

Economic Contributions of Forest Product Manufacturing in Fernandina Beach, Florida

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**UF/IFAS ECONOMIC IMPACT ANALYSIS PROGRAM
DEPARTMENT OF FOOD AND RESOURCE ECONOMICS
UNIVERSITY OF FLORIDA**

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UF/IFAS Economic Impact Analysis Program

- Integrated research and extension program housed within the Food and Resource Economics Department
- Expertise in the areas of regional economic modeling, economic impact analysis, economic contribution studies, disaster impact analysis
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- Conduct sponsored research projects involving detailed analyses of particular industries, regions, or situations.

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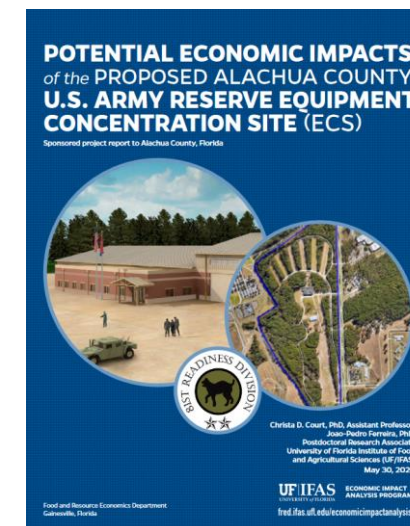
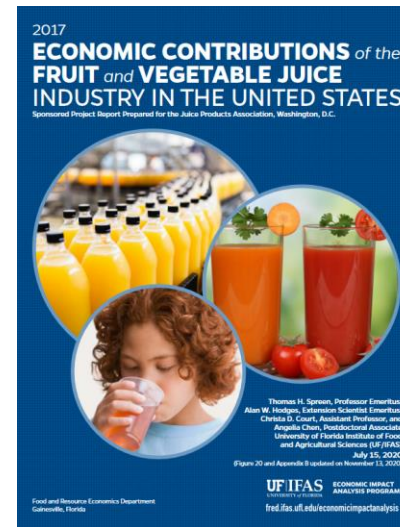
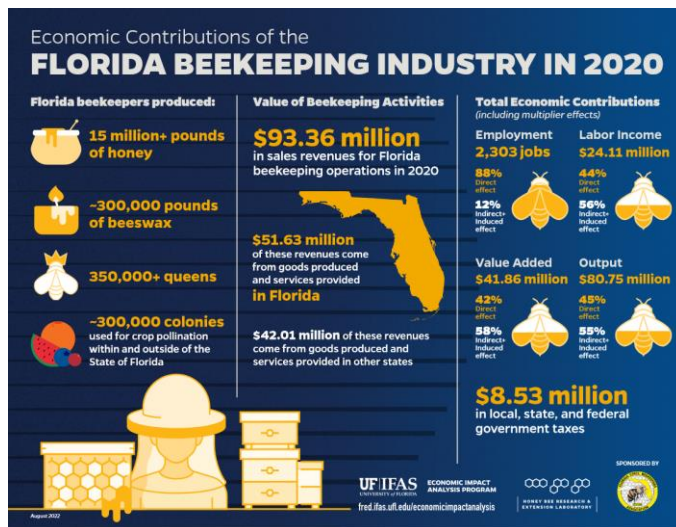
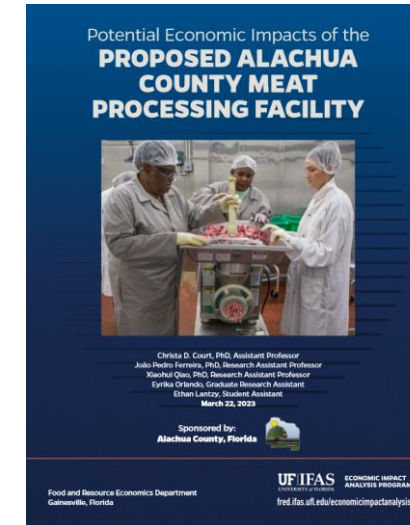
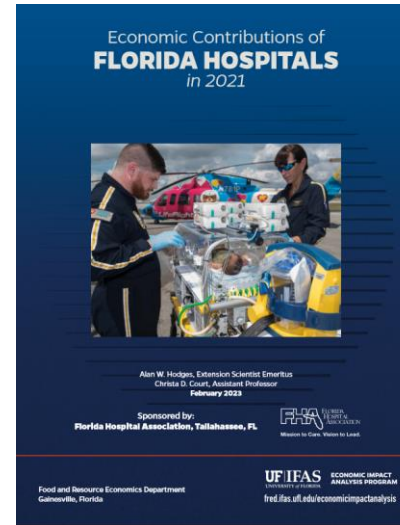
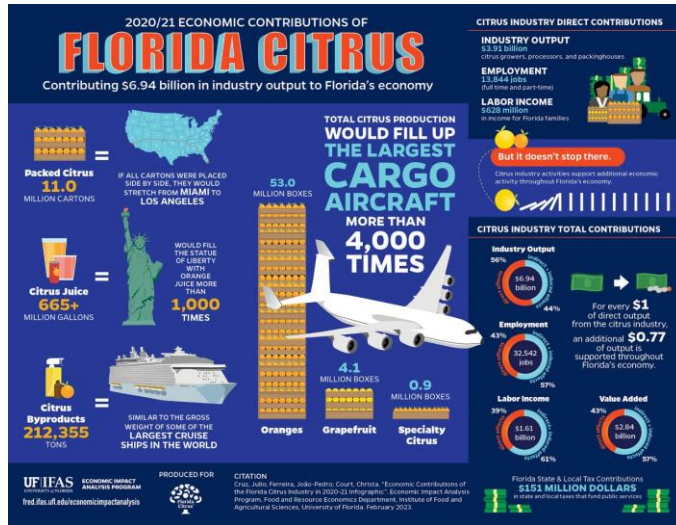
Regional Economic Analysis

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Production Agriculture

Other Industries

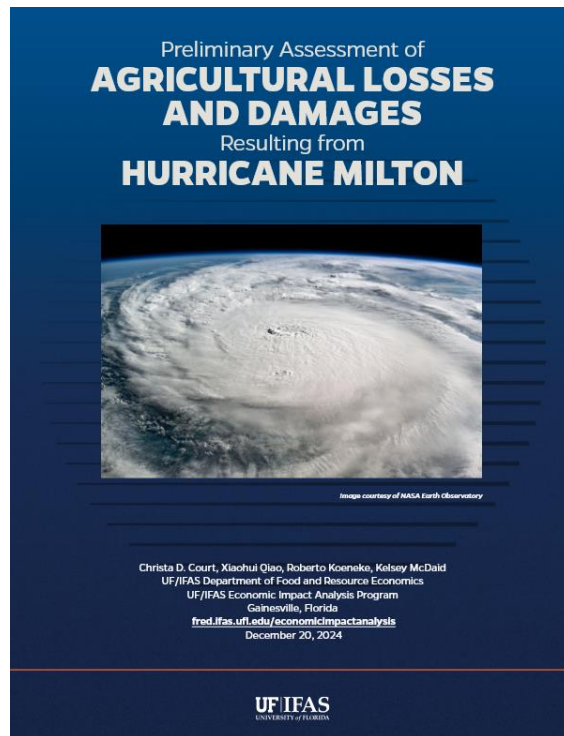
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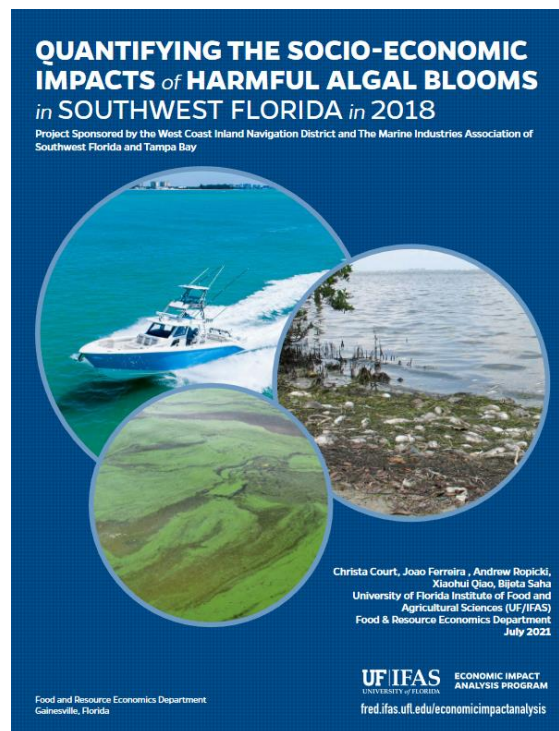
Disaster Impact Analysis

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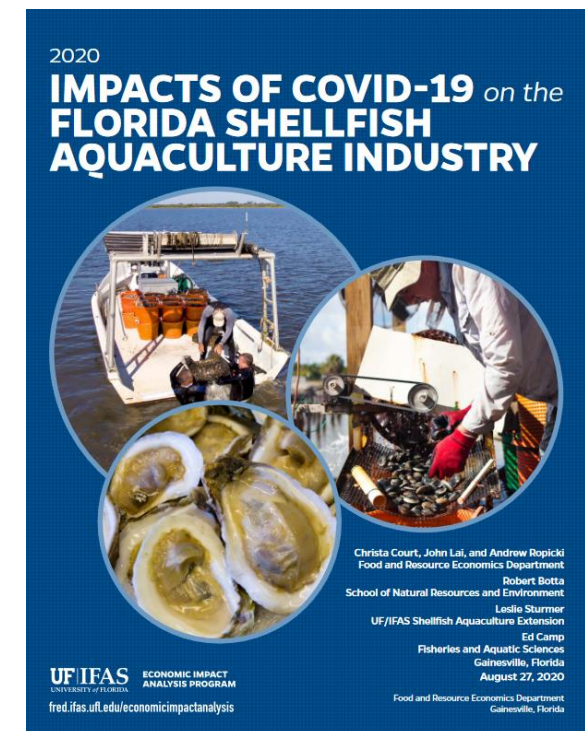
Rapid Assessment of Agricultural Losses



Water Quality



Other



Project Scope and Objectives

1. Document economic conditions and trends in the Jacksonville Metropolitan Statistical Area (MSA) and Nassau County

- Population
- Employment
- Gross Regional Product
- Forest industry statistics

2. Estimate total economic contributions of forest manufacturing industries in wood resource region and Nassau County

- Rayonier Advanced Materials (RYAM), Smurfit Westrock, and LignoTech Florida LLC
- Follow current best practices for industry contribution analysis studies
- Use IMPLAN regional economic model for Florida to estimate direct, indirect, and induced multiplier effects

Socio-economic Trends in Jacksonville, MSA

- Population grew from 1.126 million in the year 2000 to 1.676 million in 2022, representing a 49 percent increase, or average annual growth rate of 2.32 percent.
- Employment in the area also grew by 49 percent during this period.
- Gross Regional Product (GRP) in the MSA grew from \$80.34 billion in 2017 to \$99.47 billion in 2022 or 4.76 percent annually, in constant-dollar terms.

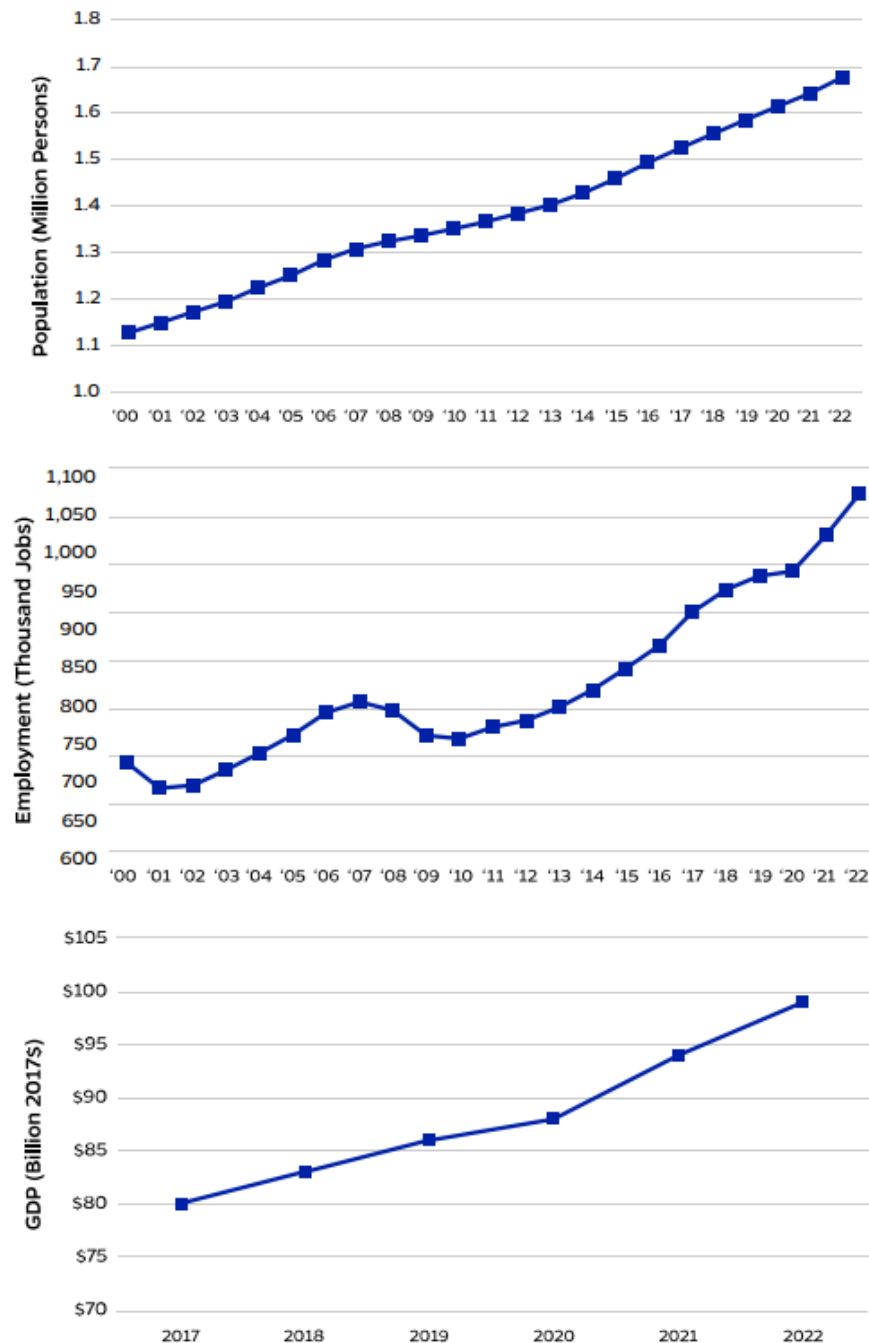


Figure 2. Population, employment, and GDP growth in the Jacksonville Florida MSA.
Source: U.S. Commerce Department, Bureau of Economic Analysis, data for Jacksonville FL MSA.

Economic Trends in Nassau County

- Total employment in the County in 2022 was 39,959 full-time and part-time jobs, with leading sectors including:

- Accommodation-Food Services (4,693 jobs)
- Retail Trade (4,549 jobs)
- Administrative Government-Military (3,358 jobs)
- Other Services (3,225 jobs)
- Health Care-Social Assistance (3,136 jobs).

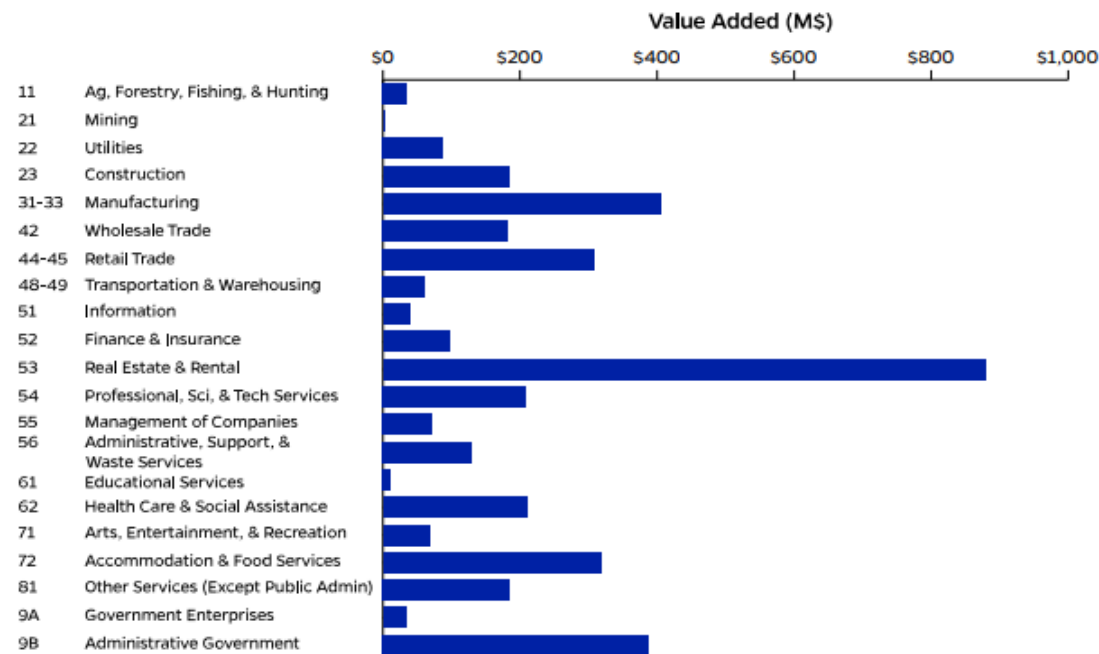
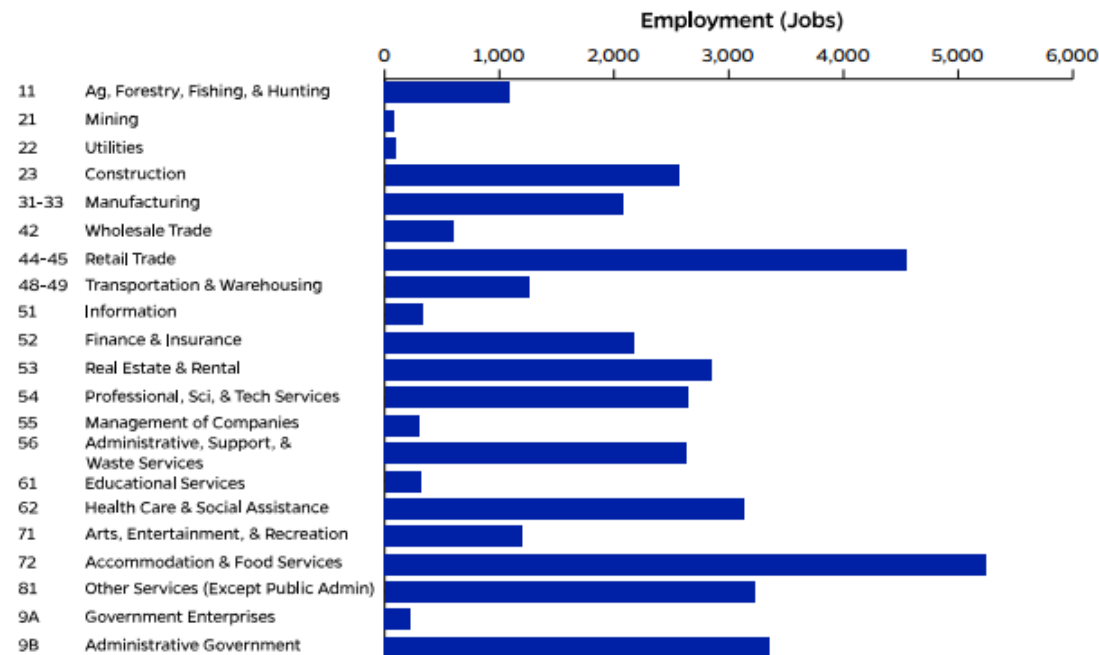


Figure 3. Profile of industry employment and value added in Nassau County, Florida, 2022.
Source: IMPLAN county data (IMPLAN Group LLC).

- GRP in the County in 2022 was \$3.903 billion, with leading sectors including:

- Real Estate-Rentals (\$879 million)
- Manufacturing (\$405 million)
- Government (\$388 million)
- Accommodation-Food Services (\$319 million)

Forest Industry Trends in Nassau County

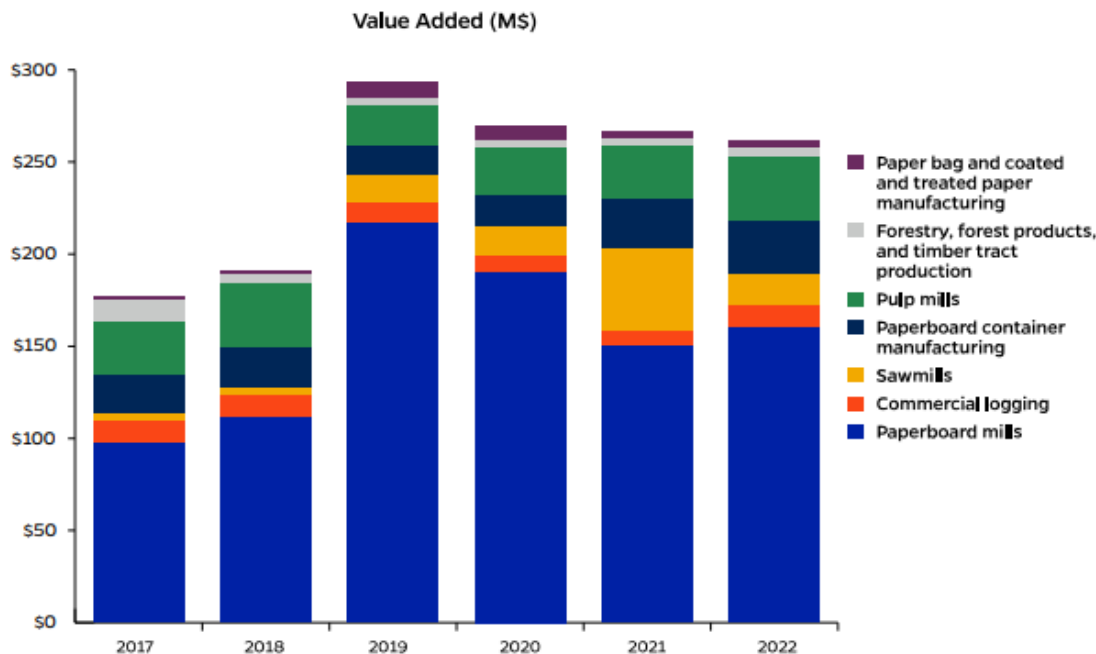
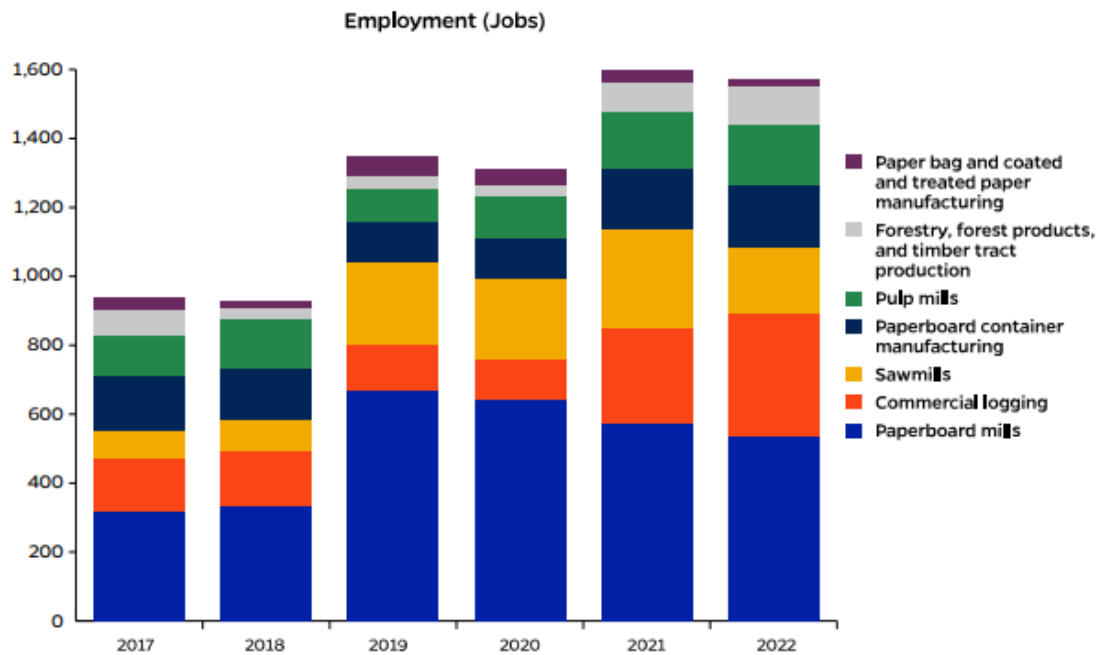


Figure 4. Trend in employment and value added for forest industry sectors in Nassau County, Florida, 2017–22.
Source: IMPLAN county data (IMPLAN Group LLC).

- Overall forest industry employment in 2022 was **1,570 jobs**, including:
 - Paperboard mills (535 jobs)
 - Commercial logging (354 jobs)
 - Sawmills (195 jobs)
 - Paperboard container manufacturing (181 jobs)
 - Pulp mills (174 jobs)
 - Forestry and timber production (111 jobs)
 - Paper bag-treated/coated paper manufacturing (21 jobs)
- Total forest industry employment increased **68 percent** during 2017–22.
- Forest industry output or business revenues in the County in 2022 was **\$896 million**, and value added (GDP) was **\$261 million**.

Project Scope and Objectives

1. Document economic conditions and trends in the Jacksonville Metropolitan Statistical Area (MSA) and Nassau County

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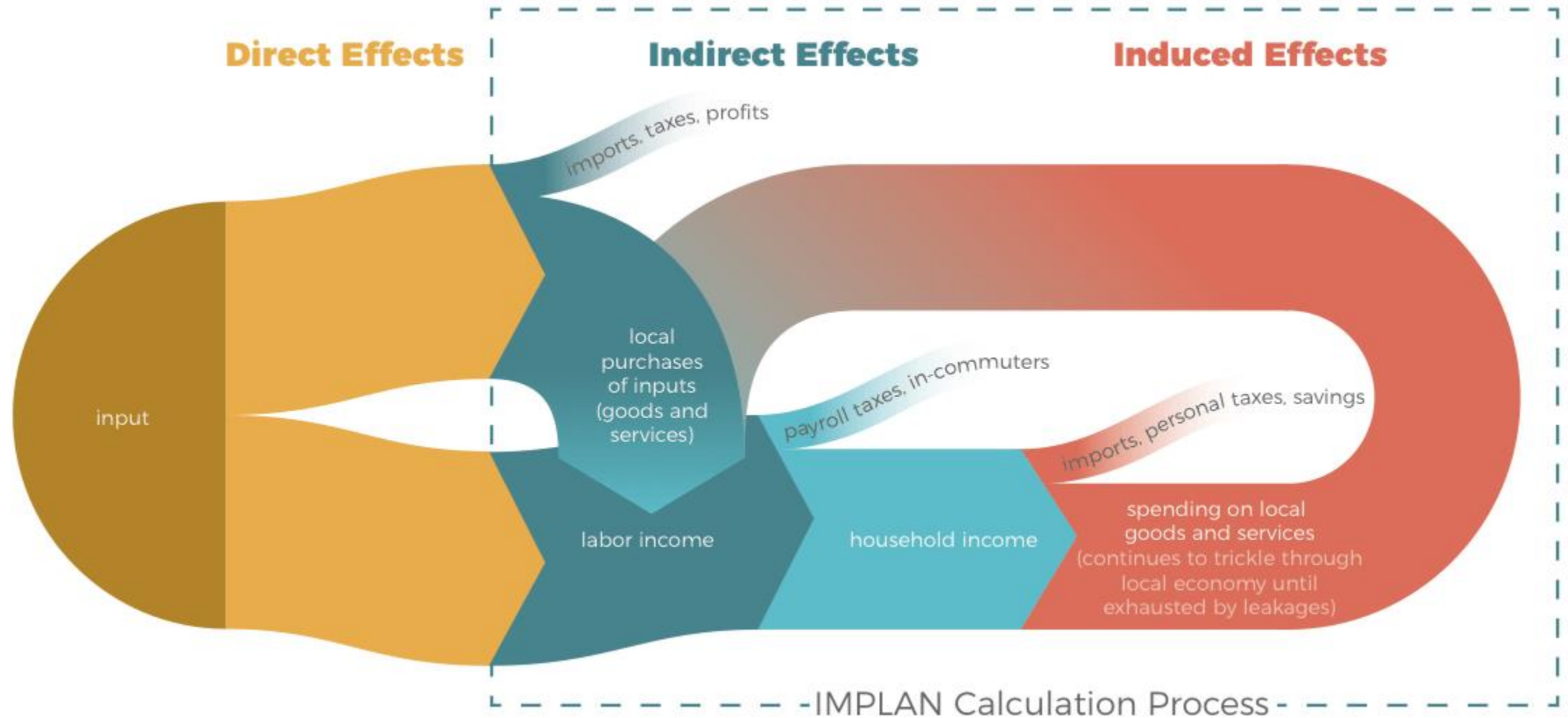
- Rayonier Advanced Materials (RYAM), Smurfit Westrock, and LignoTech Florida LLC
- Follow current best practices for industry contribution analysis studies
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Economic Analysis Methodology

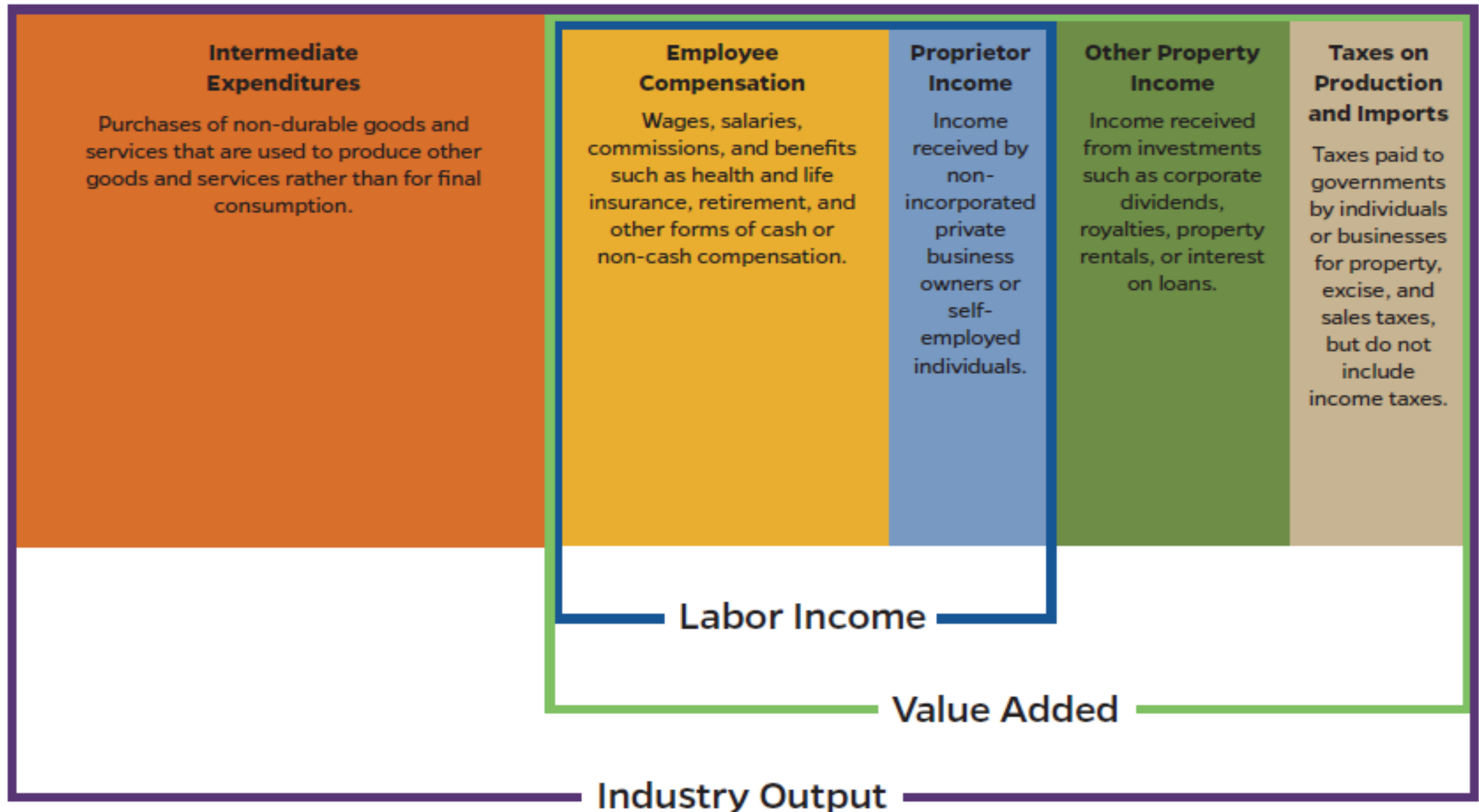


- **IMPLAN regional economic modeling system and 2022 database (IMPLAN Group LLC)**
- **Separate models for two study regions (wood source region & Nassau County)**
- **Economic contributions, not impacts**
- **Allows for the estimation of economic multiplier effects**
 - Direct effects: activity in forest manufacturing industries
 - Indirect effects: industry supply chain activity
 - Induced effects: employee household spending

Conceptual Diagram of Input-Output Modeling



Understanding Economic Metrics



Forest Product Manufacturing Industries in Fernandina Beach, FL

- **Rayonier Advanced Materials (RYAM)**
 - Manufactures specialty cellulose products
 - Produces over 25 grades of high-purity cellulose fibers used in a wide array of consumer and technical products
 - Sources wood fiber from forests across northeast Florida and southeast Georgia
- **Smurfit Westrock**
 - Manufactures paperboard (linerboard) packaging
 - Second largest paper packaging manufacturer in the United States
 - Sources wood fiber from forests across northeast Florida and southeast Georgia
- **LignoTech Florida LLC**
 - Manufactures refined lignin, a constituent of wood extracted from wood pulp, which is sourced from the adjacent RYAM sulfite pulp mill
 - Distributes both liquid and solid products to specialty chemicals markets around the world

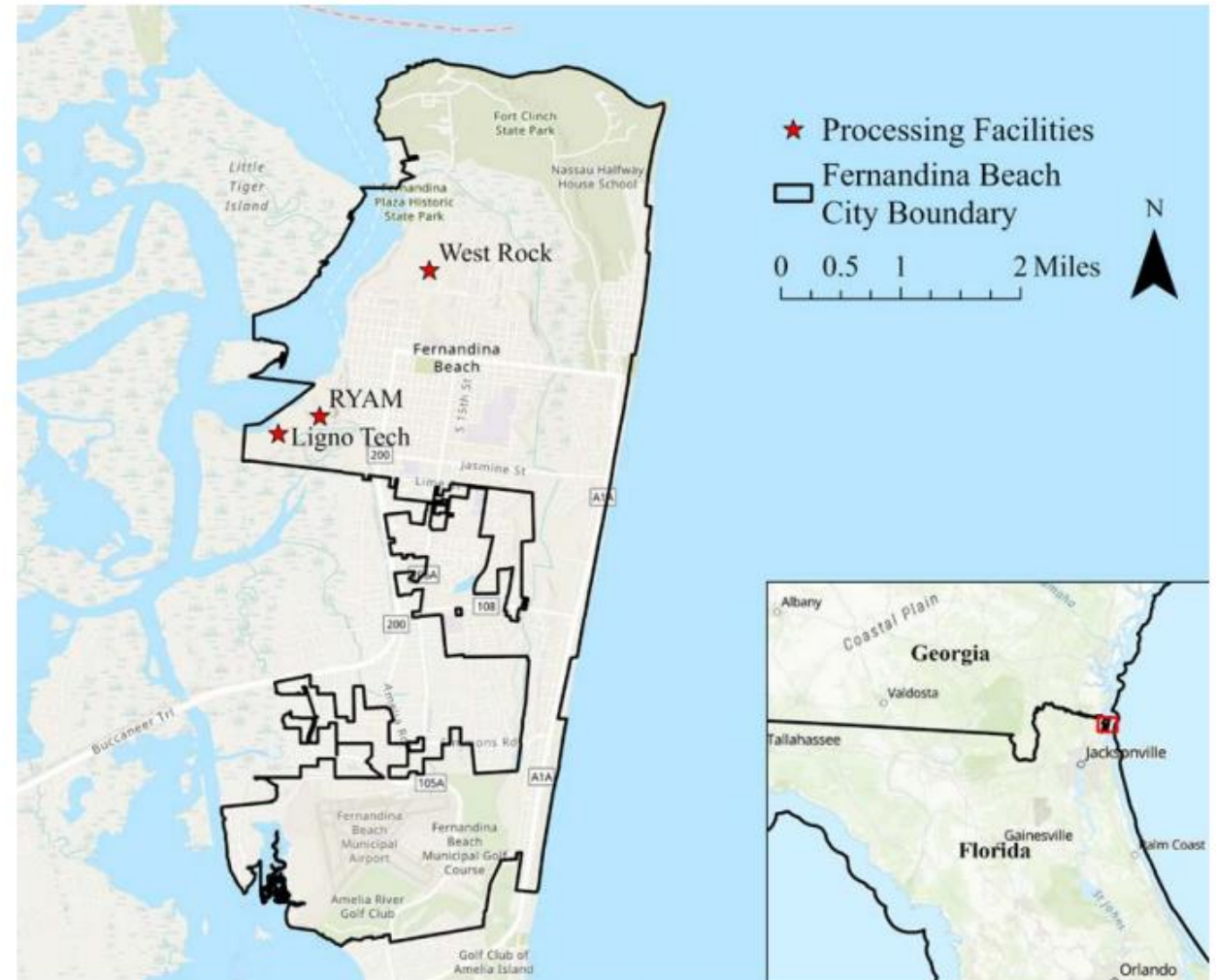
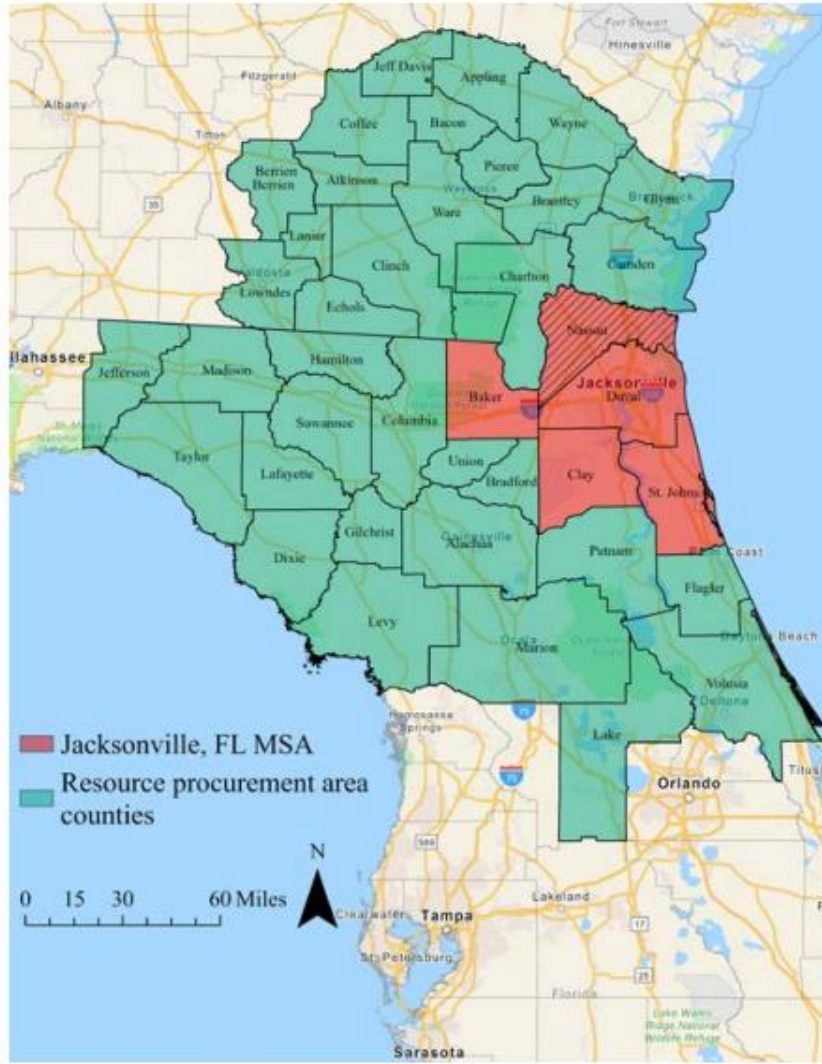


Figure 1. Location map of Fernandina Beach, Florida, and company locations on Amelia Island.

Forest Product Manufacturing Industries in Fernandina Beach, FL (2023)



- **Total production volume included:**
 - 129,645 tons of refined cellulose (RYAM)
 - 789,523 tons of paperboard (Smurfit Westrock)
 - 1.3 billion square feet of paperboard packaging (Smurfit Westrock)
 - 82,000 tons of lignin products (LignoTech)
- **The mills consumed 3.4 million tons of roundwood logs and wood chips from a 41-county wood resource region in northeast FL and southeast GA.**
- **The three companies had a combined total of 1,445 full-time equivalent employees, including full-time, part-time, and contract workers.**
- **Capital improvements to facilities during 2021–23 were valued at \$136.30 million, including**
 - \$127.3 million for plant equipment
 - \$9.01 million for buildings.

Figure 5. Map of the Jacksonville FL MSA, and Florida and Georgia counties in the wood resource procurement region for forest product manufacturing companies in Fernandina Beach, Florida.

...but it doesn't stop there...

- **Fernandina Beach forest product manufacturing activities support additional economic activity throughout the region's economy – namely **indirect and induced contributions**.**



Source: UF/IFAS

Table 4. Summary of economic contributions of forest product manufacturing in Fernandina Beach within the Florida-Georgia wood resource region.

Activity (company), Multiplier Effect	Employment (Jobs)	Output (M\$)	Value Added (M\$)	Employee Compensation (M\$)	Proprietor Income (M\$)	Other Property Income (M\$)	Local, State, Federal Taxes (M\$)
Pulp mill (RYAM)	1,080	\$370.59	\$144.57	\$77.20	\$5.70	\$52.51	\$32.25
Paperboard mill (Smurfit Westrock)	3,054	\$1,056.42	\$459.30	\$229.62	\$27.87	\$173.37	\$100.22
Box plant (Smurfit Westrock)	354	\$138.11	\$46.58	\$22.63	\$3.33	\$16.95	\$10.87
Lignin manufacturing (LignoTech)	162	\$72.93	\$21.27	\$10.52	\$0.89	\$8.15	\$4.89
Capital improvements- buildings (all companies)	29	\$4.63	\$2.34	\$1.39	\$0.24	\$0.58	\$0.56
Capital improvements- equipment (all companies)	297	\$68.60	\$28.74	\$19.24	\$1.15	\$6.58	\$7.17
Total	4,977	\$1,711.28	\$702.79	\$360.60	\$39.17	\$258.14	\$155.97
Direct effects	1,591	\$988.35	\$331.61	\$181.73	\$17.24	\$124.14	\$63.76
Indirect effects	1,917	\$459.52	\$219.62	\$109.99	\$15.61	\$73.24	\$55.16
Induced effects	1,469	\$263.41	\$151.55	\$68.89	\$6.32	\$60.76	\$37.06

Values in millions of 2023 dollars. Employment represents full-time and part-time jobs.

Source: IMPLAN model for 41-county area in Florida and Georgia, 2022 (IMPLAN Group LLC).

Total Economic Contributions by individual activity/company (FL-GA Wood Resource Region)

- Employment and value added contributions within the Florida-Georgia wood resource region were:
 - 1,080 jobs and \$145 million for the pulp mill (RYAM)
 - 3,054 jobs and \$459 million for the paperboard mill (Smurfit Westrock)
 - 354 jobs and \$46.6 million for the paperboard container plant (Smurfit Westrock)
 - 162 jobs and \$21.3 million for lignin manufacturing (LignoTech)
 - 327 jobs and \$31.1 million for capital improvements to buildings and equipment (all companies)

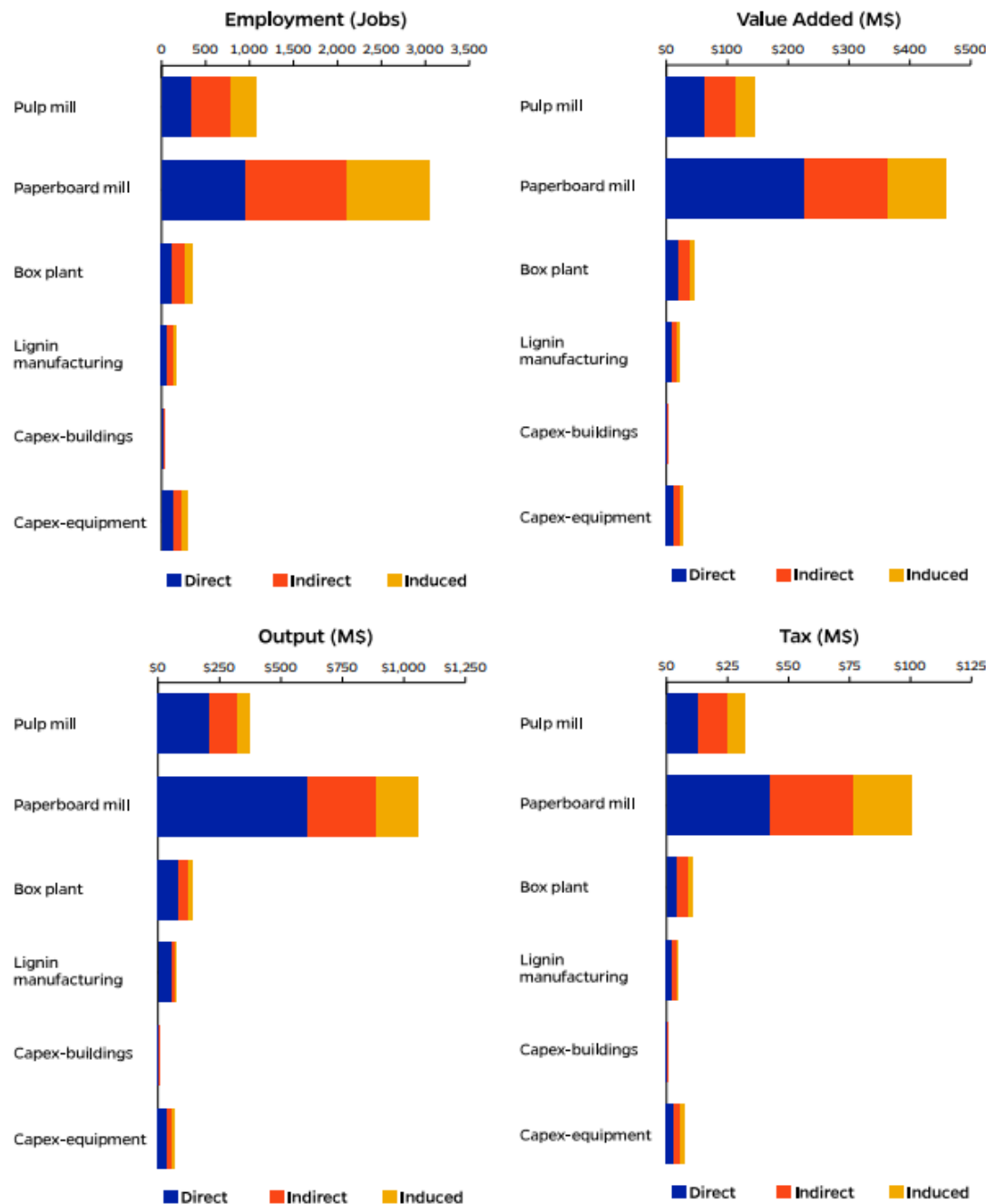


Figure 6. Employment, output, value added, and tax contributions of forest product manufacturing in Fernandina Beach within the Florida-Georgia wood resource region.

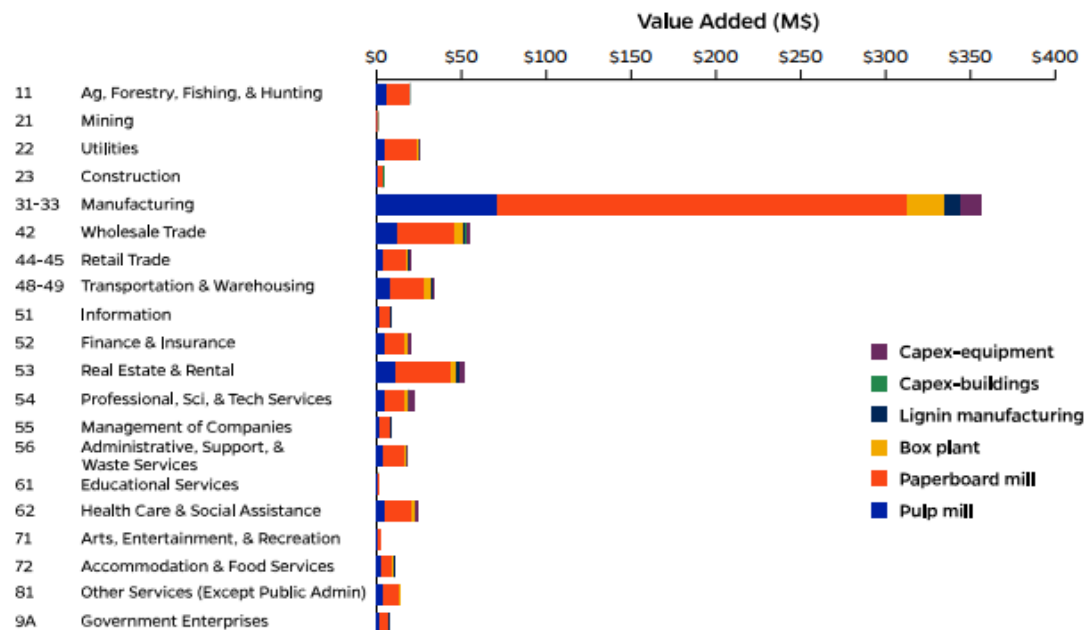
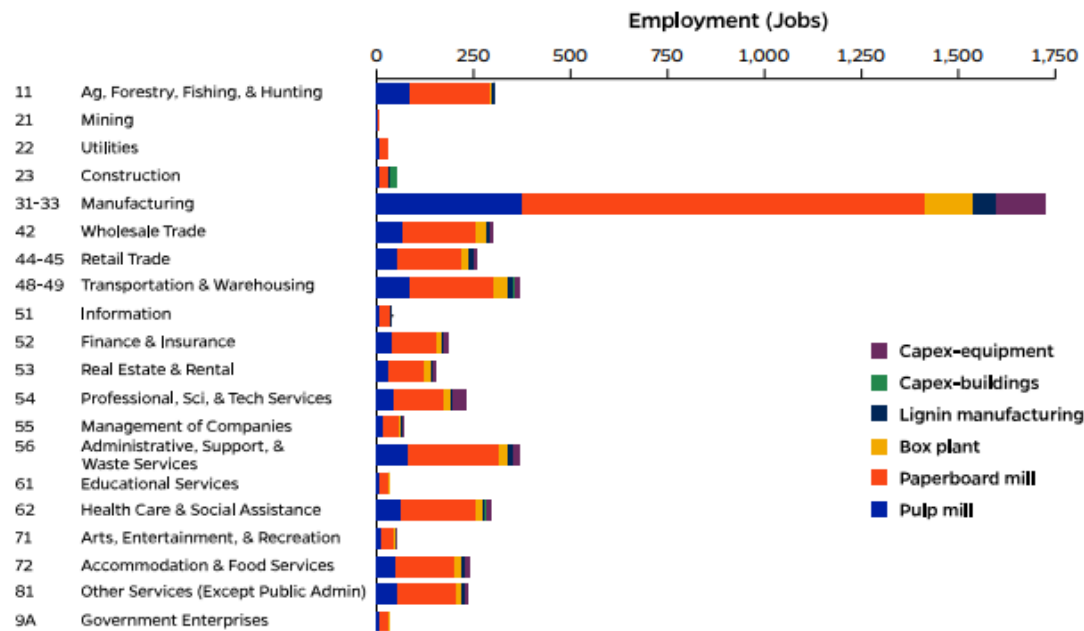


Figure 8. Employment and value added contributions by industry group of forest product manufacturing in Fernandina Beach within the Florida-Georgia wood resource region.
 Values in millions of 2023 dollars. Employment represents full-time and part-time jobs. Estimates include regional multiplier effects.
 Source: IMPLAN model for 41-county area in Florida and Georgia, 2022 (IMPLAN Group LLC).

Total Economic Contributions by major economic sector (FL-GA Wood Resource Region)

- **Manufacturing was the largest contributing sector, with 1,726 jobs, \$1.072 billion in industry output, and \$356 million in value added.**
- **Other sectors with significant employment contributions were:**
 - Transportation & Warehousing (371 jobs)
 - Administrative, Support, & Waste Services (370 jobs)
 - Wholesale Trade (301 jobs)
 - Health Care & Social Assistance (296 jobs)
- **Other sectors with significant value added contributions were:**
 - Wholesale Trade (\$54.6 Million)
 - Real Estate & Rental (\$51.2 million)
 - Transportation & Warehousing (\$33.9 million)
 - Utilities (\$25.0 million)

Table 8. Local, state, and federal tax impacts of forest product manufacturing in Fernandina Beach, within the Florida-Georgia wood resource region.

Industry	County Taxes (M\$)	Subcounty General Taxes (M\$)	Subcounty Special District Taxes (M\$)	Total County, Subcounty Taxes (M\$)	State Taxes (M\$)	Federal Taxes (M\$)	Total Local, State, Federal Taxes (M\$)
Pulp mill (RYAM)	\$1.29	\$1.24	\$1.47	\$4.00	\$5.52	\$22.72	\$32.25
Paperboard mill (Smurfit Westrock)	\$3.99	\$3.85	\$4.57	\$12.41	\$17.23	\$70.58	\$100.22
Box plant (Smurfit Westrock)	\$0.51	\$0.50	\$0.59	\$1.60	\$2.15	\$7.12	\$10.87
Lignin manufacturing (LignoTech)	\$0.24	\$0.23	\$0.27	\$0.75	\$1.00	\$3.15	\$4.89
Capex-buildings (all companies)	\$0.02	\$0.02	\$0.02	\$0.06	\$0.08	\$0.42	\$0.56
Capex-equipment (all companies)	\$0.25	\$0.24	\$0.29	\$0.77	\$1.05	\$5.35	\$7.17
Total	\$6.29	\$6.07	\$7.22	\$19.58	\$27.03	\$109.35	\$155.97

Values in millions of 2023 dollars. Estimates include regional multiplier effects.
Source: IMPLAN model for 41-county area in Florida and Georgia, 2022 (IMPLAN Group LLC).

Table 5. Summary of economic contributions of forest product manufacturing in Fernandina Beach within Nassau County, Florida.

Activity (company), Multiplier Effect	Employment (Jobs)	Output (M\$)	Value Added (M\$)	Employee Compensation (M\$)	Proprietor Income (M\$)	Other Property Income (M\$)	Local, State, Federal Taxes (M\$)
Pulp mill (RYAM)	659	\$268.96	\$91.34	\$47.65	\$8.50	\$30.73	\$19.19
Paperboard mill (Smurfit Westrock)	1,881	\$781.54	\$314.58	\$152.31	\$30.01	\$117.56	\$62.84
Box plant (Smurfit Westrock)	216	\$105.16	\$30.76	\$14.02	\$4.12	\$10.64	\$6.71
Lignin manufacturing (LignoTech)	101	\$59.22	\$3.86	\$1.62	\$0.61	\$1.25	\$0.94
Capital improvements- buildings (all companies)	25	\$3.39	\$1.61	\$0.94	\$0.31	\$0.31	\$0.37
Total	2,883	\$1,218.27	\$442.15	\$216.53	\$43.54	\$160.49	\$90.05
Direct	1,465	\$951.36	\$304.14	\$160.31	\$25.06	\$110.80	\$57.00
Indirect	924	\$184.63	\$88.90	\$39.77	\$15.43	\$25.99	\$21.71
Induced	494	\$82.27	\$49.12	\$16.45	\$3.05	\$23.70	\$11.35

Values in millions of 2023 dollars. Employment represents full-time and part-time jobs.
Source: IMPLAN model for Nassau County, Florida, 2022 (IMPLAN Group LLC).

Total Economic Contributions by individual activity/company (Nassau County)

- **Employment and value added contributions within Nassau County were:**
 - 659 jobs and \$91.3 million for the pulp mill (RYAM)
 - 1,881 jobs and \$315 million for the paperboard mill (Smurfit Westrock)
 - 216 jobs and \$30.8 million for the paperboard container plant (Smurfit Westrock)
 - 101 jobs and \$3.86 million for lignin manufacturing (LignoTech)
 - 25 jobs and \$1.61 million for capital improvements to buildings (all companies; equipment not estimated)

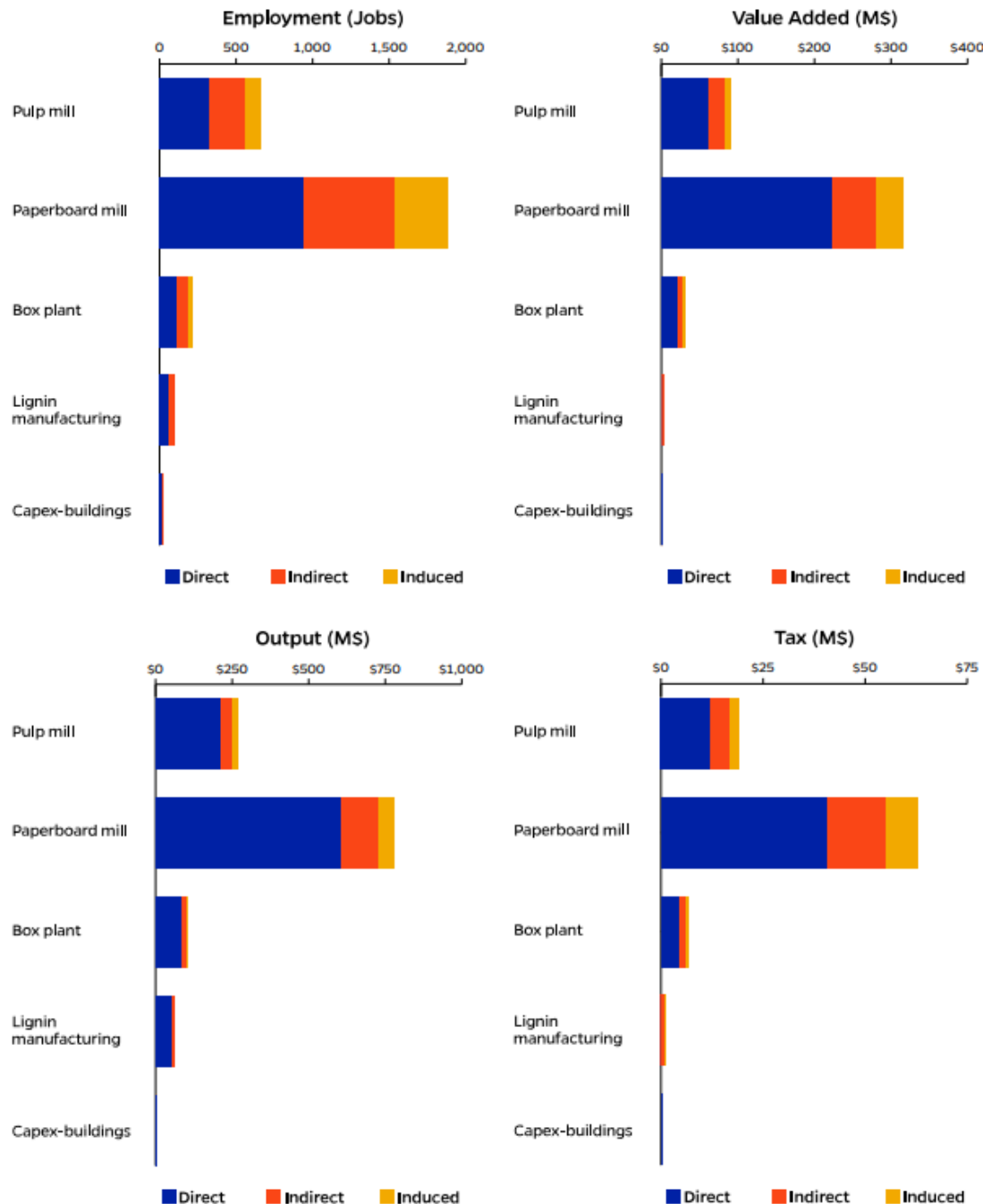


Figure 7. Employment, output, value added, and tax contributions of forest product manufacturing in Fernandina Beach within Nassau County, Florida.

Total Economic Contributions by major economic sector (Nassau County)

- Manufacturing was the largest contributing sector, with 1,495 jobs, \$974 million in industry output, and \$308 million in value added.
- Other sectors with significant employment contributions were:
 - Ag, Forestry, Fishing, & Hunting (275 jobs)
 - Administrative, Support, & Waste Services (196 jobs)
 - Retail Trade (117 jobs)
 - Accommodation & Food Services (117 jobs)
- Other sectors with significant value added contributions were:
 - Real Estate & Rental (\$23.1 million)
 - Wholesale Trade (\$21.5 million)
 - Utilities (\$14.4 million)
 - Ag, Forestry, Fishing, & Hunting (\$10.2 million)

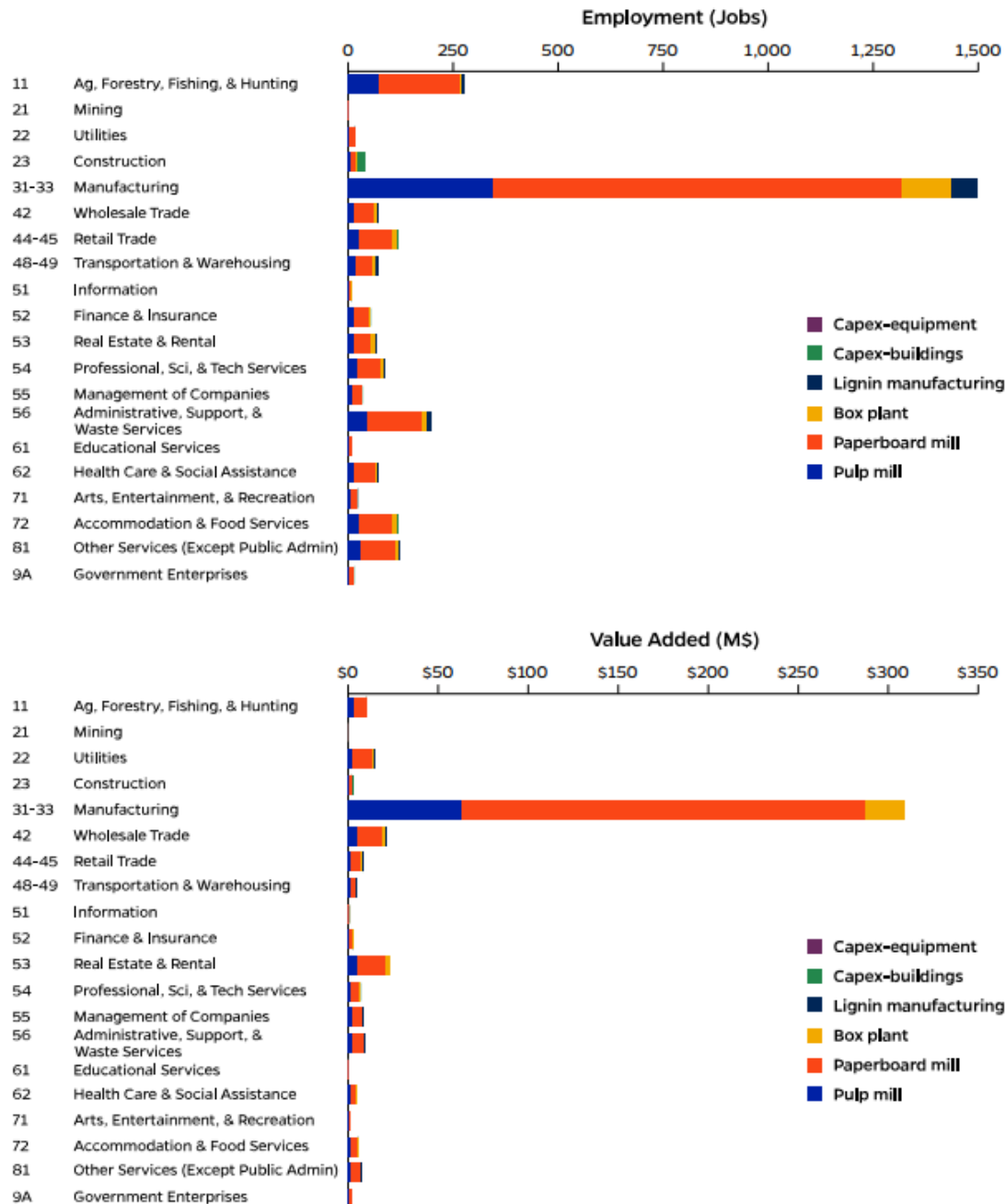


Figure 9. Employment and value added contributions by industry group of forest product manufacturing in Fernandina Beach within Nassau County, Florida.
 Values in millions of 2023 dollars. Employment represents full-time and part-time jobs. Estimates include regional multiplier effects.
 Source: IMPLAN model for Nassau County, Florida, 2022 (IMPLAN Group LLC).

Table 9. Local, state and federal tax impacts of forest product manufacturing in Fernandina Beach within Nassau County, Florida.

Industry	County Taxes (M\$)	Subcounty General Taxes (M\$)	Subcounty Special District Taxes (M\$)	Total County, Subcounty Taxes (M\$)	State Taxes (M\$)	Federal Taxes (M\$)	Total Local, State, Federal Taxes (M\$)
Pulp mill (RYAM)	\$1.25	\$0.24	\$0.79	\$2.28	\$2.26	\$14.65	\$19.19
Paperboard mill (Smurfit Westrock)	\$4.11	\$0.78	\$2.60	\$7.49	\$7.50	\$47.84	\$62.84
Box plant (Smurfit Westrock)	\$0.55	\$0.10	\$0.35	\$1.01	\$0.98	\$4.71	\$6.71
Lignin manufacturing (LignoTech)	\$0.10	\$0.02	\$0.07	\$0.19	\$0.18	\$0.57	\$0.94
Capex-buildings (all companies)	\$0.02	\$0.00	\$0.01	\$0.03	\$0.03	\$0.31	\$0.37
Total	\$6.04	\$1.14	\$3.82	\$11.00	\$10.96	\$68.09	\$90.05

Values in millions of 2023 dollars. Estimates include regional multiplier effects.

Source: IMPLAN model for Nassau County, Florida, 2022 (IMPLAN Group LLC).

Another way to think about it...

A portion of the revenues of the Fernandina Beach forest product manufacturing industry are redistributed within Nassau County.



A dollar is received by the Fernandina Beach forest product manufacturing industries



A portion of that dollar is spent on inputs (goods, services, and employee wages) that originate in Nassau County



A portion of what remains is re-spent on inputs (goods, services, and employee wages) that originate in Nassau County



A portion of what remains is re-spent on inputs (goods, services, and employee wages) that originate in Nassau County

Rounds of spending continue until the portions remaining in Florida are negligible.

Although direct contributions are annual values...there is no set time scale on the rounds of spending.

Adding all local re-spending dollars gives us an output multiplier.

The imputed output multiplier for Fernandina Beach forest product manufacturing (O&M + capex) is:

1.28

This means that for every \$1 of industry output associated with the Fernandina Beach forest product manufacturing industry, an additional \$0.28 of activity is supported throughout Nassau County's economy.



Thank you! Questions?

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