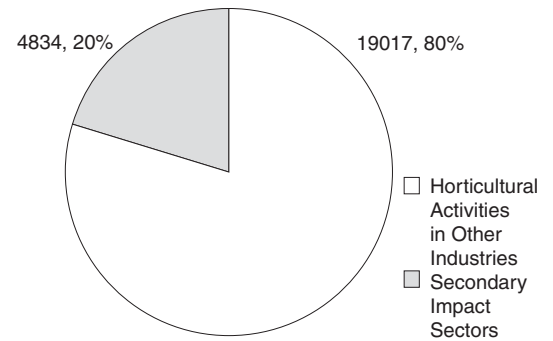
Secondary impacts. Services, Trade and FIRE were the large secondary impact sectors for GS and for GSP. Services and Trade also were leading sectors for TPI and employment, but FIRE had a much smaller linkage in terms of these measures.

Table 5. Impact of 'Related Horticultural Activities' (RHA) on Louisiana's Economy, Green Industry Model, Updated 1999 IMPLAN Database.

Industry	Gross Sales	Total Personal Income	Gross State Product	Employment
	million dollars			jobs
Greenhouse and Nursery Products	0.2	0.1	0.2	5
Agricultural, Forestry, Fishery Services	2.3	0.6	0.8	38
Landscape and Horticultural Services	0.5	0.2	0.3	17
Mining	3.0	0.7	2.0	12
Construction	9.4	3.6	3.8	113
Manufacturing	26.4	4.1	6.7	120
Transportation, Communication and Utilities (TCU)	33.1	8.3	18.9	194
Trade	75.0	33.9	55.6	1,839
Finance, Insurance and Real Estate (FIRE)	73.7	11.2	52.0	383
Services	108.0	57.3	66.9	2,063
Government	6.9	2.0	2.8	49
Horticultural Expenditure in Related Horticultural Activities	534.0	455	563.9	19,017
Total	872.5	577.0	774.9	23,850

Boldface line indicates the industry modeled.

Figure 5. Related Horticultural Activities Employment Impacts.



Employment Impacts. A total of 23,850 jobs was created as a result of the impact of RHA (Figure 5). More than 19,000 jobs were created in those other related activities (79 percent of the total), with most of the rest attributable to Services and to Trade.

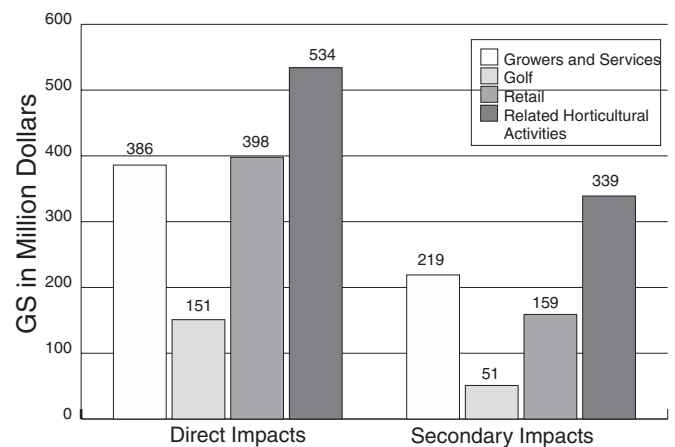
Comparisons Across Sectors

The previous discussion addressed impacts within the individual sectors to demonstrate the contribution of those separate sectors. Impacts also can be compared across models to indicate where the larger economic impacts are. Here, we compare the primary impacts and the secondary impacts by the alternative measures of output.

The Gross Sales measure

These values are taken from Tables 2 through 5. The RHA sector, comprised of the construction and real estate industries, and the expenses incurred by the many public and private institutions providing horticulture-related services to themselves, was largest in terms of direct impacts (Figure 6). The Producers industries and Retailing were very comparable in total impact at just under \$400 million or about 26 percent lower than RHA. Sales in the Golf sector, while smallest among these, still was a very important sector. For the secondary impacts, the relationships followed a similar pattern. The RHA

Figure 6. Gross Sales (GS) Impacts by Sector and by Direct and Indirect Effects, Updated 1999 IMPLAN Database.



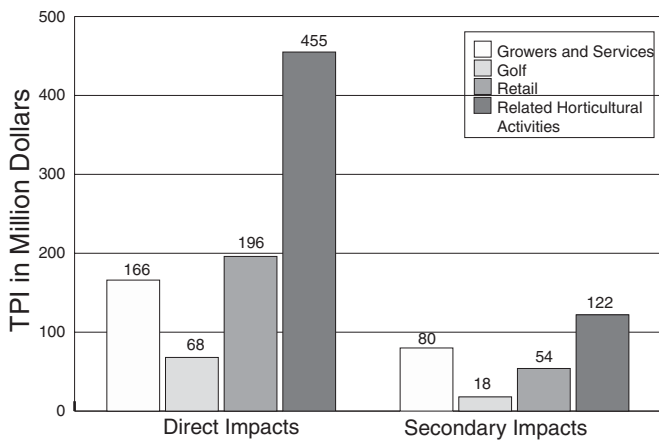
sector's secondary impacts were largest at \$339 million. The Producers industries, however, had higher secondary impacts than did Retail. The Producers industries value was about 35 percent lower than RHA, and the

Retail value was about 53 percent lower. This suggests stronger linkages to other components of the economy in the Producers industries compared to Retail.

The Total Personal Income measure

The relationships within the TPI measure followed a similar pattern to GS (Figure 7). RHA was largest, followed by relatively similar values for Retail and the Producers industries, but these were relatively lower compared to the GS measure. Retail was about 57 percent lower than RHA, and Producers industries were about 63 percent lower. Golf again was lowest among the relationships included in the models. The pattern for the secondary impacts among sectors, again, is similar to the GS measure; however, there was much less secondary impact in the RHA sector. The value dropped to \$122 million, or 73 percent lower than the direct impact. In

Figure 7. Total Personal Income (TPI) Impacts by Sector and by Direct and Indirect Effects, Updated 1999 IMPLAN Database.

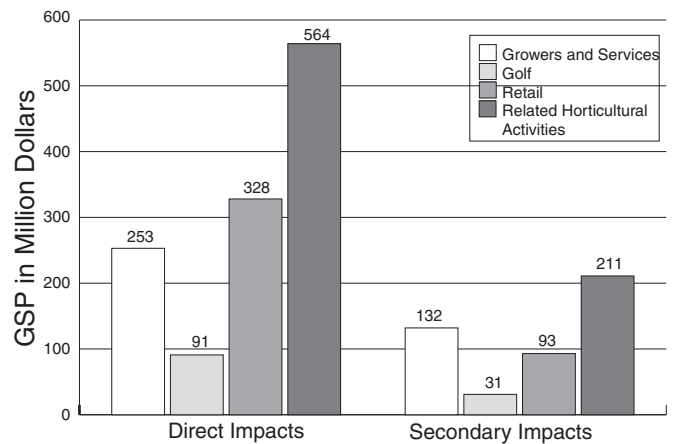


contrast, the secondary impacts of the Producers industries were about 52 percent lower than the direct impacts. This suggests the Producers were more closely linked with other segments of the economy.

The Gross State Product measure

For GSP (or value added), the same pattern as for GS and TPI was observed. For direct impacts, the RHA sector dominated in value added contribution, followed by Retail, Producers industries and Golf (Figure 8). Producers and Retail, however, were not as similar in size as was the case when comparing GS and TPI. For the secondary impacts, the RHA sector impacts were much lower than the direct impacts. The Producers industries were second in importance, but the indirect impacts were more than half as large as the direct impacts.

Figure 8. Gross State Product (GSP) Impacts by Sector and by Direct and Indirect Effects, Updated 1999 IMPLAN Database.



The Total Economic Impact Model

The overall economic impact of the green industry was estimated in a single IMPLAN model, using information from the four individual sectors. Total impact was estimated at \$2.21 billion in gross sales, \$1.19 billion in total personal income, \$1.68 billion in gross state product and 56,686 jobs created (Table 6 and Figure 9).

Primary impacts. As a proportion of total gross sales, the production industries, the golf sector, the retail sector and Related Horticultural Activities sector accounted for about 71 percent of the total impacts (Figure 9). For the other three measures of impact, the contributions by the directly affected sectors were 81 percent, 78 percent and 87 percent for TPI, GSP and Employment, respectively.

Secondary impacts. Services, FIRE and TCU were the largest secondary impacts sectors for all the impact measures, but these were relatively low compared to the primary impacts.

Employment Impacts. The overall model shows the scope of jobs impacts of the green industry. A total of 56,686 jobs was created (Figure 10). In the primary sectors, the jobs impact totaled 49,484. Of those, 12,155 jobs, or 20 percent, were created in the Producers Industry, 14,904 jobs or 26 percent in the Trade Sector (including Retail), 22,394 jobs or 40 percent in the Related Horticultural Activities and the Golf sectors. Secondary impacts accounted for 7,202 jobs.

Figure 9. Overall Model Impacts for Sectors by Gross Sales, Total Personal Income and Gross State Product.

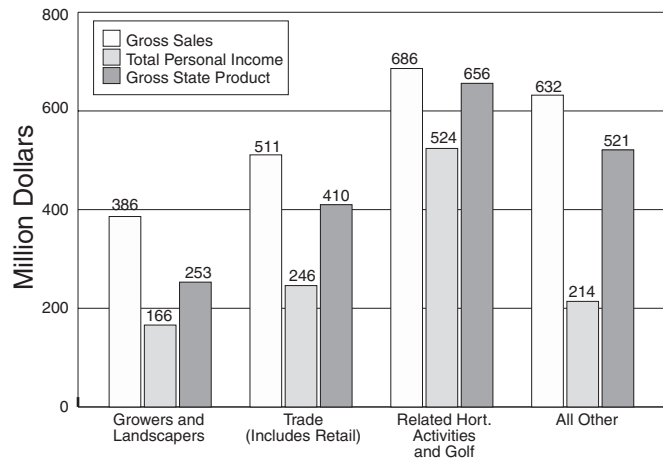


Figure 10. Total Impacts of the Green Industry on Employment.

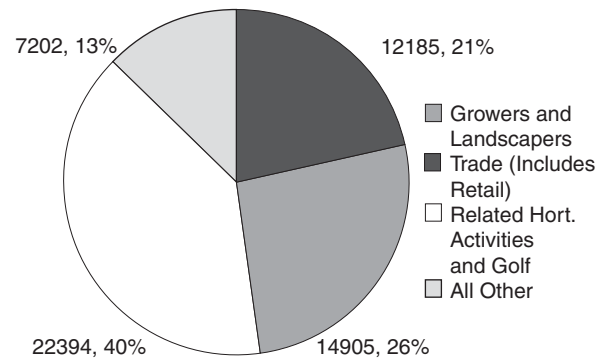


Table 6. Impact of the Entire Green Industry on Louisiana's Economy, Green Industry Model, Updated 1999 IMPLAN Database.

Industry	Gross Sales	Total Personal Income	Gross State Product	Employment jobs
	million dollars			
Greenhouse and Nursery Products	119.9	55.8	87.3	2,824
Agricultural, Forestry, Fishery Services	7.0	2.4	3.2	167
Landscape and Horticultural Services	266.1	110.5	166.0	9,361
Mining	8.1	2.0	5.4	31
Construction	27.9	12.1	12.7	371
Manufacturing	66.9	10.8	17.6	298
Transportation, Communication and Utilities (TCU)	89.8	23.3	51.0	545
Trade (Retail)	511.3	245.9	410.1	14,905
Finance, Insurance and Real Estate (FIRE)	166.8	27.4	116.5	978
Services	248.7	130.5	153.8	4,684
Government	16.4	5.1	6.9	122
Expenditure in 'Related Horticultural Activities' and Golf	685.9	524.1	656.0	22,394
Total	2,215.1	1,149.8	1,686.6	56,686

Boldface lines indicate the industry or industries modeled.

Measures of Industry Expansion

The green industry's economic impact in 2001 was important both in contribution to agricultural output and to economic activity in many other areas. IMPLAN'S most recent database (for 1999) was updated to reflect current industry output. Most components of the green industry experienced economic growth during the 1990s. For GNSP, industry output was about \$105 million in 1994, compared to \$120 million in 2001. This was a modest but important increase in an evermore competitive wholesale nursery environment. LHS industry output increased from \$146 million to \$266 million over the period. The increased output of this industry reflects an expanding economy in which homes, and commercial and public facilities, are upgraded because they enhance quality of life. Retail sales of green industry goods and services also increased dramatically, as measured by estimated expenditures per household that went from \$190.92 in 1995 to \$408.82 in 2001. There was a substantial increase in output by RHA, in part because additional activities (described above) were included. RHA also included the construction industries, which are large sectors of the economy. Growth in output by all these

sectors was stimulated by increasing incomes and the desire to improve private and public spaces.

As a basis for comparison, the 1995 model referenced above estimated total impact on Gross Sales, Total Personal Income, Gross State Product and Employment at \$1.30 billion, \$485.97 million, \$848.35 million and 26,227 jobs, respectively. Results from the 2001 model estimated these measures of impact at \$2.2 billion, \$1.15 billion, \$1.69 billion and 56,686 jobs, respectively.

These models are not comparable in all aspects; however, documentation of increases in direct industry and sector output, along with strong linkages to secondary sectors, are impressive measures of the industry's growth. And, factors that reflect changes in preferences, such as the upward trending expenditures per household on green industry products and services, are positive indicators. This suggests that more household disposable income is being allocated to green industry goods and services. It is a reasonable prediction that this industry's future will remain bright.



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