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Economic Contributions of Agricultural, Food Manufacturing, and Natural Resource Industries in Florida in 2006[1]

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The agricultural, food manufacturing, and natural resource industries are a significant component of the Florida economy. The purpose of this report is to quantify the magnitude of these industries' contribution to the economy of Florida in 2006, updating a previous study for 2004 (Hodges, Rahmani, and Mulkey, December 2006).

Methods

Data for this analysis were obtained from the *IMPLAN Professional* database (Minnesota IMPLAN Group), which in turn were derived from the National Income and Product Accounts and employment data for the United States (U.S. Department of Commerce). Over 100 individual industry sectors in Florida were identified as related to agriculture, food manufacturing, and natural resources, including sectors for commodity production, processing and manufacturing, and associated input suppliers and supporting services. The industry sectors were organized into thirteen industry groups having similar products or services, or representing market chain linkages. Wholesale and retail distribution of food and kindred products, restaurants, and other food service establishments were excluded from the analysis since these activities are not strictly related to agriculture or natural resources.

The total regional economic impacts for each sector were estimated using *IMPLAN* input-output multipliers which capture the indirect and induced effects of sales outside Florida that bring new money into the region and generate further economic activity as these dollars circulate through the economy. Indirect effects represent the economic activity generated by businesses that furnish inputs to the agricultural, food manufacturing, and natural resource industries while induced effects represent the impacts of industry employee household spending. The total economic impact of an industry is the sum of direct, indirect, and induced effects. A brief glossary of economic impact analysis terminology is provided in the Appendix. Impact estimates in this update are expressed in 2007 U.S. dollars using the Gross Domestic Product Implicit Price Deflator indices for mid-year 2001 through 2007 (U.S. Department of

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Commerce). *IMPLAN* data were available for 2001 through 2004 and 2006, but not for 2005.

Results

Total industry output (sales) of the agricultural, food manufacturing, and natural resource industries in Florida was over $59 billion (Bn) in 2006 (Table 1). Total exports outside the state of Florida amounted to $32.67 Bn. As a result of the indirect and induced multiplier effects from these exports, the total output impacts were estimated at $100.25 Bn. Direct employment in the industry was 404,399 full-time and part-time jobs, and total employment impacts were estimated at 766,884 full-time and part-time jobs (Table 1). The direct value added contribution of agricultural, food manufacturing, and natural resource industries in 2006 was estimated at $20.4 Bn (2007 dollars), and total value added impacts were $44.36 Bn. Value added is a broad measure of economic contribution that is comparable to the gross domestic product (GDP) at the national level, which represents the net income created by an industry or the difference between industry revenues and input purchases from other sectors; it includes personal and business net income, and capital consumption. The labor (earned) income impact was estimated to be $27.74 Bn. Indirect business taxes paid to local, state, and federal governments were $2.98 Bn.

Impacts by Industry Groups and Sectors

Table 1 shows the economic impact measures for the thirteen industry groups of the agricultural, food manufacturing, and natural resource industries in Florida in 2006, while Table 2 shows results for individual industry sectors within each group. The five industry groups with the largest value added impacts in Florida were environmental horticulture ($8.14 Bn), forestry and forest products ($7.98 Bn), fruits and vegetable farming and processing ($7.28 Bn), agricultural inputs and support services ($6.54 Bn), and other food product manufacturing ($6.36 Bn) (Table 1). The next four largest industry groups were tobacco farming and manufacturing ($2.91 Bn), mining ($1.94 Bn), sugarcane farming and refined sugar manufacturing ($1.42 Bn), and livestock and dairy farming and animal products manufacturing ($1.1 Bn). Relatively smaller industry groups with value added impacts of less than $1 billion were other crop farming ($227 Mn), fishing and seafood products ($221 Mn), grain and oilseed farming and processing ($160 Mn), and wildlife hunting ($81 Mn). In terms of employment impacts (Table 1), the largest industry groups were environmental horticulture (178,805); agricultural inputs and services (161,342 jobs); forestry, wood, and paper products manufacturing (116,951); and fruit and vegetable farming and processing (16,203).

Individual industry sectors that generated the largest value added impacts were landscape services ($5.47 Bn), soft drink and ice manufacturing ($3.53 Bn), other tobacco product manufacturing ($2.72 Bn), greenhouse and nursery production ($2.67 Bn), fruit farming ($2.4 Bn), agriculture and forestry support activities ($2.31 Bn), vegetable and melon farming ($2.21 Bn), phosphatic fertilizer manufacturing ($2.2 Bn), fruit and vegetable canning and drying ($1.71 Bn), paper and paperboard mills ($1.63 Bn), forest nurseries and timber tracts ($1.38 Bn), veterinary services ($1.05 Bn), and engineered wood and truss manufacturing ($1.03 Bn) (Table 2).

Impacts in Florida Regions

Regional value added impacts of agricultural, food manufacturing, and natural resource industries are shown in Table 3 for the nine economic regions of Florida. The delineation of the counties in these nine regions was based on employee commuting patterns and other economic data from the 2000 Census (Johnson and Kort, 2004). A map of these regions is shown in Figure 1. Total value added impacts for the nine regions, ranked in descending order, were Miami-Ft. Lauderdale ($11.59 Bn), Orlando ($10.27 Bn), Tampa-St. Petersburg-Clearwater ($7.8 Bn), Jacksonville ($6.53 Bn), Sarasota-Bradenton ($4.38 Bn), Gainesville ($1.38 Bn), Tallahassee ($1.17 Bn), Pensacola ($761 Mn), and Panama City ($542 Mn). Note that some Georgia counties included in these regions were not evaluated in this analysis. It should also be noted that there were slight discrepancies in the results of the analysis at the state and regional levels due to differences in trade flows and accounting adjustments.

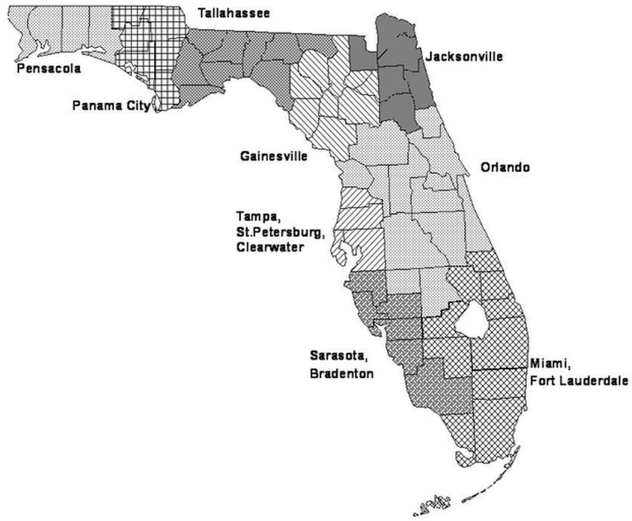

Figure 1. Economic regions of Florida

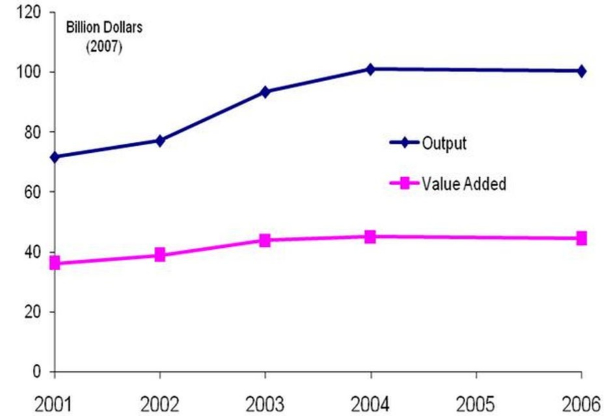

Figure 2. Trend in output and value added impacts of agricultural, food manufacturing, and natural resource industries in Florida, 2001-2006

Impact Trends, 2001-2006

Trends in economic impacts of the agricultural, food manufacturing, and natural resource industries in Florida between 2001 and 2006 are shown in Tables 4 and 5, and Figures 2 through 5. Again, all values were adjusted for inflation to express in 2007 dollars. Total value added impacts grew from $36.17 Bn in 2001 to $44.36 Bn in 2006 (Figure 2), representing an overall growth of 23 percent, or an average of 4.6 percent per annum. Total output impacts grew by an average of 8.2 percent annually, and total employment impacts increased by 3.1 percent annually. Different results were seen, however, when comparing impact trends during the 2001-2004 and 2004-2006 periods. During the latter period, there was a much slower growth for output (0.23% average annual), and a slight decline in employment impact (-0.15% average annual) and value-added impact (-0.72% average annual). The growth in output together with a decline in employment suggests decreasing labor intensity and increasing labor productivity. Note that these trends may reflect changes in the structure of the Florida economy as well as changes in industry activity and commodity prices.

The trends in economic impacts for selected industry groups with notable changes during 2001 to 2006 are illustrated in Figures 3, 4, and 5. Environmental horticulture sustained a high average annual growth rate of 6.0 percent throughout this period and increased 8.3 percent annually during the 2004-2006 period. Very strong average annual growth in value added impacts was seen for tobacco products (26.6%) and forestry, wood, and paper products manufacturing (10.3%); however, tobacco products shrank by 4.1 percent during the 2004-2006 period while forestry, wood, and paper products grew by 2.6 percent. Similarly, wildlife hunting, which had enjoyed a strong average annual growth in value added impacts during the 2001-2004 period (31.7%), showed the greatest decline (-24.8%) during the 2004-2006 period. Livestock, dairy farming, and animal products manufacturing accelerated its annual rate of decline to nearly -10 percent during the 2004-2006 period, as did sugarcane farming, refined sugar, and confections (-11.6%), and fishing and seafood products (-22.6%). Grain and oilseed farming and processing reversed its negative growth during the 2001-2004 period to become the fastest growing group during the 2004-2006 period (+17.8%).

The fastest-changing individual industry sectors in terms of value added impacts are shown in Table 6 and Figure 6 for sectors with at least $100 million change between 2001 and 2006. The highest increase in value added impacts over the entire period were seen for landscape services ($929 Mn), and soft drink and ice manufacturing ($678 Mn). Other tobacco product manufacturing enjoyed substantial growth ($1.75 Bn, or 49% average annually) during the 2001-2004 period, but decreased by $298 Mn (-5% annually) during the 2004-2006 period. Veterinary

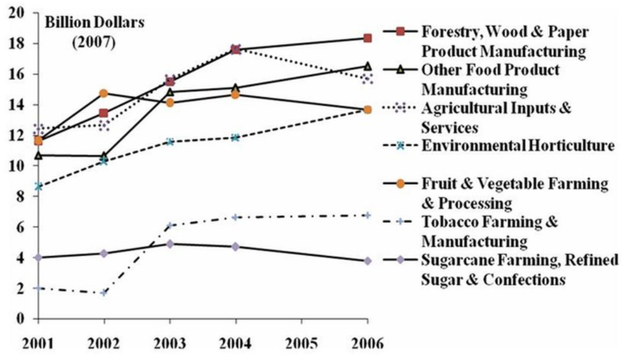

Figure 3. Trend in output impacts of selected agricultural, food manufacturing, and natural resource industry groups, 2001-2006

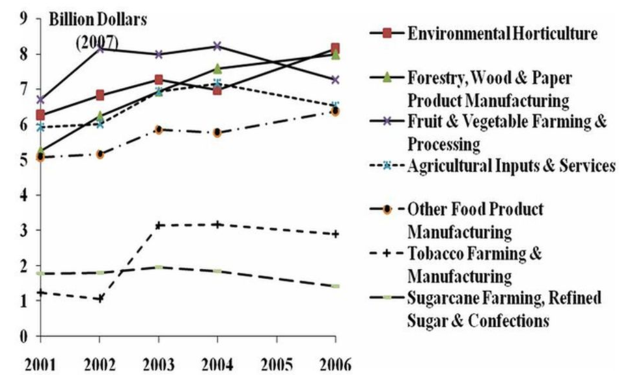

Figure 4. Trend in value added impacts of selected agricultural, food manufacturing, and natural resource industry groups in Florida, 2001-2006

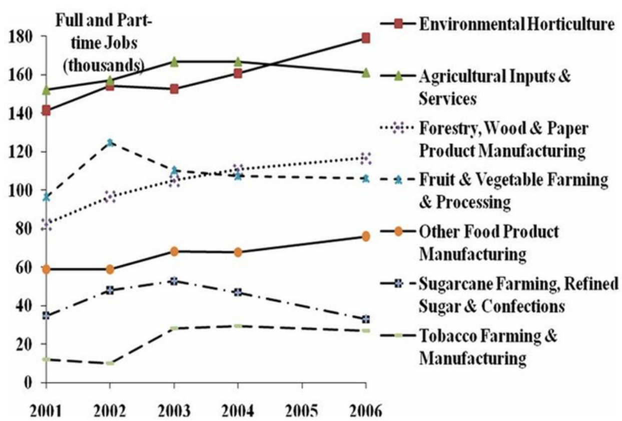

Figure 5. Trend in employment impacts of selected agricultural, food manufacturing, and natural resource industry groups, 2001-2006

services; greenhouse and nursery products; and forest nurseries, forest products, and timber tracts recorded significant annual growths of 16 percent, 5 percent, and 5 percent, respectively, during the 2004-2006 period. Phosphatic fertilizer manufacturing had the highest decrease at $708 Mn (-10% annually) during the 2004-2006 period. Other sectors with significant decreases in value added impacts during the 2004-2006 period were fruit and vegetable canning and drying (-$453 Mn, -10%), agricultural and forestry support activities (-$289 Mn, -6%), sugar manufacturing (-$265 Mn, -11%), and frozen food manufacturing (-$218 Mn, -9%).

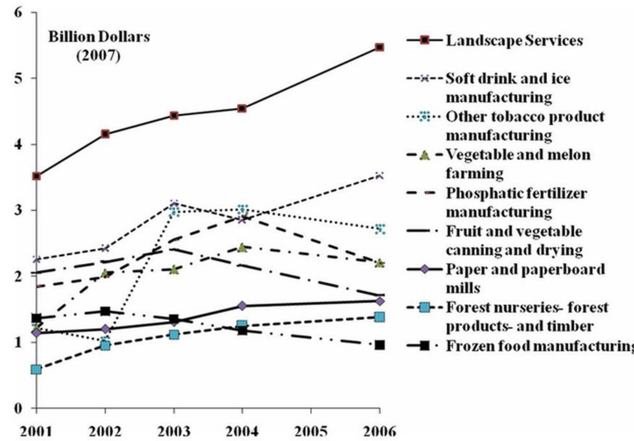

Figure 6. Trend in value added impacts of selected agricultural, food manufacturing, and natural resource industry sectors in Florida, 2001-2006

Conclusions

The relative importance of the agricultural, food manufacturing, and natural resource industries in Florida can be gauged by its share of overall economic activity in the state. The gross state product (GSP), which is the sum of value added for all industries in Florida, was $706 Bn in 2006 (expressed in 2007 dollars), and total employment in Florida was 10.3 million jobs (Table 7). The direct value added contributed by agricultural, food manufacturing, and natural resource industries in Florida for 2006 represented about 2.9 percent of GSP, ranking fifteenth among all industry groups in contribution to the GSP of Florida. Direct employment represented 3.9 percent of total state employment. However, when the indirect and induced multiplier effects from export sales are included, the total value added impacts of agricultural, food manufacturing, and natural resource industries represented 4.6 percent of GSP, and the total employment impacts accounted for 5.4 percent of all jobs in Florida. The agricultural, food manufacturing, and natural resource industries in Florida exhibited strong growth during the

2001-2004 period, with an average annual increase in value added impacts of 4.6 percent (inflation adjusted), but there was essentially no growth during the 2004-2006 period.

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Table 1. Economic impacts of agricultural, food manufacturing, and natural resource industry groups in Florida in 2006.*

Industry Group	Industry Output	Exports	Output Impacts	Employment Impacts	Total Value Added Impacts	Labor Income Impacts	Indirect Business Tax Impacts
	(Mn$)	(Mn$)	(Mn$)	(Jobs)	(Mn$)	(Mn$)	(Mn$)
Agricultural Inputs & Services[1]	9,351.0	5,643.1	15,693.2	161,342	6,535.7	5,186.1	367.0
Environmental Horticulture[2]	8,489.7	3,593.9	13,679.4	178,805	8,141.1	5,417.9	400.9
Fishing & Seafood Products	793.5	100.5	924.6	10,730	220.9	212.7	10.6
Forestry, Wood & Paper Product Manufacturing (Mfg.)	10,378.7	6,696.0	18,347.1	116,951	7,976.0	5,055.5	454.9
Fruit & Vegetable Farming & Processing	6,700.4	5,600.0	13,676.5	106,203	7,278.8	3,985.8	429.4
Grain & Oilseed Farming & Processing	146.6	155.3	355.3	2,031	160.2	98.0	13.6
Livestock & Dairy Farming & Animal Products Mfg.	4,589.9	755.7	5,343.5	27,684	1,110.0	673.8	80.5
Mining	3,161.7	1,114.9	4,521.3	21,737	1,935.5	1,093.7	143.3
Other Crop Farming	212.0	177.2	414.6	3,106	226.8	103.2	13.3
Other Food Products Mfg.	9,621.5	5,552.4	16,409.3	75,813	6,363.4	3,715.1	717.5
Sugarcane Farming, Refined Sugar & Confections	1,969.8	1,173.7	3,783.3	33,019	1,421.0	842.5	105.4
Tobacco Farming & Mfg.	3,422.9	2,067.4	6,784.8	27,224	2,911.1	1,318.7	210.9
Wildlife Hunting	173.8	39.2	236.0	2,238	81.5	40.4	10.7
Grand Total	59,011.6	32,669.3	100,249.8	766,884	44,361.9	27,743.6	2,957.9

Source: *IMPLAN* data for Florida (MIG, Inc., 2007).
* Values expressed in 2007 dollars using GDP implicit price deflator (U.S. Department of Commerce).
[1] Agricultural Inputs & Services = fertilizers, pesticides, veterinary, support activities, equipment manufacturing.
[2] Environmental Horticulture = nursery, greenhouse, landscape services.

Table 2. Economic impacts of agricultural, food manufacturing, and natural resource industry sectors in Florida in 2006.*

Industry Group	Industry Sector	Industry Output	Output Impacts	Employment Impacts	Total Value Added Impacts
		(Mn$)	(Mn$)	(Jobs)	(Mn$)
Agricultural Inputs & Services	Agriculture & forestry support activities	2,052.3	3,591.2	91,772	2,310.4
	Farm machinery & equipment manufacturing (mfg.)	157.3	187.1	615	50.8
	Fertilizer (mixing only) mfg.	423.6	423.6	781	90.5
	Food product machinery mfg.	62.8	88.1	458	43.1
	Lawn & garden equipment mfg.	17.9	20.3	60	4.2
	Nitrogenous fertilizer mfg.	644.0	1,060.9	3,225	291.7
	Paper industry machinery mfg.	12.5	19.3	110	7.6
	Pesticide & other agricultural chemical mfg.	601.8	1,096.1	4,210	478.5
	Phosphatic fertilizer mfg.	3,381.9	6,780.2	28,399	2,204.1
	Sawmill & woodworking machinery	9.2	10.9	62	4.5
	Veterinary services	1,987.7	2,415.6	31,651	1,050.3
	Total	9,351.0	15,693.2	161,342	6,535.7
Environmental Horticulture	Greenhouse & nursery production	1,954.3	3,756.8	34,425	2,668.6
	Landscape services	6,535.4	9,922.6	144,380	5,472.5
	Total	8,489.7	13,679.4	178,805	8,141.1
Fishing & Seafood Products	Fishing	227.2	315.9	8,384	106.5
	Seafood product preparation & packaging	566.3	608.7	2,346	114.5
	Total	793.5	924.6	10,730	220.9
Forestry, Wood & Paper Product Mfg.	All other converted paper products mfg.	84.9	192.0	1,190	95.0
	Coated & laminated paper & packaging	192.8	427.0	2,405	196.2
	Coated & uncoated paper bag mfg.	135.3	264.6	1,488	112.8
	Cut stock (resawing timber) & planing	22.0	22.0	162	5.5
	Engineered wood member & truss mfg.	1,424,5	2,115.1	13,851	1,030.4
	Forest nurseries, forest products, & timber tracts	978.9	2,882.4	34,914	1,379.0
	Logging	775.8	936.3	4,692	284.0

Table 2. Economic impacts of agricultural, food manufacturing, and natural resource industry sectors in Florida in 2006.*

Industry Group	Industry Sector	Industry Output	Output Impacts	Employment Impacts	Total Value Added Impacts
		(Mn$)	(Mn$)	(Jobs)	(Mn$)
	Miscellaneous wood product mfg.	72.3	80.1	543	38.2
	Other millwork, including flooring	345.6	358.4	2,112	104.6
	Paper & paperboard mills	1,472.3	3,487.3	18,180	1,626.2
	Paperboard container mfg.	1,183.3	2,165.5	11,730	907.7
	Pulp mills	361.6	930.0	4,903	401.8
	Reconstituted wood product mfg.	36.1	38.2	101	20.6
	Sanitary paper product mfg.	1,275.1	2,312.0	10,222	993.3
	Sawmills	653.7	723.9	2,940	224.6
	Surface-coated paperboard mfg.	2.7	3.0	11	0.6
	Veneer & plywood mfg.	208.6	233.5	1,288	70.8
	Wood container & pallet mfg.	173.0	178.0	1,506	67.4
	Wood preservation	184.3	189.7	664	46.2
	Wood windows & doors mfg.	795.9	807.9	4,050	371.0
	Total	10,378.7	18,347.1	116,951	7,976.0
Fruit & Vegetable Farming & Processing	Frozen food mfg.	971.9	2,094.9	12,213	959.4
	Fruit & vegetable canning & drying	1,699.5	3,736.2	19,766	1,708.0
	Fruit farming	2,136.1	4,298.9	46,514	2,400.8
	Vegetable & melon farming	1,892.9	3,546.5	27,709	2,210.6
	Total	6,700.4	13,676.5	106,203	7,278.8
Grain & Oilseed Farming & Processing	Flour milling	95.9	201.0	946	84.9
	Grain milling	7.6	17.6	218	9.6
	Oilseed farming	2.0	45.0	408	26.9
	Rice milling	41.1	91.7	460	38.9
	Total	146.6	355.3	2,031	160.2
Livestock & Dairy Farming & Animal Products Mfg.	Animal (except poultry) slaughtering	448.7	465.9	1,271	71.4
	Animal production (except cattle & poultry)	245.4	279.1	6,011	49.4
	Cattle ranching & farming	948.1	1,337.5	11,296	308.0
	Cheese mfg.	50.4	50.9	67	6.3
	Dry, condensed, & evaporated dairy products	36.3	44.3	110	12.0
	Fluid milk mfg.	1,149.1	1,152.5	1,907	138.9
	Ice cream & frozen dessert mfg.	296.4	298.7	631	58.3

Table 2. Economic impacts of agricultural, food manufacturing, and natural resource industry sectors in Florida in 2006.*

Industry Group	Industry Sector	Industry Output	Output Impacts	Employment Impacts	Total Value Added Impacts
		(Mn$)	(Mn$)	(Jobs)	(Mn$)
	Meat processed from carcasses	563.4	626.5	1,767	94.5
	Poultry & egg production	310.5	484.6	2,130	239.8
	Poultry processing	432.9	450.7	1,987	81.6
	Rendering & meat byproduct processing	108.8	152.8	507	49.7
	Total	4,589.9	5,343.5	27,684	1,110.0
Mining	Drilling oil & gas wells	197.2	392.1	1,992	160.3
	Gold, silver, & other metal ore mining	38.4	61.7	246	36.5
	Iron ore mining	2.3	5.1	27	2.9
	Oil & gas extraction	1,879.9	1,919.4	5,645	465.8
	Other nonmetallic mineral mining	464.6	780.4	4,413	436.3
	Sand, gravel, clay, & refractory mining	220.4	542.2	3,897	331.0
	Stone mining & quarrying	299.9	677.5	4,474	405.1
	Support activities for oil & gas operations	36.1	87.4	650	65.4
	Support activities for other mining	22.9	55.4	393	32.2
	Total	3,161.7	4,521.3	21,737	1,935.5
Other Crop Farming	All other crop farming	178.4	341.8	2,483	188.2
	Cotton farming	32.6	70.6	602	37.3
	Tree nut farming	1.1	2.2	21	1.3
	Total	212.0	414.6	3,106	226.8
Other Food Products Mfg.	All other food mfg.	359.2	436.7	2,002	106.3
	Bread & bakery products (except frozen) mfg.	1,178.5	1,197.3	8,166	485.7
	Breweries	743.4	1,489.3	7,197	745.9
	Coffee & tea mfg.	339.6	384.6	952	73.3
	Cookie & cracker mfg.	288.5	288.5	746	84.0
	Distilleries	483.2	1,262.0	7,886	798.4
	Dog & cat food mfg.	72.5	94.6	231	20.4
	Dry pasta mfg.	23.5	24.2	73	5.6
	Fats & oils refining & blending	19.8	23.8	46	5.6
	Flavoring syrup & concentrate mfg.	102.9	108.1	209	34.4

Table 2. Economic impacts of agricultural, food manufacturing, and natural resource industry sectors in Florida in 2006.*

Industry Group	Industry Sector	Industry Output	Output Impacts	Employment Impacts	Total Value Added Impacts
		(Mn$)	(Mn$)	(Jobs)	(Mn$)
	Frozen cakes & other pastries mfg.	18.1	20.0	130	5.7
	Mayonnaise, dressing, & sauce mfg.	160.9	175.5	522	44.1
	Mixes & dough (made from purchased flour)	6.7	7.1	15	2.8
	Other animal food mfg.	330.1	583.0	2,319	164.4
	Other snack food mfg.	362.3	370.9	699	100.2
	Roasted nuts & peanut butter mfg.	23.5	31.7	114	9.1
	Soft drink & ice mfg.	4,716.8	9,525.9	42,934	3,528.9
	Spice & extract mfg.	315.9	323.8	775	92.3
	Tortilla mfg.	3.8	3.8	24	1.1
	Wineries	72.5	139.4	772	55.2
	Total	9,621.5	16,490.3	75,813	6,363.4
Sugarcane Farming, Refined Sugar & Confections	Confectionery mfg. (cacao beans)	43.4	52.8	159	11.9
	Confectionery mfg. (chocolate)	173.8	260.7	1,250	80.8
	Non-chocolate confectionery mfg.	198.7	303.0	1,439	116.6
	Sugar mfg.	1,125.4	2,523.1	16,246	918.5
	Sugarcane & sugar beets farming	428.5	643.8	13,925	293.2
	Total	1,969.8	3,783.3	33,019	1,421.0
Tobacco Farming & Mfg.	Cigarette mfg.	402.4	420.0	279	170.7
	Other tobacco products mfg.	3,009.0	6,339.6	26,685	2,721.8
	Tobacco farming	11.5	25.2	260	18.6
	Total	3,422.9	6,784.8	27,224	2,911.1
Wildlife	Hunting & trapping	173.8	236.0	2,238	81.5
Grand Total	All sectors	59,011.6	100,249.8	766,884	44,361.9

Source: *IMPLAN* data for Florida (MIG, Inc. 2007).
* Values expressed in 2007 dollars using GDP implicit price deflator (U.S. Department of Commerce).

Table 3. Value added impacts of agricultural, food manufacturing, and natural resource industry groups in economic regions of Florida in 2006.*

Industry Group	Miami – Ft Lauderdale	Orlando	Tampa – St. Petersburg–Clearwater	Sarasota–Bradenton	Jacksonville	Gainesville	Tallahassee	Panama City	Pensacola
					(Million Dollars)				
Agricultural Inputs & Services	1,314.5	2,336.9	1,134.5	876.2	183.9	52.7	308.0	15.9	42.6
Environmental Horticulture	2,636.3	2,187.0	990.4	1,063.1	518.0	114.1	108.4	79.1	134.4
Fishing & Seafood Products	51.2	40.5	118.9	38.8	18.9	11.8	3.6	0.8	4.0
Forestry, Wood, & Paper Products Manufacturing (Mfg.)	1,635.4	1,444.3	666.5	299.8	1,556.2	475.2	511.6	321.9	414.4
Fruit & Vegetable Farming & Processing	2,371.4	1,876.0	645.3	1,760.5	154.0	109.3	29.6	16.0	6.4
Grain & Oilseed Farming & Processing	88.3	0.5	43.3	0.0	0.3	0.8	5.6	3.4	2.9
Livestock & Dairy Farming & Animal Products Mfg.	278.9	178.9	249.1	72.8	81.3	453.1	65.2	52.3	50.2
Mining	276.4	503.9	1,093.4	148.2	61.2	45.1	56.0	4.3	53.4
Other Crop Farming	15.2	36.5	11.8	4.6	2.1	36.9	5.6	36.1	35.1
Other Food Products Mfg.	1,290.1	1,511.8	1,703.7	86.8	1,982.7	70.1	66.4	6.7	17.4
Sugarcane Farming, Refined Sugar & Confections	1,405.4	65.8	102.8	31.1	16.9	2.0	0.9	0.0	0.4
Tobacco Farming & Mfg.	220.6	0.0	1,042.9	0.0	1,952.7	11.8	4.7	0.0	0.0
Wildlife Hunting	11.5	88.6	1.9	0.6	3.7	1.4	7.2	5.5	0.0
Grand Total	11,595	10,271	7,805	4,382	6,532	1,384	1,173	542	761

Source: *IMPLAN* data for Florida (MIG, Inc., 20007).
* Values expressed in 2007 dollars using GDP implicit price deflator.

Table 4. Value added impacts of agricultural, food manufacturing, and natural resource industry groups in Florida, 2001-2004 and 2006.

Industry Group	Total Value Added Impacts ($Mn)*					Average Annual Percent Change	
	2001	2002	2003	2004	2006	2001-06	2004-06
Agricultural Inputs & Services	5,932.9	6,006.8	6,938.0	7,148.9	6,535.7	2.0%	–4.3%
Environmental Horticulture (nursery & greenhouse, landscape services)	6,257.1	6,813.6	7,274.4	6,979.4	8,141.1	6.0%	8.3%
Fishing & Seafood Products	420.6	465.1	440.7	403.7	220.9	–9.5%	–22.6%
Forestry, Wood, & Paper Product Manufacturing (Mfg.)	5,258.0	6,234.1	6,935.8	7,580.4	7,976.0	10.3%	2.6%
Fruit & Vegetable Farming & Processing	6,712.9	8,139.0	7,989.6	8,206.8	7,278.8	1.7%	–5.7%
Grain & Oilseed Farming & Processing	236.1	109.4	99.0	118.1	160.2	–6.4%	17.8%
Livestock & Dairy Farming & Animal Products Mfg.	1,402.4	1,183.1	1,235.4	1,384.4	1,110.0	–4.2%	–9.9%
Mining	1,541.1	1,634.1	1,670.7	1,971.0	1,935.5	5.1%	–0.9%
Other Crop Farming	184.6	202.7	254.9	266.5	226.8	4.6%	–7.5%
Other Food Products Mfg.	5,067.8	5,170.8	5,864.6	5,761.6	6,363.4	5.1%	5.2%
Sugarcane Farming, Refined Sugar & Confections	1,789.9	1,799.6	1,961.3	1,852.3	1,421.0	–4.1%	–11.6%
Tobacco Farming & Mfg.	1,249.5	1,060.6	3,145.6	3,172.1	2,911.1	26.6%	–4.1%
Wildlife Hunting	82.9	57.8	48.1	161.9	81.5	–0.3%	–24.8%
Grand Total	36,136	38,877	43,858	45,007	44,362	4.6%	–0.7%

Source: *IMPLAN* data for Florida (MIG, Inc., 2007). Note: data not available for 2005.
* Values expressed in 2007 dollars using GDP implicit price deflator (U.S. Department of Commerce).

Table 5. Employment impacts of agricultural, food manufacturing, and natural resource industry groups in Florida, 2001-2004 and 2006.

Industry Group	Total Employment Impacts (Jobs)					Average Annual Percent Change	
	2001	2002	2003	2004	2006	2001-06	2004-06
Agricultural Inputs & Services	152,182	157,151	166,714	166,835	161,342	1.2%	–1.6%
Environmental Horticulture (nursery & greenhouse, landscape services)	141,253	154,205	152,820	160,785	178,805	5.3%	5.6%
Fishing & Seafood Products	12,895	14,530	13,905	12,364	10,730	–3.4%	–6.6%
Forestry, Wood, & Paper Products Manufacturing (Mfg.)	82,510	96,929	105,111	110,823	116,951	8.3%	2.8%
Fruit & Vegetable Farming & Processing	96,340	124,990	110,222	107,478	106,203	2.0%	–0.6%
Grain & Oilseed Farming & Processing	5,182	1,573	1,455	1,644	2,031	–12.2%	11.8%
Livestock & Dairy Farming & Animal Products Mfg.	39,770	32,244	31,118	33,030	27,684	–6.1%	–8.1%
Mining	22,866	22,043	20,590	25,444	21,737	–1.0%	–7.3%
Other Crop Farming	3,939	3,184	3,533	3,350	3,106	–4.2%	–3.6%
Other Food Products Mfg.	58,957	59,168	68,273	67,998	75,813	5.7%	5.7%
Sugarcane Farming, Refined Sugar & Confections	34,906	48,038	52,778	47,022	33,019	–1.1%	–14.9%
Tobacco Farming & Mfg.	11,928	10,084	28,411	29,342	27,224	25.6%	–3.6%
Wildlife Hunting	2,360	1,818	2,062	3,110	2,238	–1.0%	–14.0%
Grand Total	665,089	725,957	756,993	769,224	766,884	3.1%	–0.15%

Source: *IMPLAN* data for Florida (MIG, Inc., 2007). Note: data not available for 2005.

Table 6. Agricultural, food manufacturing, and natural resource industry sectors in Florida with fastest changing value added impacts, 2001 to 2006.*

Industry Sector	2001	2002	2003	2004	2006	Value Change 2004-06	Average Annual Percent Change	
	(Million Dollars)						2001-06	2004-06
Veterinary services	691	757	788	798	1,050	253	10%	16%
Soft drink & ice manfacturing (mfg.)	2,258	2,422	3,109	2,851	3,529	678	11%	12%
Pesticide & other agricultural chemical mfg.	201	156	415	385	479	94	28%	12%
Landscape services	3,520	4,149	4,439	4,544	5,473	929	11%	10%
Greenhouse & nursery production	2,737	2,665	2,835	2,436	2,669	233	0%	5%
Forest nurseries, forest products, & timber tracts	589	950	1,116	1,250	1,379	129	27%	5%
Paper & paperboard mills	1,144	1,199	1,310	1,554	1,626	72	8%	2%
Paperboard container mfg.	756	892	869	888	908	20	4%	1%
Fruit farming	2,073	2,396	2,120	2,425	2,401	–24	3%	0%
Other tobacco product mfg.	1,216	1,018	2,979	3,019	2,722	–298	25%	–5%
Vegetable & melon farming	1,218	2,056	2,107	2,444	2,211	–234	16%	–5%
Agriculture & forestry support activities	2,496	2,428	2,259	2,600	2,310	–289	–1%	–6%
Pulp mills	750	824	872	469	402	–67	–9%	–7%
Frozen food mfg.	1,365	1,471	1,353	1,177	959	–218	–6%	–9%
Fruit & vegetable canning & drying	2,056	2,296	2,409	2,161	1,708	–453	–3%	–10%
Sugar mfg.	1,099	1,996	1,348	1,184	919	–265	–3%	–11%
Phosphatic fertilizer mfg.	1,847	1,992	2,553	2,912	2,204	708	4%	–12%

Source: *IMPLAN* data for Florida (MIG, Inc., 2007). Note: data not available for 2005.
* Values expressed in 2007 dollars using GDP implicit price deflator (U.S. Department of Commerce).

Table 7. Output, exports, employment, value added, and indirect business tax of all industry groups in Florida in 2006.*

Industry Group	Industry Output	Total Exports	Employment	Total Value Added	Indirect Business Taxes
	($Mn)	($Mn)	(Jobs)	($Mn)	($Mn)
Agriculture, Natural Resources, Related Manufacturing & Services**	59,012	32,669	404,399	20,402	1,045
Construction	113,961	3,877	891,661	48,907	612
Consumer Services	37,917	10,838	382,569	18,122	1,513
Education	43,114	999	859,307	39,732	103
Government	44,711	0	416,046	39,962	1
Health Care	80,323	3,916	822,462	48,999	575
Information & Communications	65,648	24,128	273,651	32,161	2,910
Manufacturing	105,719	55,745	335,649	30,529	537
Private Households	63,999	272	165,227	57,313	7,383
Professional & Technical Services	152,303	48,306	1,602,541	89,412	1,610
Real Estate & Financial Services	168,454	53,069	999,582	105,835	11,411
Retail Trade	78,895	8,267	1,081,138	51,290	11,095
Social Services & Organizations	14,482	4,901	268,926	8,066	37
Transportation	40,316	15,257	332,845	19,945	1,162
Travel, Food, & Entertainment Services	67,507	22,414	1,021,138	38,478	4,527
Utilities	15,198	51	31,467	11,122	1,429
Wholesale Trade	69,342	19,345	410,760	46,918	9,935
Miscellaneous Residual Accounts	–406	8,230	0	–406	0
Grand Total	1,220,495	312,287	10,299,368	706,788	55,884

Source: IMPLAN data for Florida (MIG, Inc., 2007).
* Values expressed in 2007 dollars using GDP implicit price deflator (U.S. Department of Commerce).
** Values for some manufacturing and service sectors within food, agriculture, and natural resources were netted out of other industry groups.

Appendix.

Glossary of Economic Impact 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. Economic regions identified in this paper were defined based on worker commuting patterns.

Sector is a grouping of industries that produce similar products or services, or production processes. Most economic reporting and models in the United States 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 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 backwards (e.g., purchases of plants that lead growers to purchase additional inputs, such as 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.

Direct effects are changes in economic activity during the first round of spending. **Secondary effects** are changes in economic activity from subsequent rounds of re-spending. There are two types of secondary effects: indirect and induced. **Indirect effects** are changes in sales, income, or employment within the region in backward-linked industries supplying goods and services to businesses (e.g., increased sales in input supply firms resulting from more nursery industry sales). **Induced effects** are increased sales within the region from household spending of the income earned in the direct and supporting industries. Employees in direct and supporting industries spend their incomes on housing, utilities, groceries, and other consumer goods and services. This generates sales, income, and employment throughout a regions economy. **Total effects** are the sum of direct, indirect, and induced effects.

Multipliers capture the total effects, both direct and secondary, 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 regions 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 a economy associated with a unit change in output or employment in a given sector**.**

Purchaser prices are prices paid by the final consumer of a good or service. **Producer prices** are 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, 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 wholesalers, shippers, and manufacturers 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 proprietors 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.