

GEORGIA FORESTRY
COMMISSION



Economic Benefits of the Forestry Industry in Georgia 2008 Final Report

A Program of the Georgia Forestry Commission
with support from Georgia Tech.



Economic Benefits of the Forestry Industry in Georgia: 2008

Final Report

Prepared for
Georgia Forestry Commission
Macon, Georgia

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October 2009

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Executive Summary

Georgia's forestry industry has many components, which interact with all other sectors of the economy in complex ways. The purpose of this analysis is to: (1) quantify the level of economic activity conducted by the components of the forestry industry, (2) estimate economic activity supported in all Georgia sectors by the industry's activities, (3) compare the level of activity in the forestry industry with other industries, and (4) assess the degree of forestry dependence of Georgia's counties.

This report is the latest in a series that began in 2002, but underwent a significant restructuring in 2003 to reflect the change in industry classification systems (from SIC to NAICS) used by data collection agencies (primarily the Georgia Department of Labor) that provide much of the data used in these analyses.

The forestry industry components, and the level of economic activity represented by them, are shown in Table E-1 for 2008. Economic activity is measured by output (similar to sales revenue), employment, and compensation (defined as wages and salaries including benefits plus proprietor income). These measures are traditionally used in this type of analysis.

Table E-1 shows the forestry industry employed 57,812 in all industry sectors combined, paid an annual compensation of over \$3.1 billion, and had estimated total revenue of almost \$18.3 billion. The activities in the sectors bring dollars into the state, which recirculate in a process called the "multiplier effect." The recirculation touches all major industry sectors as goods and services are bought and sold to meet increased demands by businesses and households resulting from the new resources brought into the state by the forestry industry.

Table E-1: Georgia Forestry Industry Economic Activity 2008

<u>Sector</u>	<u>Output</u>	<u>Employment</u>	<u>Compensation</u>
Forestry Management, Logging, and Misc. Forest Products	\$1,698,173,504	5,529	\$255,378,592
Lumber and Wood Preservation	\$1,732,113,024	6,477	\$281,671,680
Veneer, Plywood, Reconstituted, and Engineered Wood	\$961,215,872	4,448	\$210,965,444
Prefabricated Wood Buildings and Manufactured Housing	\$426,574,816	2,983	\$99,465,656
Pulp and Paper Products	\$10,855,959,292	20,816	\$1,565,335,794
Woodworking and Paper Industries Machinery	\$67,305,680	295	\$18,465,906
Wooden Furniture and Cabinets	\$1,058,247,482	8,235	\$330,157,350
Windows and Doors	\$720,966,464	3,967	\$172,845,536
Containers, Showcases, Partitions, and Shelving	\$654,329,040	4,506	\$171,501,616
Custom Architectural and Miscellaneous Wood Products	<u>\$95,202,311</u>	556	<u>\$25,267,894</u>
Total	\$18,270,087,485	57,812	\$3,131,055,468

The result of the multiplier effect, given by total impacts (which includes the economic activity in Table E-1¹), is also measured by output, employment, and income and is shown in Table E-2. Total economic activity supported by the forestry industry in Georgia (including the multiplier effect and federal payments to landowners of about \$14.5 million) is over \$28.7 billion. This activity employs 128,388 people whose compensation is over \$6.5 billion.

Table E-2: Total Benefits by Major Industry Sector 2008

Sector	Output	Employment	Compensation
Agriculture, Forestry, Fishing and Hunting	\$2,245,841,920	10,492	\$407,427,936
Mining	\$9,670,426	41	\$3,263,116
Utilities	\$737,002,560	922	\$141,627,456
Construction	\$201,215,568	2,029	\$86,304,160
Manufacturing	\$17,863,469,056	55,394	\$3,086,833,664
Wholesale Trade	\$1,442,124,672	7,410	\$556,886,272
Transportation and Warehousing	\$482,971,680	7,641	\$208,826,240
Retail Trade	\$944,089,920	6,500	\$325,535,776
Information	\$379,788,544	911	\$97,847,800
Finance and Insurance	\$669,709,120	2,873	\$212,344,224
Real Estate and Rental	\$913,338,816	2,941	\$84,191,544
Professional, Technical, and Scientific Services	\$658,372,224	4,837	\$330,928,448
Management of Companies	\$482,664,608	2,181	\$222,345,216
Administrative and Waste Services	\$341,560,672	5,262	\$156,872,144
Educational Services	\$52,509,968	867	\$27,720,888
Health and Social Services	\$419,467,392	5,056	\$225,027,040
Arts, Entertainment and Recreation	\$55,178,140	1,176	\$25,940,050
Accommodation and Food Services	\$324,991,296	5,583	\$110,053,456
Other Services	\$347,570,016	5,166	\$131,904,096
Government and Non-NAICS Industries	\$150,705,584	1,106	\$72,555,512
Total	\$28,722,668,524	128,388	\$6,514,435,038

Another way to examine the forestry industry in Georgia is to compare it with other manufacturing sectors. Table E-3 lists 2008 income and employment totals for each major industry sector sorted by total wages. These data show that forestry ranks second in total income generated, and third in total employment. Food processing ranks first in income and employment; textiles (dominated by carpet) ranks second in employment and fourth in income. Forestry's second rank in income is very close to first-ranked food processing in income, reflecting forestry's relatively higher average wages.

¹ The economic activity in Table E-1 contains more than just the direct impacts because some of the inter-industry purchasing (indirect impacts) is necessarily contained in the estimates of economic activity.

Of particular importance to Georgia's state government is how the forestry industry affects its annual budget. This is investigated by estimating the revenues associated with the forestry industry's total economic activity and subtracting the costs associated with providing state services to Georgia's households and companies associated with that activity. Revenues include individual and corporate income tax, sales and use taxes, highway taxes, fees, and miscellaneous revenues. Costs include education, public health, safety and welfare, highways, administration, and miscellaneous. Table E-4 provides the fiscal impact estimates based on total impacts. The forestry industry generates an estimated \$539 million per year in revenues for the state budget. When the costs of providing services to all employees are deducted from these revenues, net annual state revenues are over \$206 million for 2008.

Table E-3: Comparison of Georgia Industries 2007

<u>Sector</u>	<u>Employment</u>	<u>Wages & Salaries</u>
Food Processing	67,504	\$2,889,643,252
Forestry Industry	57,812	\$2,446,122,916
Transportation Equipment	41,247	\$2,407,986,059
Textiles	59,831	\$2,068,017,538
Fabricated Metal Products	29,279	\$1,126,303,819
Machinery	23,275	\$1,091,119,682
Chemicals	21,162	\$1,269,687,337
Printing	19,522	\$869,785,674
Electrical Equipment and Appliances	15,295	\$929,074,016
Computers and Electronic Products	13,720	\$878,435,928
Apparel	4,608	\$155,257,134

Table E-4: Fiscal Impact Analysis 2008

Annual State Government Revenues	\$538,988,062
Annual State Government Costs	<u>\$332,950,843</u>
Net Annual Revenues	\$206,037,219

Table E-5 extracts information from several tables to present a comparison of the overall results obtained in each impact analysis conducted from 2003 through 2008. All measures show growth between 2003 and 2004 and between 2004 and 2005. The highest growth rates are in industry output which grew between 10 and 14 percent depending on the year and whether it is being calculated for forestry industry activity or total activity. Compensation also increased for these periods. In the 2003 to 2004 period, forestry industry compensation increased by 9.7 percent and total compensation increased by 12 percent without considering inflation. From 2004 to 2005, the rate of increase was

somewhat lower – 4 percent for the forestry industry and 9 percent for total impacts. Employment increases are more modest, increasing 3 percent and 7 percent for forestry industry and total impacts, respectively, in the 2003 to 2004 period. Although employment from total impacts grew an estimated 6 percent between 2004 and 2005, forestry industry employment was essentially flat.

In the 2006 to 2007 period, forestry industry employment declined by 5.2 percent and employment from total impacts fell by 5.5 percent. The two sectors which declined the most (in percentage terms) were prefabricated buildings and veneer, plywood, and reconstituted wood products. Productivity increases are apparent in forestry industry sectors (pulp and paper products, for example) as well as sectors stimulated by the multiplier effect which would serve to allow output increases with employment declines.

Table E-5: Comparison of Results 2003 to 2008

(Dollars in millions not adjusted for inflation; Employment in persons)

Forestry Industry Economic Activity	2003	2004	2005	2006	2007	2008
Output	\$12,679	\$14,163	\$16,150	\$17,760	\$18,459	\$18,270
Employment	65,706	67,633	67,694	67,733	64,192	57,812
Compensation	\$3,007	\$3,299	\$3,422	\$3,513	\$3,394	\$3,131
		Year to Year Percent Change				
Output		11.70%	14.04%	9.97%	3.93%	-1.02%
Employment		2.93%	0.09%	0.06%	-5.23%	-9.94%
Compensation		9.71%	3.71%	2.67%	-3.38%	-7.75%
Total Impacts	2003	2004	2005	2006	2007	2008
Output	\$20,199	\$22,729	\$25,972	\$27,738	\$28,547	\$28,723
Employment	136,022	144,944	154,147	149,347	141,155	128,388
Compensation	\$5,600	\$6,276	\$6,827	\$6,773	\$6,696	\$6,514
		Year to Year Percent Change				
Output		12.53%	14.27%	6.80%	2.92%	0.61%
Employment		6.56%	6.35%	-3.11%	-5.49%	-9.04%
Compensation		12.07%	8.77%	-0.79%	-1.13%	-2.71%
Fiscal Impact	2003	2004	2005	2006	2007	2008
State Revenues	\$514	\$546	\$591	\$580	\$566	\$539
State Costs	\$368	\$392	\$414	\$400	\$373	\$333
Net Revenues	\$147	\$155	\$176	\$180	\$193	\$206
Source: EII impact assessments and Georgia Department of Labor, Current Employment and Wages.						

The most recent (2007-2008) period shows significant declines in both employment and compensation, and a small decrease in output for economic activity. The greater decline in employment indicates that more of the employment loss is at the bottom of the income scale. The declines in employment and compensation are also seen in the total impacts, but the output estimate shows a slight increase in 2008 over 2007.

The apparent increase in output (total impacts) given the significant decline in employment and the more moderate decline in compensation, however, deserves additional consideration. It should be noted that in estimating economic activity the core data (Department of Labor CEW statistics) only provide wage and employment information and do not include output measures. These must therefore be estimated and in any estimation there is some margin of error. It is not surprising, however, to see employment and compensation declines greater than output declines (as seen in the forest industry economic activity results) because firms, logically, would reduce their least productive activities first in a contraction. This explains why the output estimated for economic activity declined less than employment or compensation. It does not explain why output estimates of total impact show growth, albeit small growth.

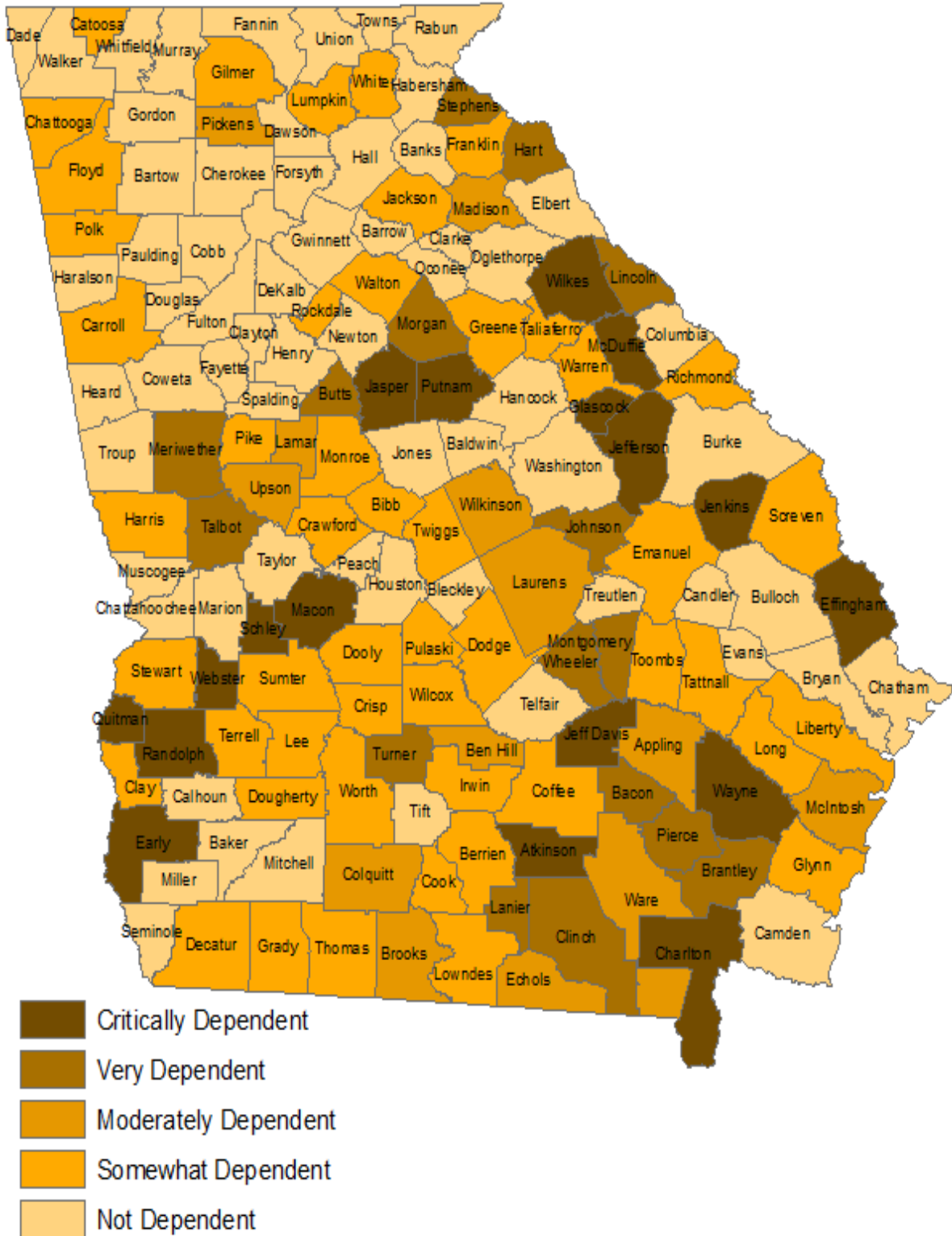
A more detailed examination of where the output estimates revealed higher than expected estimates of input demands (indirect impacts) in a number of sectors that have nothing to do with the forestry industry. A reorganization of industry sectors in the 2007 Implan data, and the accompanying production functions, make it impossible to identify all of the influences leading to the higher output estimates, but it appears that small changes were made in many places that accumulated to provide these results.

Forestry Dependent Communities

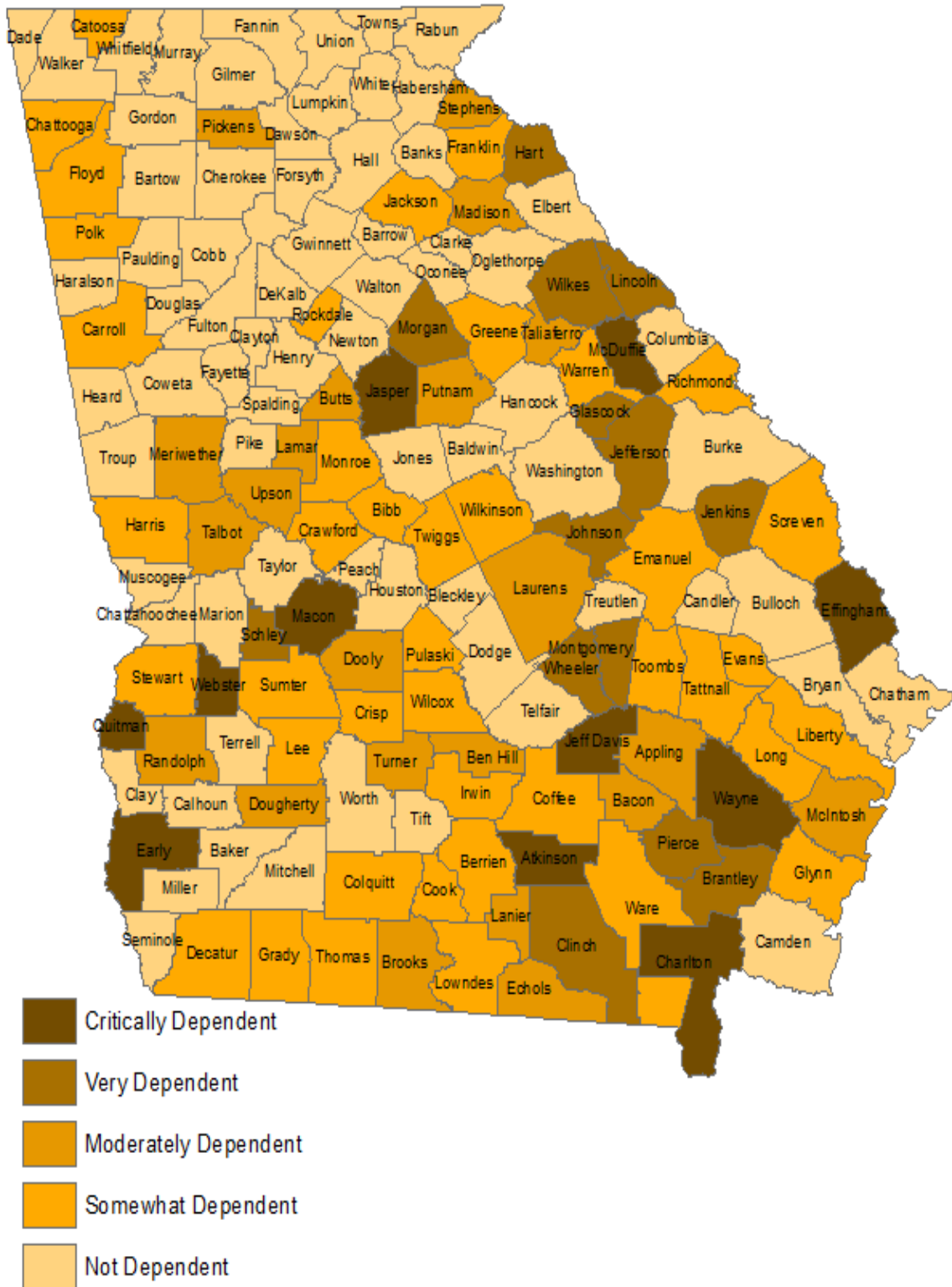
The economies of Georgia's counties are all dependent upon their ability to bring resources into their areas. There is no clear definition of "dependence" so two measures were developed. The first is based on employment where "critically dependent" counties have more than 10 percent of their total private-sector employment in the forestry industry. "Very dependent" counties have between 6 percent and 10 percent of their employment in forestry industries and "moderately dependent," "somewhat dependent," and "not dependent" have between 4 percent and 5.9 percent, 1.6 percent and 3.9 percent, and less than 1.6 percent of their employment in forestry industries, respectively. Figure E-1 depicts the degree of economic dependence on forestry, as measured by its proportion of total employment.

Another measure of dependence is provided by wages and salaries. For this measure, counties are considered "critically dependent" if more than 15 percent of total private-sector wages and salaries are from forestry-related industries. "Very dependent" counties have between 10 percent and 15 percent of their employment in forestry industries and "moderately dependent," "somewhat dependent," and "not dependent" have between 5 percent and 10 percent, 2 percent and 5 percent, and less than 2 percent of their wages and salaries from forestry industries, respectively. Figure E-2 depicts the degree of economic dependence on forestry, as measured by its proportion of total wages and salaries.

**Figure E-1
Forestry Dependency Based on Employment 2008**



**Figure E-2
Forestry Dependency Based on Income 2008**



SECTION 1

Introduction

Georgia's forestry industry contains many components and supports a significant proportion of the state's economic activity. This analysis quantifies that activity in terms of economic output, employment, and household income where economic output is defined as business revenues and household compensation is defined as wages, salaries (including benefits), and proprietor income. Additional factors considered include how the manufacturing components in the forestry industry compare to other manufacturing sectors, and how the industry affects state government costs and revenues.

The first step in this process is to define the limits of what constitutes the "forestry industry." This is not as simple a task as it may appear because the borders of one industry overlap those of other industries. How this was done and its results appear in Section 2, which also contains estimates of how much economic activity is occurring in each component of the forestry industry.

After the industry was defined and activities quantified, the total economic activity supported by the forestry industry was estimated. Total activity is generally referred to as the "multiplier effect." This effect occurs whenever dollars are brought into the state's economy and recirculated before leaking out. Section 3 explains the methodology used to estimate total economic activity and provides perspective on how important these activities are in the overall Georgia economy.

Section 4 examines how important the forestry components are to the existing industry base in each of Georgia's counties and divides counties into five categories according to their degree of dependence on forestry.

This report is the latest of a series of reports begun with an analysis of the 2002 impacts and continues annually to the present analysis. The 2002 analysis is not comparable to the subsequent analyses, however, because of a significant change in the industry classification systems implemented in the 2003 data set. The 2002 analysis is based on the Standard Industry Classification system (SIC) and the later data sets use the North American Industrial Classification System (NAICS).

SECTION 2

Definition of the Forestry Industry in Georgia

The forestry industry in Georgia has many diverse components. A general definition would include all service and manufacturing activity related to the growth, harvesting, and use of forest materials that would not exist in Georgia without the presence of extensive forests or forest industries. For example, the papermaking industry would be a part of the forestry industry definition, but retail sales of that paper would not. States without commercial forests still sell paper within their borders.

Therefore, the forestry industry definition used in this analysis includes these broad sectors: forestry, logging, wood products (such as dimension lumber), paper products, manufactured housing, furniture, other miscellaneous wood products, and woodworking and papermaking machinery. The 2007 North American Industrial Classification System (NAICS) is used to define the components of the forestry industry. The NAICS codes and descriptions comprising the detailed definition appear in Table 2-1.

Table 2-1: Forestry Industry Definition Components: NAICS

NAICS Code	Description
113	<i>Forestry and Logging</i>
1131	<i>Timber Tract Operations</i>
11311	<i>Timber Tract Operations</i>
1132	<i>Forest Nurseries and Gathering of Forest Products</i>
11321	<i>Forest Nurseries and Gathering of Forest Products</i>
1133	<i>Logging</i>
11331	<i>Logging</i>
115	<i>Support Activities for Agriculture and Forestry</i>
1153	<i>Support Activities for Forestry</i>
115310	<i>Support Activities for Forestry</i>
321	<i>Wood Product Manufacturing</i>
3211	<i>Sawmills and Wood Preservation</i>
32111	<i>Sawmills and Wood Preservation</i>
321113	<i>Sawmills</i>
321114	<i>Wood Preservation</i>
3212	<i>Veneer, Plywood, and Engineered Wood Product Manufacturing</i>
32121	<i>Veneer, Plywood, and Engineered Wood Product Manufacturing</i>
321211	<i>Hardwood Veneer and Plywood Manufacturing</i>
321212	<i>Softwood Veneer and Plywood Manufacturing</i>
321213	<i>Engineered Wood Member (except Truss) Manufacturing</i>
321214	<i>Truss Manufacturing</i>
321219	<i>Reconstituted Wood Product Manufacturing</i>
3219	<i>Other Wood Product Manufacturing</i>

32191	<i>Millwork</i>
321911	<i>Wood Window and Door Manufacturing</i>
321912	<i>Cut Stock, Resawing Lumber, and Planing</i>
321918	<i>Other Millwork (including Flooring)</i>
32192	<i>Wood Container and Pallet Manufacturing</i>
32199	<i>All Other Wood Product Manufacturing</i>
321991	<i>Mobile Homes</i>
321992	<i>Prefabricated Wood Building Manufacturing</i>
321999	<i>All Other Miscellaneous Wood Product Manufacturing</i>
322	<i>Paper Manufacturing</i>
3221	<i>Pulp, Paper, and Paperboard Mills</i>
32211	<i>Pulp Mills</i>
32212	<i>Paper Mills</i>
322121	<i>Paper (except Newsprint) Mills</i>
322122	<i>Newsprint Mills</i>
32213	<i>Paperboard Mills</i>
3222	<i>Converted Paper Product Manufacturing</i>
32221	<i>Paperboard Container Manufacturing</i>
322211	<i>Corrugated and Solid Fiber Box Manufacturing</i>
322212	<i>Folding Paperboard Box Manufacturing</i>
322213	<i>Setup Paperboard Box Manufacturing</i>
322214	<i>Fiber Can, Tube, Drum, and Similar Products Manufacturing</i>
322215	<i>Non-folding Sanitary Food Container Manufacturing</i>
32222	<i>Paper Bag and Coated and Treated Paper Manufacturing</i>
322221	<i>Coated and Laminated Packaging Paper and Plastics Film Manufacturing</i>
322222	<i>Coated and Laminated Paper Manufacturing</i>
322223	<i>Plastics, Foil, and Coated Paper Bag Manufacturing</i>
322224	<i>Uncoated Paper and Multiwall Bag Manufacturing</i>
322225	<i>Laminated with Foil for Flexible Packaging</i>
322226	<i>Surface-Coated Paperboard Manufacturing</i>
32223	<i>Stationery Product Manufacturing</i>
322231	<i>Die-Cut Paper and Paperboard Office Supplies Manufacturing</i>
322232	<i>Envelope Manufacturing</i>
322233	<i>Stationery, Tablet, and Related Product Manufacturing</i>
32229	<i>Other Converted Paper Product Manufacturing</i>
322291	<i>Sanitary Paper Product Manufacturing</i>
322299	<i>All Other Converted Paper Product Manufacturing</i>
33321	<i>Sawmill and Woodworking Machinery Manufacturing</i>
333291	<i>Paper Industry Machinery Manufacturing</i>
337	<i>Furniture & Related Product Manufacturing</i>
3371	<i>Household and Institutional Furniture and Kitchen Cabinet Manufacturing</i>

33711	<i>Wood Kitchen Cabinet and Countertop Manufacturing</i>
33712	Household and Institutional Furniture Making
337121	<i>Upholstered Household Furniture Manufacturing</i>
337122	<i>Non-Upholstered Wood Household Furniture Manufacturing</i>
337127	<i>Institutional Furniture Manufacturing</i>
337129	<i>Wood Television, Radio, and Sewing Machine Cabinet Manufacturing</i>
337211	<i>Wood Office Furniture Manufacturing</i>
337212	<i>Custom Architectural Woodwork and Millwork Manufacturing</i>
337215	<i>Showcase, Partition, Shelving, and Locker Manufacturing</i>
333	Machinery Manufacturing
3332	Industrial Machinery Manufacturing
33321	<i>Sawmill and Woodworking Machinery Manufacturing</i>
33329	Other Industrial Machinery Manufacturing
333291	<i>Paper Industry Machinery Manufacturing</i>
339	Miscellaneous Manufacturing
3399	Other Miscellaneous Manufacturing
33999	All Other Miscellaneous Manufacturing
339995	<i>Burial Casket Manufacturing</i>
Source: North American Industrial Classification System, and Georgia Tech's Enterprise Innovation Institute	

The organization of industries on this list is hierarchical, that is, the NAICS code digits increase as the level of detail increases. The highest level of detail is the six-digit level. In some cases, however, the six-digit industry is the same as the five-digit industry, so these duplications are not presented in Table 2-1. For example, industry 11311 (timber tract operations) does not break down into smaller components, so the six-digit industry (which would be 113110) is omitted because it's redundant.

In some cases, the higher-level NAICS industries contain components that are not a part of the forestry industry. For example, metal furniture is included in NAICS 3371, but is not included at the six-digit level used to define the forestry industry. Each component containing only forestry-related industries is indicated by italicized text in the table. Non-forestry-related components have been eliminated.

The level of economic activity in each forestry industry component is measured by output, employment, and income. Measures for the 2008 calendar year appear in Table 2-2, which aggregates the numerous categories from Table 2-1 to a more manageable number. This table shows that total employment in all of the forestry industry sectors is 57,812 and these jobs earned annual compensation (total wages and salaries including benefits) of over \$3.1 billion from estimated total revenue of almost \$18.3 billion.

Within the industry, Georgia companies have representatives in each of the sectors and subsectors down to the NAICS six-digit level. Based on this aggregation scheme, the highest employment is seen in pulp and paper with 20,816 workers followed by wooden furniture and cabinets with 8,235. Several additional segments have employment exceeding 5,000, including wood lumber and wood preservation, veneer and plywood,

and logging and nurseries. Compensation, like employment, is dominated by pulp and paper with almost \$1.6 billion (about half the total) followed distantly by wood furniture and cabinets at over \$330 million and lumber and wood preservation at almost \$282 million. The largest outputs are produced by pulp and paper (about \$10.9 billion) followed by lumber and logging, (about \$1.7 billion, each) and veneer and plywood at almost \$1.0 billion.

Table 2-2: Georgia Forestry Industry Economic Activity 2008

Sector	Output	Employment	Compensation
Forestry Management, Logging, and Misc. Forest Products	\$1,698,173,504	5,529	\$255,378,592
Lumber and Wood Preservation	\$1,732,113,024	6,477	\$281,671,680
Veneer, Plywood, Reconstituted, and Engineered Wood	\$961,215,872	4,448	\$210,965,444
Prefabricated Wood Buildings and Manufactured Housing	\$426,574,816	2,983	\$99,465,656
Pulp and Paper Products	\$10,855,959,292	20,816	\$1,565,335,794
Woodworking and Paper Industries Machinery	\$67,305,680	295	\$18,465,906
Wooden Furniture and Cabinets	\$1,058,247,482	8,235	\$330,157,350
Windows and Doors	\$720,966,464	3,967	\$172,845,536
Containers, Showcases, Partitions, and Shelving	\$654,329,040	4,506	\$171,501,616
Custom Architectural and Miscellaneous Wood Products	<u>\$95,202,311</u>	<u>556</u>	<u>\$25,267,894</u>
Total	\$18,270,087,485	57,812	\$3,131,055,468

Table 2-3 provides a comparison of the forestry industry activity for 2004 to 2008. Three measures are included in the comparison: output, employment, and compensation. Output (an estimate of the firms revenues) decreased slightly over the 2007-2008 period, but the decline was uneven across industry sectors with some showing an increase.

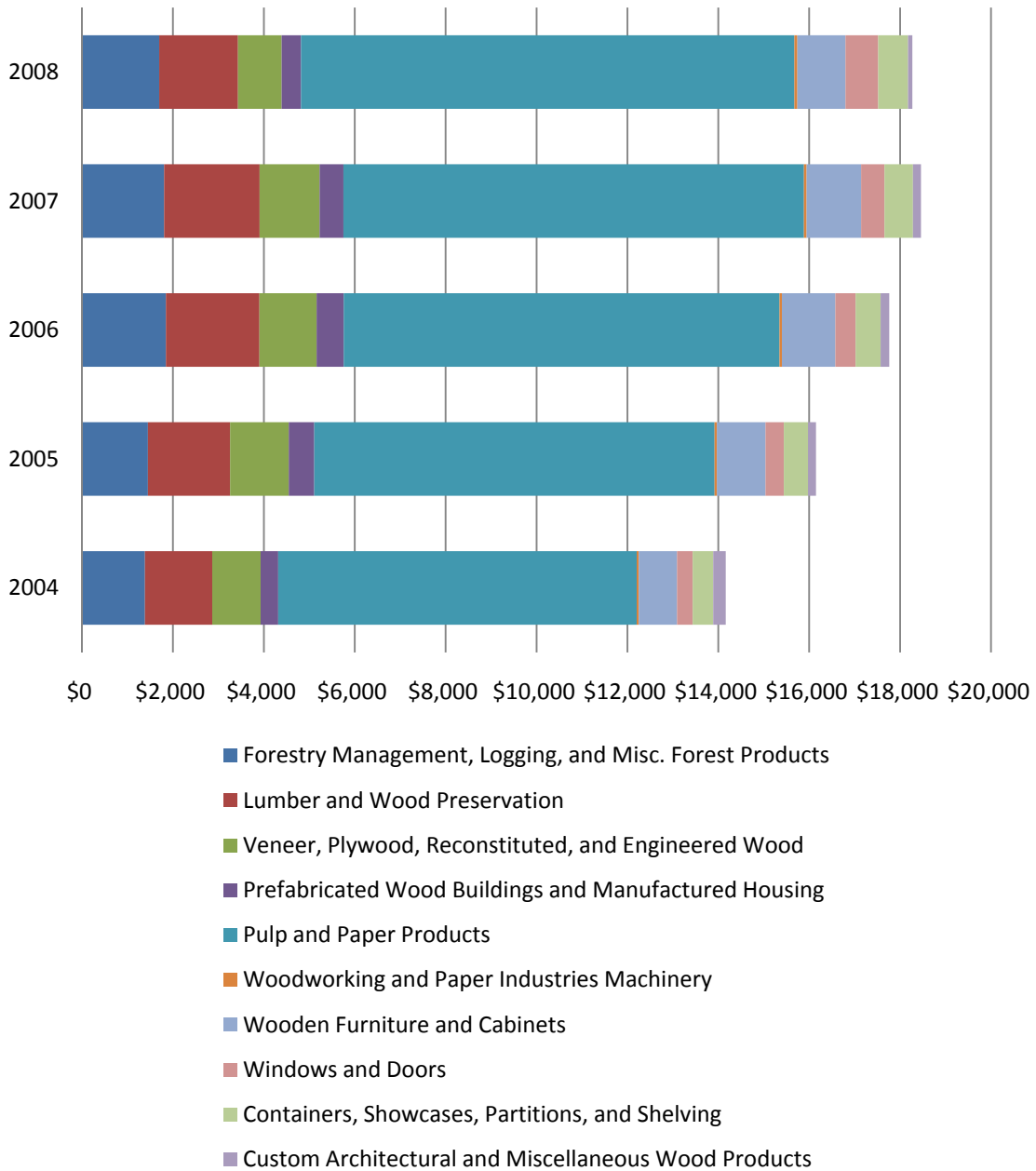
Overall employment dropped between 2007 and 2008 with the largest number of jobs lost in the lumber and wood preservation sector, probably due to the precipitous decline in housing construction. The pulp and paper sector, which has shown consistent declines over the years shown, was the second largest employment decline. All other sectors also showed employment declines except for window and door employment which showed an unexpected increase.

Changes in employee compensation are generally negative over the most recent period, but with one exception. From 2007 to 2008, the largest declines are in the same sectors as the declines in employment (lumber and wood preservation, and pulp and paper) and the increase was in wooden windows and doors.

Table 2-3: Forestry Industry Activity 2004 - 2008 Comparison

(Note: Values not adjusted for inflation)					
Sector	Output (Millions of Dollars)				
	2004	2005	2006	2007	2008
Forestry Management, Logging, and Misc. Forest Products	\$1,384	\$1,447	\$1,846	\$1,807	\$1,698
Lumber and Wood Preservation	\$1,482	\$1,811	\$2,057	\$2,100	\$1,732
Veneer, Plywood, Reconstituted, and Engineered Wood	\$1,062	\$1,290	\$1,260	\$1,322	\$961
Prefabricated Wood Buildings and Manufactured Housing	\$388	\$561	\$596	\$523	\$427
Pulp and Paper Products	\$7,888	\$8,808	\$9,590	\$10,131	\$10,856
Woodworking and Paper Industries Machinery	\$47	\$53	\$52	\$61	\$67
Wooden Furniture and Cabinets	\$841	\$1,066	\$1,176	\$1,197	\$1,058
Windows and Doors	\$344	\$406	\$446	\$517	\$721
Containers, Showcases, Partitions, and Shelving	\$454	\$533	\$548	\$624	\$654
Custom Architectural and Miscellaneous Wood Products	<u>\$274</u>	<u>\$175</u>	<u>\$190</u>	<u>\$177</u>	<u>\$95</u>
Total	\$14,163	\$16,150	\$17,760	\$18,459	\$18,270
Employment					
	2004	2005	2006	2007	2008
Forestry Management, Logging, and Misc. Forest Products	6,005	6,133	6,152	5,914	5,529
Lumber and Wood Preservation	8,505	8,839	8,957	8,773	6,477
Veneer, Plywood, Reconstituted, and Engineered Wood	6,588	7,110	6,963	6,004	4,448
Prefabricated Wood Buildings and Manufactured Housing	3,494	4,531	4,500	3,581	2,983
Pulp and Paper Products	25,032	23,150	22,861	21,651	20,816
Woodworking and Paper Industries Machinery	292	319	314	304	295
Wooden Furniture and Cabinets	8,685	8,867	9,308	8,914	8,235
Windows and Doors	2,522	2,446	2,598	3,043	3,967
Containers, Showcases, Partitions, and Shelving	5,031	4,788	4,618	4,733	4,506
Custom Architectural and Miscellaneous Wood Products	<u>1,479</u>	<u>1,511</u>	<u>1,462</u>	<u>1,275</u>	<u>556</u>
Total	67,633	67,694	67,733	64,192	57,812
Compensation (Millions of Dollars)					
	2004	2005	2006	2007	2008
Forestry Management, Logging, and Misc. Forest Products	\$234	\$254	\$267	\$273	\$255
Lumber and Wood Preservation	\$353	\$385	\$400	\$391	\$282
Veneer, Plywood, Reconstituted, and Engineered Wood	\$312	\$341	\$353	\$291	\$211
Prefabricated Wood Buildings and Manufactured Housing	\$122	\$164	\$165	\$119	\$99
Pulp and Paper Products	\$1,616	\$1,595	\$1,630	\$1,602	\$1,565
Woodworking and Paper Industries Machinery	\$18	\$20	\$18	\$19	\$18
Wooden Furniture and Cabinets	\$302	\$323	\$343	\$341	\$330
Windows and Doors	\$104	\$104	\$100	\$115	\$173
Containers, Showcases, Partitions, and Shelving	\$181	\$169	\$175	\$191	\$172
Custom Architectural and Miscellaneous Wood Products	<u>\$57</u>	<u>\$66</u>	<u>\$61</u>	<u>\$53</u>	<u>\$25</u>
Total	\$3,299	\$3,422	\$3,513	\$3,394	\$3,131

**Figure 2-1
Economic Activity: Output by Sector
(Dollars in Millions)**



**Figure 2-2
Forestry Industry Economic Activity:
Employment by Sector**

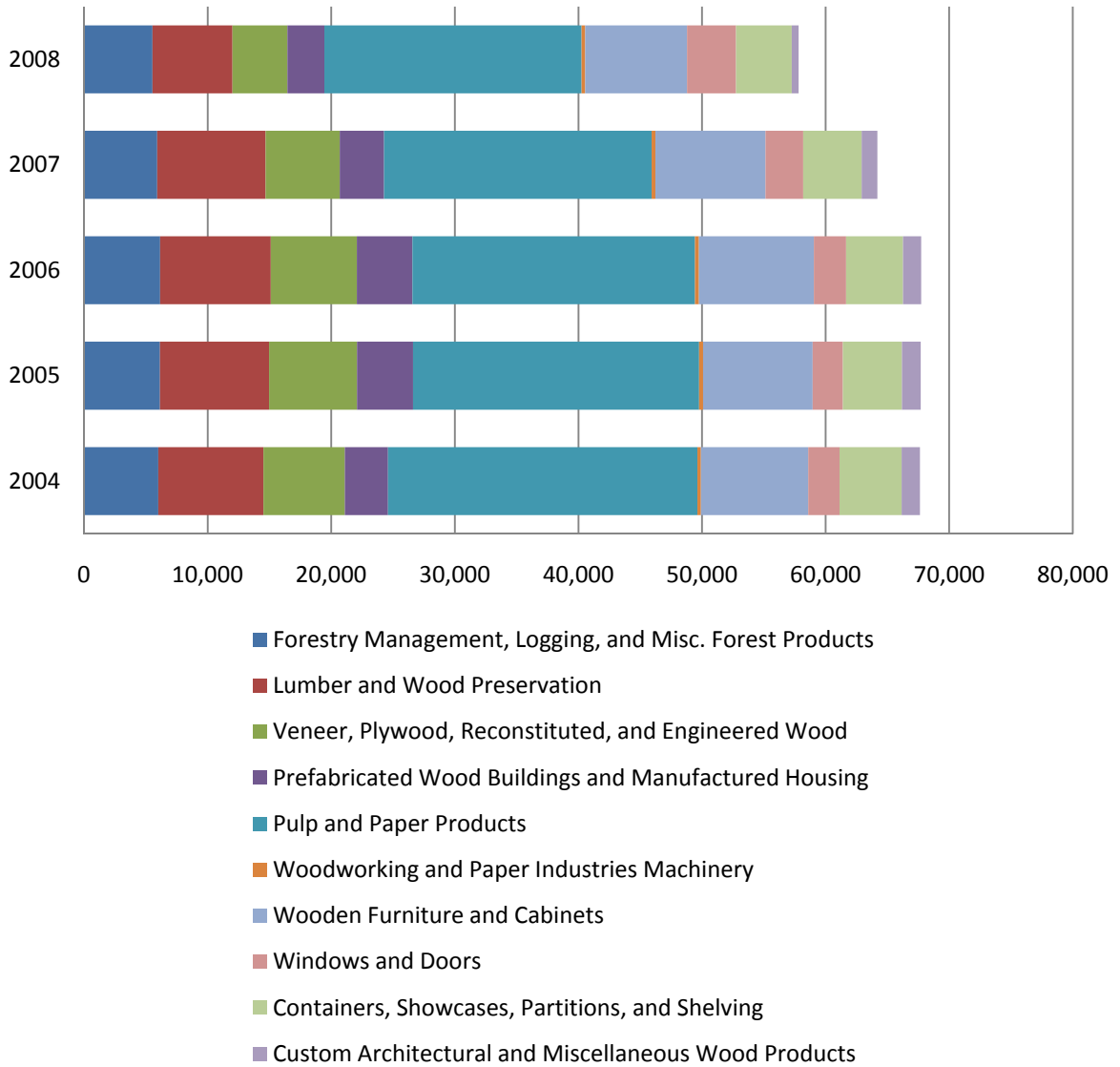
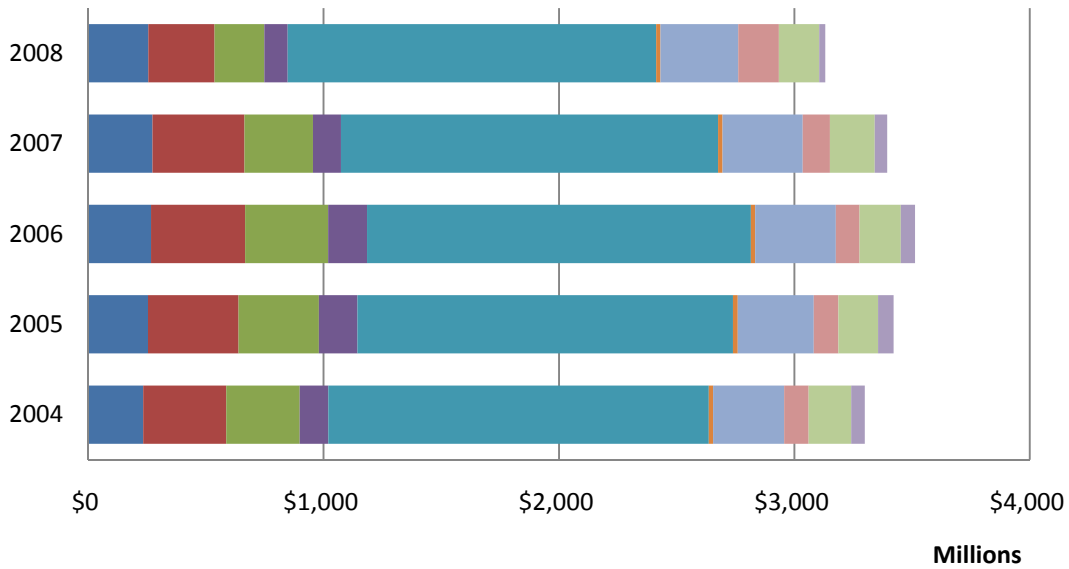


Figure 2-3
Forestry Industry Economic Activity:
Compensation by Sector (Dollars in Millions)



- Forestry Management, Logging, and Misc. Forest Products
- Lumber and Wood Preservation
- Veneer, Plywood, Reconstituted, and Engineered Wood
- Prefabricated Wood Buildings and Manufactured Housing
- Pulp and Paper Products
- Woodworking and Paper Industries Machinery
- Wooden Furniture and Cabinets
- Windows and Doors
- Containers, Showcases, Partitions, and Shelving
- Custom Architectural and Miscellaneous Wood Products

SECTION 3

Economic Benefits

Economic impact analyses have used basically the same methods for over 40 years. The tools, although greatly improved in quality and ease of use, are also similar to those in long-time use.

The conceptual basis for estimating economic benefits of an industry is that resources brought into Georgia's economy by the industry raise the level of economic activity. This additional economic activity, commonly called the multiplier effect, supports increased employment, income, and business revenues. These increases are estimated from an input-output model (I/O).

The purpose of an I/O model is to estimate the flows of resources among various economic sectors by using the "recipes" followed by producers. These recipes provide the type and amount of goods and services purchased during production, which are produced by other firms. For example, a pulp mill purchases wood from a logger. The logger, in turn, purchases equipment and fuel from firms, that, in turn, purchase their raw materials from still other firms. Combined with estimates of what percentages of these items are supplied by Georgia firms, the recipes can be used to estimate how much of each item is purchased from Georgia firms and how much is purchased from outside Georgia.

Purchases from sources outside the Georgia economy are known as "leakage," which puts the brakes on the multiplier effect; the higher the leakage, the lower the multiplier effect.

The I/O model used in this analysis is called IMPLAN, devised by the Minnesota IMPLAN Group. It is a nationally recognized model that uses Georgia data to tailor its estimates to the state economy. Still, the model must be modified somewhat to account for differences in specific industry sectors revealed by more current data. For example, the wage and salary data used in this analysis is from 2008, whereas the wage and salary data available to IMPLAN is from 2007.

One area of uncertainty that persists, however, is the level of benefits provided to workers in each of the forestry industry sectors. The available wage and salary information does not include benefits, but the I/O model bases its analysis on wages and salaries that include benefits. An average of 28 percent was assumed for this analysis, based on the latest available U.S. Bureau of Labor Statistics compensation cost data for all civilian employment.

The analytical process includes three steps after the industry sectors are defined, as described in the previous section. The first step is to quantify employment, income, and output associated with each of the defined sectors. Several data sources are used to accomplish this.

The best source for employment and wages is the employment security data collected and maintained by the Georgia Department of Labor. Commonly called ES202 data or, more recently CEW (covered employment and wages) data, it has the advantage of being current, allowing an estimate of the economic benefits occurring in 2008. It has the drawback, however, of not including single-proprietorships (because they have no employees), and it also does not include employees not covered by unemployment insurance, such as governmental employees.

The second task is to divide the forestry industry output into two categories, (1) output that is sold to another Georgia firm and (2) output sold outside the state. Another way to look at this is to recall that the multiplier effect starts from dollars brought into the Georgia economy. Output not sold to another Georgia firm is, by definition, bringing in resources from outside the Georgia economy, and it is these “exports” that fuel the multiplier effect. Forestry industry output used as an input to another Georgia forestry-industry firm is already accounted for in the multiplier effect; counting it again would result in double-counting and would imply a level of production from the input-supplying industry higher than actually observed. For example, if the multiplier effect is calculated for the paper industry, it will include some of the activities of Georgia logging operations. If the entire output from logging was then added to the multiplier effect for paper, it would double-count the logging output that went to the paper industry. The I/O model is used iteratively for these estimations, with the resulting estimates called “direct impacts.” Direct impacts are measures of the output from, in this case, forestry industries that is exported to entities outside Georgia (these are considered exports even if they only go to Alabama).

The third step is to use the I/O model to estimate total impacts, which are divided into three components. The first is the *direct* impacts (the value of resources brought into the state); the second is *indirect* impacts (impacts from recirculation of resources resulting from forestry industry purchases from other industries; and the third is *induced* impacts, which result from activities in the household sector. Adding direct, indirect, and induced impacts yields total impacts.

Three measures of economic impacts are provided. The first, output, is a measure of how much each industry or sector produced in 2007 – roughly equivalent to a measure of sales revenue. The second measure is income, including all household income and employee benefits. The third measure is employment, or number of jobs, in each forestry-related industry.

Results

Table 3-1 provides estimates of direct impacts for each of the forestry industry sectors contained in the industry’s definition. These differ from the level of economic activity shown in Tables 2-2 and 2-3 because Table 3-1 eliminates production consumed by another sector. This eliminates the double counting of production in the multiplier effect of the consuming industry sector. For example, Table 3-1 does not contain much output from the Forestry Management, Logging, and Misc. Forest Products industry segment because most of it appears to be consumed by the various Georgia wood-using industries

such as paper and lumber. Logging operations are included primarily as part of the multiplier effect by these consuming industries, not as a direct impact separate from them.

Another way to interpret Table 3-1 is to consider the direct impacts to be estimates of the exports of forestry-related industries. This exporting (to anyone outside Georgia) brings resources into the state to support the increase in economic activity estimated by the multiplier effect.

The largest industry segment by far is “Pulp and Paper”, which includes all pulping and paper-making activities representing about half of the total industry. The entire forestry industry (totals in Table 3-1) is estimated to export (to a non-Georgia destination) almost \$16.3 billion with this activity supporting 49,236 jobs with an employee compensation of almost \$2.8 billion.

Recirculation of dollars brought into Georgia’s economy (as measured by the direct impacts) support a higher level of economic activity. This higher level is estimated by applying the IMPLAN input-output model to the direct impacts provided in Table 3-1. The results of this analysis are presented in Table 3-2. Because all industries in Georgia are affected by the forestry industry, Table 3-2 summarizes the impacts by aggregated industry codes (used in the input-output model), which are roughly equivalent to two-digit NAICS codes.

Table 3-1: Direct Impacts by Forest Industry Sector 2008

Sector	Output	Employment	Compensation
Forestry Management, Logging, and Misc. Forest Products	\$571,030,080	762	\$51,292,540
Lumber and Wood Preservation	\$1,229,353,600	4,597	\$199,914,256
Veneer, Plywood, Reconstituted, and Engineered Wood	\$821,142,000	3,887	\$180,871,284
Prefabricated Wood Buildings and Manufactured Housing	\$426,574,816	2,983	\$99,465,656
Pulp and Paper Products	\$10,812,876,360	20,693	\$1,559,772,584
Woodworking and Paper Industries Machinery	\$28,976,302	127	\$7,949,904
Wooden Furniture and Cabinets	\$1,035,683,808	8,063	\$323,501,496
Windows and Doors	\$652,086,592	3,588	\$156,332,176
Containers, Showcases, Partitions, and Shelving	\$591,584,672	4,023	\$154,540,240
Custom Architectural and Miscellaneous Wood Products	<u>\$87,921,824</u>	<u>513</u>	<u>\$23,259,319</u>
Total	\$16,257,230,054	49,236	\$2,756,899,455

The largest sector impacts are seen, not surprisingly, in the manufacturing sector, with some \$17.9 billion in output, 55,394 employees, and about \$3.1 billion in compensation. A distant second is held by agriculture, forestry, fishing and hunting (which includes logging and nurseries), with over \$2.2 billion in output, 10,492 employees, and over \$407 million in compensation. Together, the economic activity supported by Georgia’s forestry industry (including federal payments to landowners of about \$14.5 million) totals over \$28.7 billion, involving employment of 128,388 people whose compensation is

about \$6.5 billion. This employment represents about 3.1 percent and 3.0 percent of total Georgia employment, and wages and salaries, respectively.

Table 3-2: Total Benefits by Major Industry Sector 2008

Sector	Output	Employment	Compensation
Agriculture, Forestry, Fishing and Hunting	\$2,245,841,920	10,492	\$407,427,936
Mining	\$9,670,426	41	\$3,263,116
Utilities	\$737,002,560	922	\$141,627,456
Construction	\$201,215,568	2,029	\$86,304,160
Manufacturing	\$17,863,469,056	55,394	\$3,086,833,664
Wholesale Trade	\$1,442,124,672	7,410	\$556,886,272
Transportation and Warehousing	\$482,971,680	7,641	\$208,826,240
Retail Trade	\$944,089,920	6,500	\$325,535,776
Information	\$379,788,544	911	\$97,847,800
Finance and Insurance	\$669,709,120	2,873	\$212,344,224
Real Estate and Rental	\$913,338,816	2,941	\$84,191,544
Professional, Technical, and Scientific Services	\$658,372,224	4,837	\$330,928,448
Management of Companies	\$482,664,608	2,181	\$222,345,216
Administrative and Waste Services	\$341,560,672	5,262	\$156,872,144
Educational Services	\$52,509,968	867	\$27,720,888
Health and Social Services	\$419,467,392	5,056	\$225,027,040
Arts, Entertainment and Recreation	\$55,178,140	1,176	\$25,940,050
Accommodation and Food Services	\$324,991,296	5,583	\$110,053,456
Other Services	\$347,570,016	5,166	\$131,904,096
Government and Non-NAICS Industries	<u>\$150,705,584</u>	<u>1,106</u>	<u>\$72,555,512</u>
Total	\$28,722,668,524	128,388	\$6,514,435,038

Table 3-3 extracts information from several tables to present a comparison of the overall results obtained in each impact analysis conducted from 2003 through 2008. All measures show growth between 2003 and 2004 and between 2004 and 2005. The highest growth rates are in industry output which grew between 10 and 14 percent depending on the year and whether it is being calculated for forestry industry activity or total activity. Compensation also increased for these periods. In the 2003 to 2004 period, forestry industry compensation increased by 9.7 percent and total compensation increased by 12 percent without considering inflation. From 2004 to 2005, the rate of increase was somewhat lower – 4 percent for the forestry industry and 9 percent for total impacts. Employment increases are more modest, increasing 3 percent and 7 percent for forestry industry and total impacts, respectively, in the 2003 to 2004 period. Although employment from total impacts grew an estimated 6 percent between 2004 and 2005, forestry industry employment was essentially flat.

In the 2006 to 2007 period, forestry industry employment declined by 5.2 percent and employment from total impacts fell by 5.5 percent. The two sectors which declined the most (in percentage terms) were prefabricated buildings and veneer, plywood, and

reconstituted wood products. Productivity increases are apparent in forestry industry sectors (pulp and paper products, for example) as well as sectors stimulated by the multiplier effect which would serve to allow output increases with employment declines.

Table 3-3: Comparison of Results 2003 to 2008

(Dollars in millions not adjusted for inflation; Employment in persons)

Forestry Industry Economic Activity	2003	2004	2005	2006	2007	2008
Output	\$12,679	\$14,163	\$16,150	\$17,760	\$18,459	\$18,270
Employment	65,706	67,633	67,694	67,733	64,192	57,812
Compensation	\$3,007	\$3,299	\$3,422	\$3,513	\$3,394	\$3,131
		Year to Year Percent Change				
Output		11.70%	14.04%	9.97%	3.93%	-1.02%
Employment		2.93%	0.09%	0.06%	-5.23%	-9.94%
Compensation		9.71%	3.71%	2.67%	-3.38%	-7.75%
Total Impacts	2003	2004	2005	2006	2007	2008
Output	\$20,199	\$22,729	\$25,972	\$27,738	\$28,547	\$28,723
Employment	136,022	144,944	154,147	149,347	141,155	128,388
Compensation	\$5,600	\$6,276	\$6,827	\$6,773	\$6,696	\$6,514
		Year to Year Percent Change				
Output		12.53%	14.27%	6.80%	2.92%	0.61%
Employment		6.56%	6.35%	-3.11%	-5.49%	-9.04%
Compensation		12.07%	8.77%	-0.79%	-1.13%	-2.71%
Fiscal Impact	2003	2004	2005	2006	2007	2008
State Revenues	\$514	\$546	\$591	\$580	\$566	\$539
State Costs	<u>\$368</u>	<u>\$392</u>	<u>\$414</u>	<u>\$400</u>	<u>\$373</u>	<u>\$333</u>
Net Revenues	\$147	\$155	\$176	\$180	\$193	\$206

Source: EII impact assessments and Georgia Department of Labor, Current Employment and Wages.

The annual percent change information in Table 3-3 is presented graphically below for output, employment, and compensation measuring levels of economic activity followed by a similar graph measuring total economic impact. A graph of the fiscal impacts also included in Table 3-3 is provided next. It should be noted that these data are in nominal dollars and have not been adjusted for inflation. If inflation adjustments had been made, it is likely that, for example, the output measures would be showing near zero growth for the last two years, rather than the slightly positive growth the nominal data show.

Figure 3-1: Annual Percent Change in Economic Activity

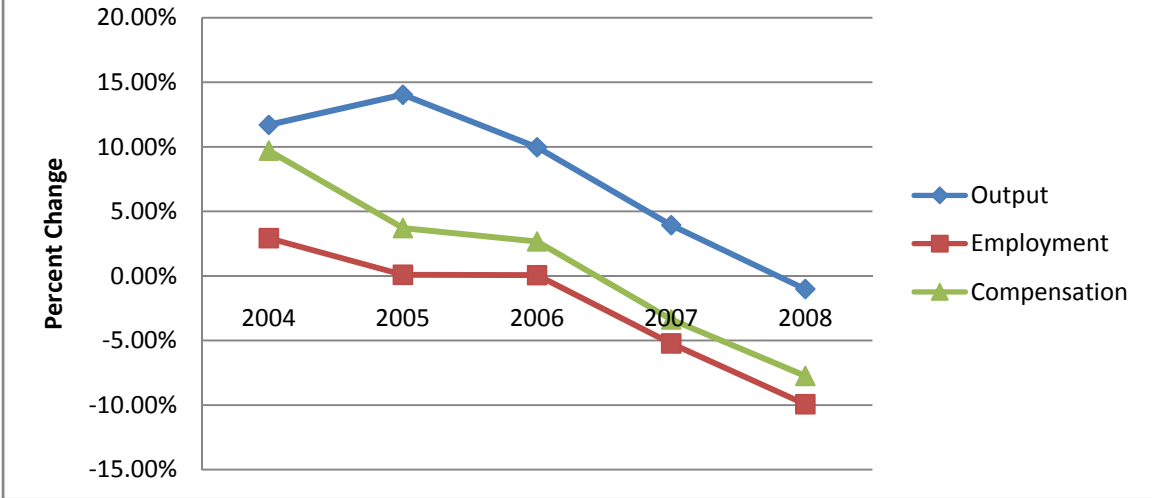
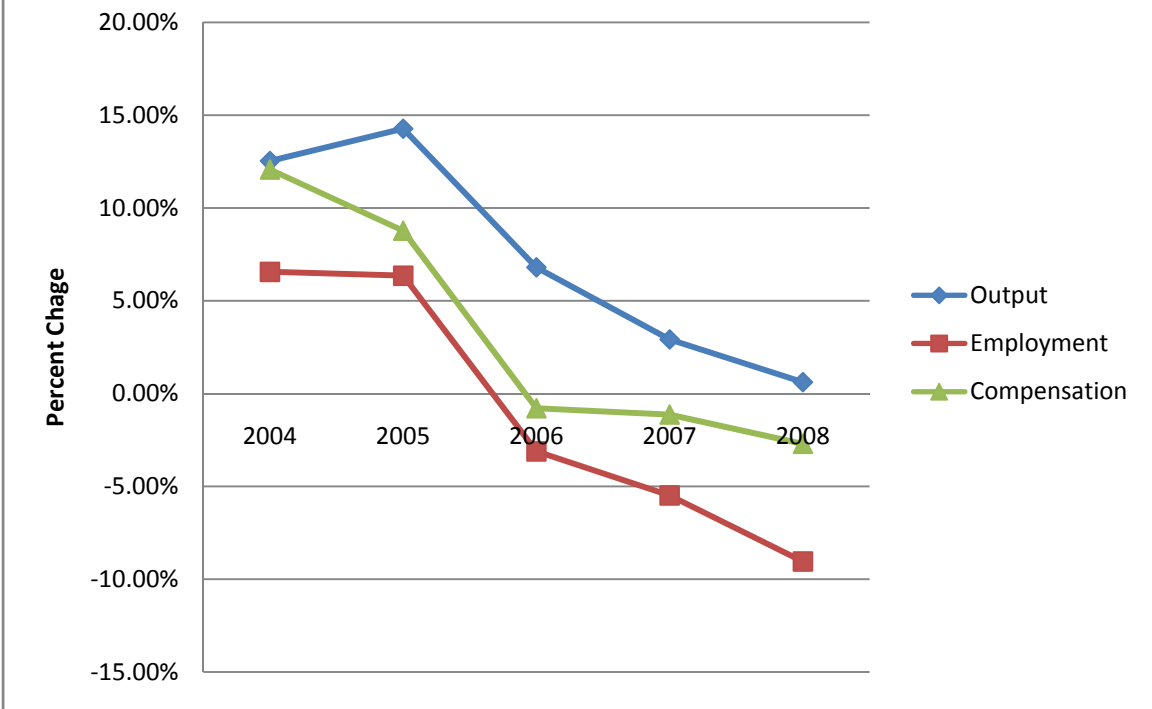
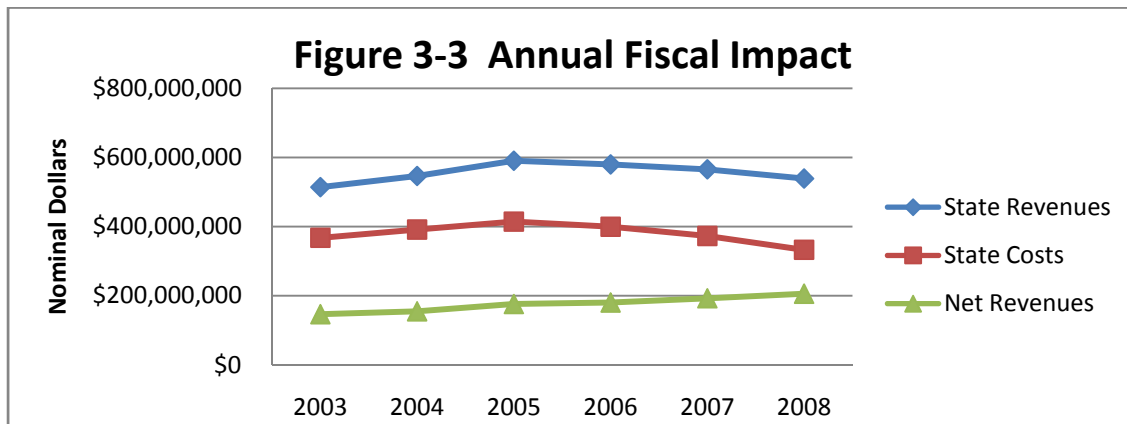


Figure 3-2: Annual Percent Change in Total Impact





Comparison of the Forestry Industry with Other Industry Sectors

It is difficult to appreciate the significance of the impacts generated by the forestry industry without some basis of comparison. This comparison is provided in Table 3-4, which shows that the forestry industry is the third largest industry sector in Georgia, (behind food processing and textiles) in employment and the second largest in wages and salaries.

Table 3-4: Comparison of Georgia Industries 2008

<u>Sector</u>	<u>Employment</u>	<u>Wages & Salaries</u>
Food Processing	67,504	\$2,889,643,252
Forestry Industry	57,812	\$2,446,122,916
Transportation Equipment	41,247	\$2,407,986,059
Textiles	59,831	\$2,068,017,538
Fabricated Metal Products	29,279	\$1,126,303,819
Machinery	23,275	\$1,091,119,682
Chemicals	21,162	\$1,269,687,337
Printing	19,522	\$869,785,674
Electrical Equipment and Appliances	15,295	\$929,074,016
Computers and Electronic Products	13,720	\$878,435,928
Apparel	4,608	\$155,257,134

SECTION 4

Economic Dependence

What Is Economic Dependence?

Economies are interwoven in a complex web. In general, however, a local economy's economic health depends on the inflow and outflow of resources. Economic base theory calls those sectors within an economy that are responsible for bringing resources in "basic" or "traded" sectors. The resources that are brought in are then (at least partially) recirculated within the local economy to support the "non-basic" sectors. For example, a saw mill will generally sell its products to builders or lumber supply houses outside the local economy. The revenue it receives from these sales is then used to purchase logs from, perhaps, a local logging firm, and it also pays wages to its employees who spend their wages in local restaurants, grocery stores, and the like. As the basic sector grows or declines, so does the non-basic sector.

Forestry industry components are very much part of Georgia's basic industry sector, with products sold worldwide. As such, it is one of the key sources of funds flowing into many local Georgia economies. Where the local economy has many sources of such flows, the growth or decline of any specific sector, such as forestry, may not have significant effects. However, in those communities where forestry is a large proportion of the local basic industry, all economic support activities, such as retail, are likewise generally dependent.

Approach

There is no clear delineation between economic dependence and non-dependence, and there are many possible facets that can be examined to depict the spectrum that describes the degree of dependence. This analysis examines the proportion of the county-level employment and income (as defined by wages and salaries) indicated by the ES202 data that is attributable directly to forestry industries. Multiplier effects are difficult to distribute to individual counties, and were therefore not included in the definition of forestry-related industries. This exclusion serves to underestimate the true proportion of the county economy supported by forestry.

The ranges of county employment attributable to forestry-related industries used to define the degree of dependence is provided in Table 4-1, which also provided the definitions of dependence according to the percentage of income (wages and salaries) attributable to forestry-related industries. These ranges were developed judgmentally, and are intended to define "dependence" in a very general sense.

Applying these criteria to Georgia's counties results in a distribution of counties as depicted in Table 4-2 for employment and income. While most counties are considered either not, or somewhat, dependent on forestry industries, the remaining counties, concentrated in South Georgia, owe significant proportions of their livelihood to forestry.

Figure 4-1 depicts the degree of forestry-related dependence based on employment and Figure 4-2 depicts the degree of dependence based on income. Table 4-3 provides the percentages of forestry to county employment and wages and salaries used to assign the degree of dependence.

Table 4-1: Definitions of Levels of Dependence

	Forestry Employment	Forestry Wages & Salaries
Critically Dependent	> 10%	> 15%
Very Dependent	6% - 9.9%	10% - 14.9%
Moderately Dependent	4% - 5.9%	9.9% - 5%
Somewhat Dependent	1.6% - 3.9%	2% - 4.9%
Not Dependent	< 1.6%	< 2%

Table 4-2: Distribution of Georgia Counties by Level of Dependence 2008

	Number of Counties	
	Employment	Wages & Salaries
Critically Dependent	18	11
Very Dependent	16	14
Moderately Dependent	13	22
Somewhat Dependent	49	40
Not Dependent	<u>63</u>	<u>72</u>
Total	159	159

Source: EII estimates using Georgia Department of Labor, Current Employment and Wages data.

Tables 4-3 and 4-4 show how overall dependency has changed (for dependency based on employment and income, respectively) over the five years these statistics have been produced. Generally, the number of counties in each of the dependency categories has remained quite stable. The year 2006, however, shows an increase in those counties considered critically dependent largely at the expense of counties considered very dependent.

Table 4-5 (following Figures 4-1 and 4-2) provides county-level detail of forestry dependency, except where those counties do not sufficient numbers of firms to ensure protection of confidentiality. Those counties were combined with larger counties into nine groups, which are listed in Table 4-6.

Table 4-3 Forestry Dependency Over Time: Employment

	Number of Counties				
	2004	2005	2006	2007	2008
Critically Dependent	19	19	22	20	18
Very Dependent	18	18	15	17	16
Moderately Dependent	20	20	18	12	13
Somewhat Dependent	49	49	50	48	49
Not Dependent	53	53	54	62	63

Table 4-4 Forestry Dependency Over Time: Income

	Number of Counties				
	2004	2005	2006	2007	2008
Critically Dependent	14	14	16	12	11
Very Dependent	17	17	13	21	14
Moderately Dependent	26	26	26	17	22
Somewhat Dependent	42	42	42	40	40
Not Dependent	60	60	62	69	72

**Figure 4-2
Forestry Dependency Based on Income 2008**

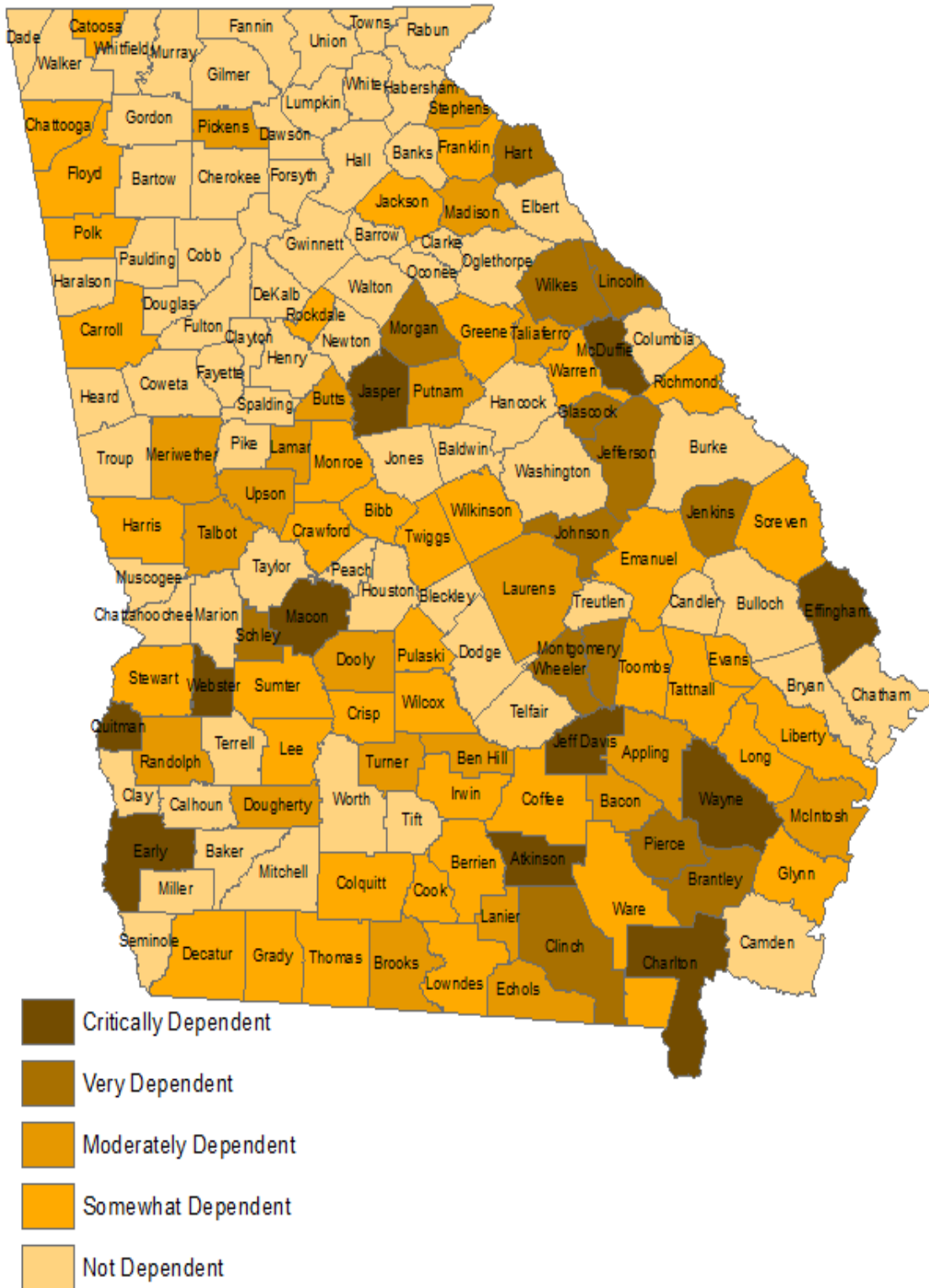


Table 4-5: Level and Percent of Forestry in County Economies**Based on Employment and Income: 2008**

County	Level of Forestry:		Percent of Forestry to Total:	
	Employment	Wages and Salaries	Employment	Wages and Salaries
Appling	323	13,769,597	4.8%	6.1%
Atkinson	511	17,484,888	29.2%	37.4%
Bacon	244	6,862,599	6.3%	7.2%
Baker	-	-	0.0%	0.0%
Baldwin	164	5,690,999	0.8%	1.0%
Banks	59	1,114,622	1.1%	0.9%
Barrow	167	7,924,022	1.0%	1.6%
Bartow	424	16,663,319	1.2%	1.3%
Berrien	136	3,053,037	2.8%	2.4%
Bibb	1,940	91,006,524	2.2%	3.0%
Bleckley	48	1,764,814	1.3%	1.6%
Brantley	194	5,856,183	9.5%	11.5%
Brooks	158	6,128,940	5.7%	8.5%
Bryan	90	3,169,433	1.4%	1.7%
Bulloch	332	10,509,898	1.4%	1.5%
Burke	20	656,956	0.3%	0.3%
Butts	371	10,506,243	6.3%	6.3%
Camden	168	6,544,724	1.1%	1.3%
Carroll	958	42,873,522	2.5%	3.3%
Catoosa	278	13,145,265	1.8%	2.8%
Charlton	405	11,418,955	16.9%	17.6%
Chatham	1,320	79,592,720	1.0%	1.5%
Chattooga	119	3,960,280	1.9%	2.2%
Cherokee	737	24,540,041	1.5%	1.5%
Clarke	487	22,856,167	0.7%	0.9%
Clayton	322	14,928,677	0.3%	0.3%
Clinch	244	8,069,581	9.5%	11.7%
Cobb	2,297	113,361,253	0.7%	0.7%
Coffee	603	16,001,123	3.7%	3.4%
Colquitt	705	18,863,292	4.4%	4.6%
Cook	168	5,388,099	3.3%	4.4%
Dade	29	381,209	0.9%	0.4%
Dawson	18	540,392	0.2%	0.3%
DeKalb	1,893	86,219,948	0.6%	0.6%
Douglas	258	13,247,566	0.6%	1.0%
Early	648	49,923,515	15.3%	31.8%
Echols	38	1,380,229	5.5%	8.8%
Effingham	1,952	92,284,805	19.1%	27.7%

Elbert	27	795,963	0.4%	0.4%
Evans	62	3,098,943	1.3%	2.5%
Fannin	47	983,766	0.8%	0.7%
Fayette	267	14,009,123	0.7%	0.9%
Floyd	1,326	67,534,736	3.3%	4.8%
Forsyth	559	21,959,318	0.9%	0.9%
Franklin	171	4,669,777	2.3%	2.2%
Fulton	2,899	152,166,072	0.4%	0.3%
Gilmer	195	4,133,001	2.2%	1.7%
Glynn	794	54,921,218	2.0%	4.0%
Gordon	134	3,450,476	0.6%	0.5%
Grady	231	6,048,729	3.5%	3.7%
Greene	149	4,700,587	2.6%	2.7%
Gwinnett	2,826	107,073,398	0.9%	0.8%
Habersham	160	4,224,763	1.1%	1.0%
Hall	716	24,388,824	0.9%	0.9%
Haralson	31	834,563	0.4%	0.3%
Harris	70	2,189,435	1.7%	2.1%
Hart	402	19,276,161	6.3%	10.1%
Henry	430	14,365,654	0.8%	0.9%
Houston	295	10,300,302	0.5%	0.5%
Jackson	340	17,940,765	1.8%	3.0%
Jasper	352	14,285,419	14.7%	21.4%
Jeff Davis	547	18,717,337	13.1%	16.4%
Jefferson	627	21,930,883	11.4%	13.5%
Jenkins	208	4,865,487	13.4%	12.2%
Johnson	170	4,821,560	9.0%	10.2%
Jones	48	1,066,684	1.3%	1.0%
Lamar	154	6,258,771	4.1%	5.7%
Lanier	89	2,211,118	6.1%	5.8%
Laurens	1,144	63,375,595	5.7%	9.8%
Lowndes	1,299	59,187,861	2.6%	4.0%
Lumpkin	133	3,806,745	1.9%	1.9%
Madison	173	6,599,987	4.9%	6.5%
Mitchell	100	1,871,754	1.1%	0.9%
Monroe	158	6,022,765	2.4%	2.9%
Montgomery	158	5,318,168	8.1%	10.4%
Morgan	470	18,690,596	7.3%	10.2%
Murray	102	2,524,871	0.9%	0.7%
Muscogee	410	14,826,358	0.4%	0.4%
Newton	297	12,983,597	1.4%	1.7%
Oconee	121	3,127,933	1.3%	1.1%
Oglethorpe	18	373,334	1.0%	0.8%

Paulding	130	4,544,093	0.6%	0.8%
Pickens	346	13,819,729	4.2%	5.8%
Pierce	408	12,728,717	9.7%	11.3%
Pike	46	1,220,653	1.9%	1.8%
Polk	275	9,887,661	2.3%	2.7%
Putnam	765	19,590,020	10.9%	9.6%
Quitman	43	1,637,891	10.7%	15.7%
Richmond	1,889	110,793,533	1.8%	2.9%
Rockdale	1,151	53,441,448	3.6%	4.7%
Screven	129	3,964,491	3.0%	3.8%
Spalding	180	6,490,946	0.8%	0.9%
Stephens	698	24,400,402	7.0%	7.8%
Stewart	29	944,569	2.2%	2.5%
Sumter	463	12,655,723	3.7%	3.6%
Tattnall	133	4,327,280	2.3%	2.9%
Thomas	775	21,277,367	3.5%	2.9%
Tift	242	8,381,175	1.3%	1.4%
Toombs	264	10,496,925	2.2%	3.1%
Turner	174	5,506,972	7.4%	9.8%
Twiggs	34	1,078,495	2.7%	2.9%
Upton	423	11,664,825	5.5%	5.3%
Walker	25	670,977	0.2%	0.2%
Walton	357	12,597,024	1.8%	2.0%
Ware	669	19,896,459	4.3%	4.5%
Washington	106	3,564,171	1.3%	1.5%
Wayne	1,108	74,402,764	12.4%	24.5%
Webster	262	7,913,277	44.0%	46.7%
Wheeler	144	4,680,189	9.8%	11.9%
White	117	2,467,891	1.8%	1.4%
Whitfield	582	18,616,719	1.0%	0.9%
Wilkinson	172	5,121,050	5.5%	4.3%
Worth	89	1,965,971	2.3%	1.9%
Group 1	101	2,604,293		
Group 2	793	24,984,056		
Group 3	1,555	54,374,442		
Group 4	1,014	41,133,769		
Group 5	233	7,465,289		
Group 6	534	27,595,464		
Group 7	1,971	101,888,940		
Group 8	299	7,414,778		
Group 9	1,091	36,510,427		
Non-County	258	11,786,217		
State Total	57,812	2,446,122,916		

Table 4-6: Counties Included in Each Group		
<u>Group 1</u>	<u>Group 2</u>	<u>Group 3</u>
Rabun	Coweta	Columbia
Towns	Heard	Glascok
Union	Meriwether	Hancock
	Troup	Lincoln
		McDuffie
		Taliaferro
		Warren
		Wilkes
<u>Group 4</u>	<u>Group 5</u>	<u>Group 6</u>
Chattahoochee	Candler	Liberty
Crawford	Emanuel	Long
Macon	Treutlen	McIntosh
Marion		
Peach		
Schley		
Talbot		
Taylor		
<u>Group 7</u>	<u>Group 8</u>	<u>Group 9</u>
Calhoun	Decatur	Ben Hill
Clay	Miller	Crisp
Dougherty	Seminole	Dodge
Lee		Dooly
Randolph		Irwin
Terrell		Pulaski
		Telfair
		Wilcox

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