Economic Benefits of the Forestry Industry in Georgia: 2006

Final Report

Prepared for
Georgia Forestry Commission
Macon, Georgia

Prepared by
Community Policy and Research Services
Enterprise Innovation Institute
760 Spring Street, NW
Atlanta, Georgia 30332

Author
B. William Riall, Ph.D.

October 2007

Table of Contents

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.

The forestry industry components, and the level of economic activity represented by them, are shown in Table E-1 for 2006. 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 67,733 in all industry sectors combined, paid an annual compensation of over $3.5 billion, and had estimated total revenue of over $17.8 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 Direct Economic Activity 2006

Sector	Output	Employment	Compensation
Forestry Management, Logging, and Misc. Forest Products	$1,845,804,352	6,152	$267,437,328
Lumber and Wood Preservation	$2,057,422,972	8,957	$399,561,280
Veneer, Plywood, Reconstituted, and Engineered Wood	$1,259,775,984	6,963	$352,537,400
Prefabricated Wood Buildings and Manufactured Housing	$595,598,848	4,500	$165,216,458
Pulp and Paper Products	$9,589,567,207	22,861	$1,630,396,895
Woodworking and Paper Industries Machinery	$52,269,742	314	$18,256,298
Wooden Furniture and Cabinets	$1,176,198,972	9,308	$342,927,437
Windows and Doors	$445,641,376	2,598	$100,483,456
Containers, Showcases, Partitions, and Shelving	$548,023,952	4,618	$175,315,696
Custom Architectural and Miscellaneous Wood Products	$190,155,372	1,462	$60,815,971
Total	$17,760,458,777	67,733	$3,512,948,218

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

The result of the multiplier effect, given by total impacts (which includes the economic activity in Table E-1[1]), 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

[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.

$12.3 million, is over $27.7 billion. This activity employs 149,347 people whose compensation is almost $6.8 billion.

Another way to examine the forestry industry in Georgia is to compare it with other manufacturing sectors. Table E-3 lists 2006 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 second in employment; textiles (dominated by carpet) ranks first in employment and third 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.

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. 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 $580 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 $180 million per year.

Table E-5 extracts information from several tables to present a comparison of the overall results obtained in each impact analysis conducted from 2003 to 2006. 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 2005 to 2006 period, forestry industry employment was essentially flat and employment from total impacts fell by 3 percent. The reason for this decline is unclear and seems to be the product of numerous small changes. 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. There were also small shifts in which forestry sectors are most active in the Georgia economy (for example, a small decline in veneer and plywood and a small increase in lumber and wood preservation) that may have changed the degree of multiplier effect on the economy as a whole.

Table E-2: Total Impacts by Major Industry Sector 2006

Sector	Output	Employment	Compensation
Agriculture, Forestry, Fishing and Hunting	$2,156,272,640	13,603	$424,170,944
Mining	$12,363,923	41	$3,647,826
Utilities	$554,235,264	732	$109,390,720
Construction	$65,916,184	696	$28,779,840
Manufacturing	$17,130,132,480	65,227	$3,458,342,400
Wholesale Trade	$1,343,019,136	7,590	$504,649,984
Transportation and Warehousing	$893,697,280	7,804	$347,114,048
Retail Trade	$623,207,104	9,597	$246,477,376
Information	$316,053,056	973	$77,954,384
Finance and Insurance	$707,085,440	3,693	$232,249,792
Real Estate and Rental	$479,028,672	2,991	$96,601,056
Professional, Technical, and Scientific Services	$609,954,496	4,438	$250,190,784
Management of Companies	$380,018,944	2,073	$175,057,440
Administrative and Waste Services	$243,014,352	4,396	$118,826,800
Educational Services	$62,797,008	1,236	$35,349,544
Health and Social Services	$528,340,128	6,790	$283,315,904
Arts, Entertainment and Recreation	$77,018,928	1,559	$32,642,004
Accommodation and Food Services	$353,691,456	7,110	$119,486,040
Other Services	$521,174,560	8,020	$191,626,176
Government and Non-NAICS Industries	$676,562,240	777	$36,676,720
Total	$27,737,507,105	149,347	$6,772,549,782

Source: Georgia Department of Labor, Current Employment and Wages; IMPLAN Analysis by EII

Table E-3: Comparison of Georgia Industries 2006

Sector	Employment	Wages & Salaries
Food Processing	72,099	$2,872,175,430
Forestry Industry	67,743	$2,744,945,397
Textiles	72,190	$2,393,142,439
Transportation Equipment	46,227	$2,410,259,632
Fabricated Metal Products	27,977	$1,044,358,379
Machinery	24,697	$1,034,231,350
Chemicals	21,085	$1,160,012,760
Printing	21,012	$886,551,366
Electrical Equipment and Appliances	14,980	$837,594,394
Computers and Electronic Products	13,188	$910,811,991
Apparel	6,631	$230,295,940

Source: Georgia Department of Labor, Current Employment and Wages

Table E-4: Fiscal Impact Analysis 2006

Annual State Government Revenues	$579,916,979
Annual State Government Costs	$399,560,260
Net Annual Revenues	$180,356,718

Source: EII fiscal impact model, SFIA

Table E-5: Comparison of Results 2003 to 2006

Forestry Industry Economic Activity	2003	2004	2005	2006
Output	$12,679,309,984	$14,162,671,796	$16,150,427,177	$17,760,458,777
Employment	65,706	67,633	67,694	67,733
Compensation	$3,007,249,626	$3,299,211,578	$3,421,577,066	$3,512,948,218
		2003-2004	**2004-2005**	**2005-2006**
Output		11.70%	14.04%	9.97%
Employment		2.93%	0.09%	0.06%
Compensation		9.71%	3.71%	2.67%

Total Impacts	2003	2004	2005	2006
Output	$20,199,375,517	$22,729,379,114	$25,972,228,986	$27,737,507,105
Employment	136,022	144,944	154,147	149,347
Compensation	$5,600,491,974	$6,276,217,393	$6,826,524,997	$6,772,549,782
		2003-2004	**2004-2005**	**2005-2006**
Output		12.53%	14.27%	6.80%
Employment		6.56%	6.35%	-3.11%
Compensation		12.07%	8.77%	-0.79%

Fiscal Impact	2003	2004	2005	2006
State Revenues	$514,089,031	$546,361,719	$590,558,427	$579,916,979
State Costs	$367,579,485	$391,523,592	$414,483,229	$399,560,260
Net Revenues	$146,509,546	$154,838,126	$176,075,198	$180,356,718

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

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 2006

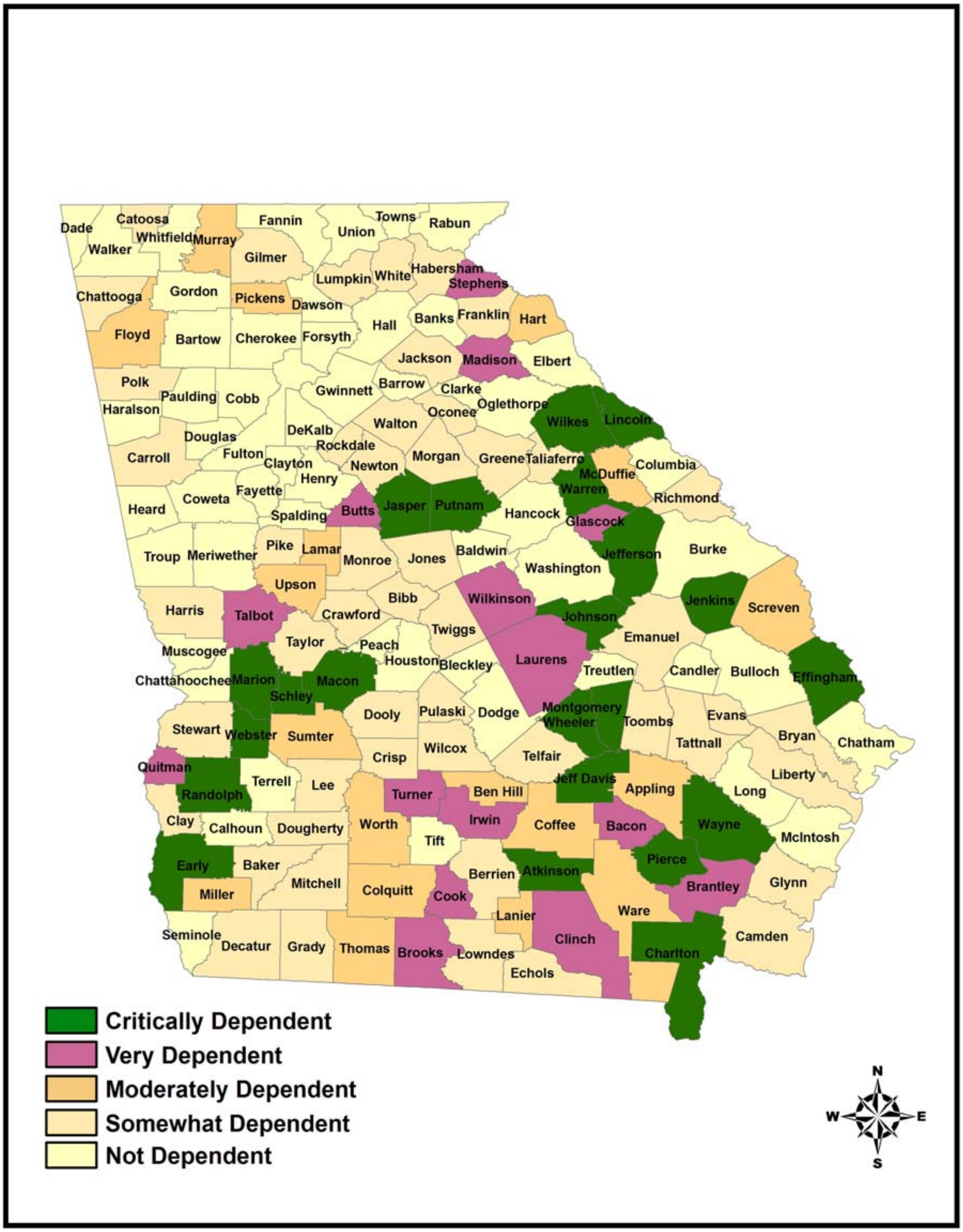
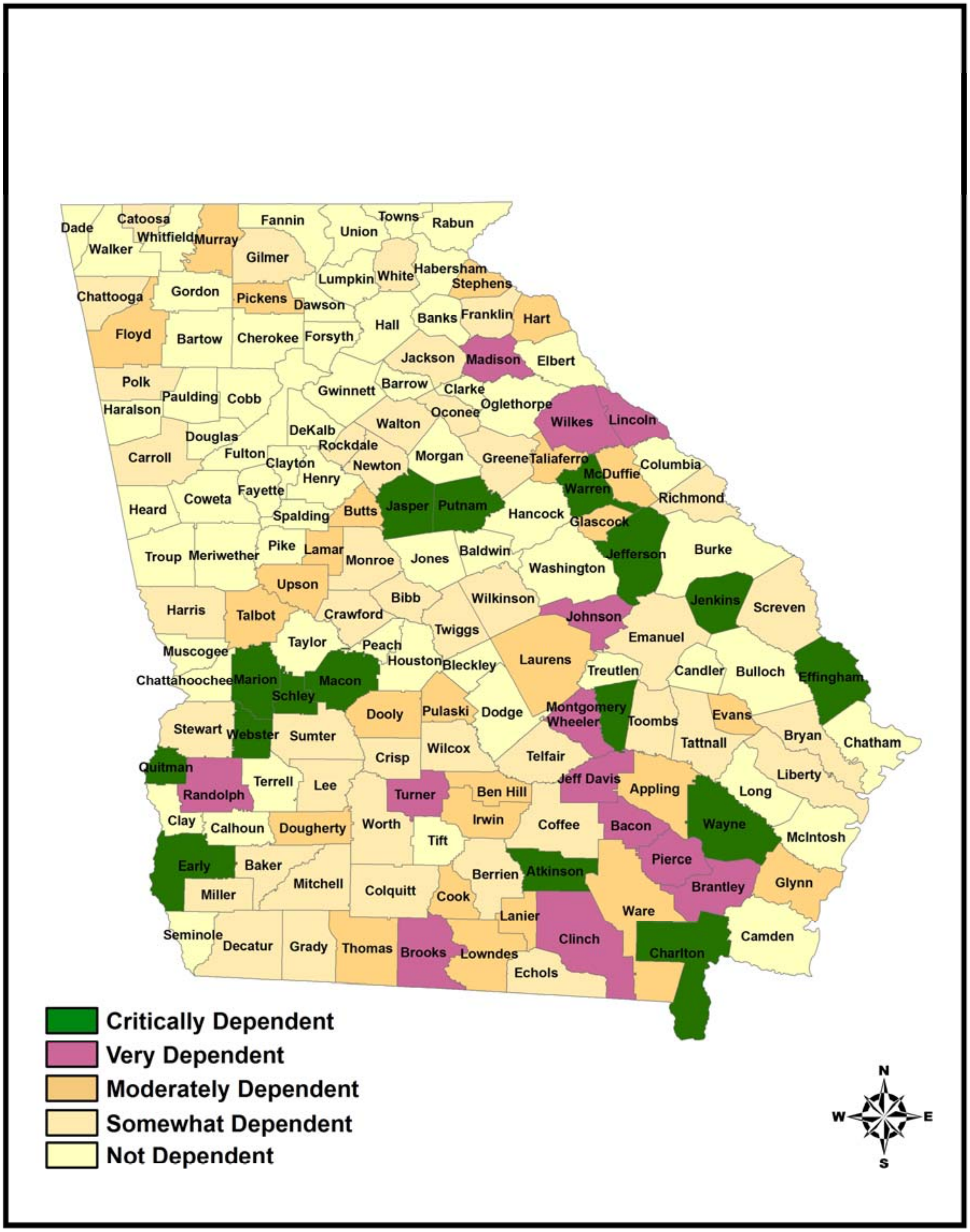


Figure E-2
Forestry Dependency Based on Income 2006



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.

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 coding 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	*Forestry and Logging*
1131	*Timber Tract Operations*
11311	*Timber Tract Operations*
1132	*Forest Nurseries and Gathering of Forest Products*
11321	*Forest Nurseries and Gathering of Forest Products*
1133	*Logging*
11331	*Logging*
321	*Wood Product Manufacturing*
3211	*Sawmills and Wood Preservation*
32111	*Sawmills and Wood Preservation*
321113	*Sawmills*
321114	*Wood Preservation*
3212	*Veneer, Plywood, and Engineered Wood Product Manufacturing*
32121	*Veneer, Plywood, and Engineered Wood Product Manufacturing*
321211	*Hardwood Veneer and Plywood Manufacturing*
321212	*Softwood Veneer and Plywood Manufacturing*
321213	*Engineered Wood Member (except Truss) Manufacturing*
321214	*Truss Manufacturing*
321219	*Reconstituted Wood Product Manufacturing*
3219	*Other Wood Product Manufacturing*
32191	*Millwork*
321911	*Wood Window and Door Manufacturing*
321912	*Cut Stock, Resawing Lumber, and Planing*
321918	*Other Millwork (including Flooring)*
32192	*Wood Container and Pallet Manufacturing*
32199	*All Other Wood Product Manufacturing*

321991	*Mobile Homes*
321992	*Prefabricated Wood Building Manufacturing*
321999	*All Other Miscellaneous Wood Product Manufacturing*
322	*Paper Manufacturing*
3221	*Pulp, Paper, and Paperboard Mills*
32211	*Pulp Mills*
32212	*Paper Mills*
322121	*Paper (except Newsprint) Mills*
322122	*Newsprint Mills*
32213	*Paperboard Mills*
3222	*Converted Paper Product Manufacturing*
32221	*Paperboard Container Manufacturing*
322211	*Corrugated and Solid Fiber Box Manufacturing*
322212	*Folding Paperboard Box Manufacturing*
322213	*Setup Paperboard Box Manufacturing*
322214	*Fiber Can, Tube, Drum, and Similar Products Manufacturing*
322215	*Non-folding Sanitary Food Container Manufacturing*
32222	*Paper Bag and Coated and Treated Paper Manufacturing*
322221	*Coated and Laminated Packaging Paper and Plastics Film Manufacturing*
322222	*Coated and Laminated Paper Manufacturing*
322223	*Plastics, Foil, and Coated Paper Bag Manufacturing*
322224	*Uncoated Paper and Multiwall Bag Manufacturing*
322225	*Laminated with Foil for Flexible Packaging*
322226	*Surface-Coated Paperboard Manufacturing*
32223	*Stationery Product Manufacturing*
322231	*Die-Cut Paper and Paperboard Office Supplies Manufacturing*
322232	*Envelope Manufacturing*
322233	*Stationery, Tablet, and Related Product Manufacturing*
32229	*Other Converted Paper Product Manufacturing*
322291	*Sanitary Paper Product Manufacturing*
322299	*All Other Converted Paper Product Manufacturing*
33321	*Sawmill and Woodworking Machinery Manufacturing*
333291	*Paper Industry Machinery Manufacturing*
337	Furniture & Related Product Manufacturing
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing
33711	*Wood Kitchen Cabinet and Countertop Manufacturing*
33712	Household and Institutional Furniture Making
337121	*Upholstered Household Furniture Manufacturing*
337122	*Non-Upholstered Wood Household Furniture Manufacturing*
337127	*Institutional Furniture Manufacturing*
337129	*Wood Television, Radio, and Sewing Machine Cabinet Manufacturing*
337211	*Wood Office Furniture Manufacturing*
337212	*Custom Architectural Woodwork and Millwork Manufacturing*
337215	*Showcase, Partition, Shelving, and Locker Manufacturing*
333	Machinery Manufacturing
3332	Industrial Machinery Manufacturing
33321	*Sawmill and Woodworking Machinery Manufacturing*
33329	Other Industrial Machinery Manufacturing
333291	*Paper Industry Machinery Manufacturing*
339	Miscellaneous Manufacturing

3399	Other Miscellaneous Manufacturing
33999	All Other Miscellaneous Manufacturing
339995	*Burial Casket Manufacturing*

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 2006 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 67,733 and these jobs earned annual compensation (total wages and salaries including benefits) of over $3.5 billion from estimated total revenue of almost $17.8 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 22,861 workers followed by wooden furniture and cabinets with 9,308. 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 over $1.6 billion (about half the total) followed distantly by lumber and wood preservation (almost $400 million) and veneer and plywood at almost $353 million. The largest outputs are produced by pulp and paper (about $9.6 billion) followed by lumber and logging, (about $2.1 and $1.8 billion, respectively) and veneer and plywood at almost $1.3 billion.

Table 2-2: Georgia Forestry Industry Economic Activity 2006

Sector	Output	Employment	Compensation
Forestry Management, Logging, and Misc. Forest Products	$1,845,804,352	6,152	$267,437,328
Lumber and Wood Preservation	$2,057,422,972	8,957	$399,561,280
Veneer, Plywood, Reconstituted, and Engineered Wood	$1,259,775,984	6,963	$352,537,400
Prefabricated Wood Buildings and Manufactured Housing	$595,598,848	4,500	$165,216,458
Pulp and Paper Products	$9,589,567,207	22,861	$1,630,396,895
Woodworking and Paper Industries Machinery	$52,269,742	314	$18,256,298
Wooden Furniture and Cabinets	$1,176,198,972	9,308	$342,927,437
Windows and Doors	$445,641,376	2,598	$100,483,456
Containers, Showcases, Partitions, and Shelving	$548,023,952	4,618	$175,315,696
Custom Architectural and Miscellaneous Wood Products	$190,155,372	1,462	$60,815,971
Total	$17,760,458,777	67,733	$3,512,948,218

Source: Georgia Department of Labor, Current Employment and Wages, and IMPLAN

Table 2-3 provides a comparison of the forestry industry activity for 2004, 2005 and 2006. Three measures are included in the comparison: output, employment, and compensation. For the most part, industry sectors showed smooth (though small) increases for each measure throughout the time period. Small output decreases are seen in veneer and plywood, and in woodworking and papermaking machinery for the most recent period, and custom architectural and miscellaneous wood products declined slightly from 2004 to 2005, and then increased slightly from 2005 to 2006.

Small decreases in employment are seen between 2005 and 2006 in veneer, prefab buildings, windows and doors, woodworking and papermaking machinery, architectural wood products, and pulp and paper. Windows and doors show a decrease between 2004 and 2005, and an increase between 2005 and 2006 which eclipses the former decline. Only pulp and paper shows a consistent decline. All other sectors show consistent increases, except for those noted above.

Changes in employee compensation are generally positive, but with a few exceptions. From 2005 to 2006, only woodworking and paper machinery, windows and doors, and architectural wood products showed small declines. Pulp and paper actually showed an increase, even though the level of employment went down. Containers showed a slight decline between 2004 and 2005, but an increase between 2005 and 2006.

Table 2-3: Georgia Forestry Industry Economic Activity 2004, 2005, and 2006

		Output	
Sector	**2004**	**2005**	**2006**
Forestry Management, Logging, and Misc. Forest Products	$1,384,113,152	$1,447,089,632	$1,845,804,352
Lumber and Wood Preservation	$1,481,513,824	$1,811,062,188	$2,057,422,972
Veneer, Plywood, Reconstituted, and Engineered Wood	$1,062,298,144	$1,290,298,688	$1,259,775,984
Prefabricated Wood Buildings and Manufactured Housing	$388,201,924	$561,314,328	$595,598,848
Pulp and Paper Products	$7,887,861,361	$8,808,187,803	$9,589,567,207
Woodworking and Paper Industries Machinery	$46,696,992	$53,197,020	$52,269,742
Wooden Furniture and Cabinets	$841,050,860	$1,065,724,056	$1,176,198,972
Windows and Doors	$343,669,472	$405,603,168	$445,641,376
Containers, Showcases, Partitions, and Shelving	$453,711,824	$532,826,960	$548,023,952
Custom Architectural and Miscellaneous Wood Products	$273,554,243	$175,123,334	$190,155,372
Total	$14,162,673,800	$16,150,427,177	$17,760,458,777
		Employment	
Sector	**2004**	**2005**	**2006**
Forestry Management, Logging, and Misc. Forest Products	6,005	6,133	6,152
Lumber and Wood Preservation	8,505	8,839	8,957
Veneer, Plywood, Reconstituted, and Engineered Wood	6,588	7,110	6,963
Prefab. Wood Buildings and Manufactured Housing	3,494	4,531	4,500
Pulp and Paper Products	25,032	23,150	22,861
Woodworking and Paper Industries Machinery	292	319	314
Wooden Furniture and Cabinets	8,685	8,867	9,308
Windows and Doors	2,522	2,446	2,598
Containers, Showcases, Partitions, and Shelving	5,031	4,788	4,618
Custom Architectural and Miscellaneous Wood Products	1,479	1,511	1,462
Total	67,633	67,694	67,733
		Compensation	
Sector	**2004**	**2005**	**2006**
Forestry Management, Logging, and Misc. Forest Products	$234,098,548	$254,133,792	$267,437,328
Lumber and Wood Preservation	$352,721,316	$384,895,901	$399,561,280
Veneer, Plywood, Reconstituted, and Engineered Wood	$312,041,524	$340,977,212	$352,537,400
Prefabricated Wood Buildings and Manufactured Housing	$121,569,812	$164,212,402	$165,216,458
Pulp and Paper Products	$1,616,422,198	$1,594,677,218	$1,630,396,895
Woodworking and Paper Industries Machinery	$18,023,702	$20,414,041	$18,256,298
Wooden Furniture and Cabinets	$301,810,254	$323,074,793	$342,927,437
Windows and Doors	$104,148,424	$104,375,704	$100,483,456
Containers, Showcases, Partitions, and Shelving	$180,908,656	$169,143,160	$175,315,696
Custom Architectural and Miscellaneous Wood Products	$57,467,145	$65,672,843	$60,815,971
Total	$3,299,213,583	$3,421,577,066	$3,512,948,218

Source: Georgia Department of Labor, Current Employment and Wages, and IMPLAN

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 2005, whereas the wage and salary data available to IMPLAN is from 2004.

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 25 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, it has the advantage of being current, allowing an estimate of the economic benefits occurring in 2006. 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 2006 – 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) over $15.5 billion with this activity supporting 58,083 jobs with an employee compensation of over $3.0 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 2006

Sector	Output	Employment	Compensation
Forestry Management, Logging, and Misc. Forest Products	$562,864,256	873	$51,722,372
Lumber and Wood Preservation	$1,492,851,894	6,654	$298,009,753
Veneer, Plywood, Reconstituted, and Engineered Wood	$1,094,815,888	6,172	$304,380,588
Prefabricated Wood Buildings and Manufactured Housing	$595,598,848	4,500	$165,216,458
Pulp and Paper Products	$9,573,173,831	22,818	$1,627,851,797
Woodworking and Paper Industries Machinery	$46,167,088	280	$16,248,504
Wooden Furniture and Cabinets	$1,071,662,008	8,540	$314,514,959
Windows and Doors	$434,148,768	2,531	$97,892,096
Containers, Showcases, Partitions, and Shelving	$518,849,552	4,370	$166,013,044
Custom Architectural and Miscellaneous Wood Products	$174,355,460	1,345	$56,265,947
Total	$15,564,487,593	58,083	$3,098,115,517

Source: Georgia Department of Labor, Current Employment and Wages, and IMPLAN

The largest sector impacts are seen, not surprisingly, in the manufacturing sector, with some $17 billion in output, 65,227 employees, and about $3.5 billion in compensation. A distant second is held by forestry, fishing and hunting (which includes logging and nurseries), with almost $2.2 billion in output, 13,603 employees, and over $424 million in compensation. Together, the economic activity supported by Georgia's forestry industry (including federal payments to landowners of about $12.3 million) totals almost $28 billion, involving employment of 149,347 people whose compensation is about $6.8 billion. This employment represents about 3.6 percent and 4.2 percent of total Georgia employment and wages and salaries, respectively.

Table 3-2: Total Impacts by Major Industry Sector 2006

Sector	Output	Employment	Compensation
Agriculture, Forestry, Fishing and Hunting	$2,156,272,640	13,603	$424,170,944
Mining	$12,363,923	41	$3,647,826
Utilities	$554,235,264	732	$109,390,720
Construction	$65,916,184	696	$28,779,840
Manufacturing	$17,130,132,480	65,227	$3,458,342,400
Wholesale Trade	$1,343,019,136	7,590	$504,649,984
Transportation and Warehousing	$893,697,280	7,804	$347,114,048
Retail Trade	$623,207,104	9,597	$246,477,376
Information	$316,053,056	973	$77,954,384
Finance and Insurance	$707,085,440	3,693	$232,249,792
Real Estate and Rental	$479,028,672	2,991	$96,601,056
Professional, Technical, and Scientific Services	$609,954,496	4,438	$250,190,784
Management of Companies	$380,018,944	2,073	$175,057,440
Administrative and Waste Services	$243,014,352	4,396	$118,826,800
Educational Services	$62,797,008	1,236	$35,349,544
Health and Social Services	$528,340,128	6,790	$283,315,904
Arts, Entertainment and Recreation	$77,018,928	1,559	$32,642,004
Accommodation and Food Services	$353,691,456	7,110	$119,486,040
Other Services	$521,174,560	8,020	$191,626,176
Government and Non-NAICS Industries	$676,562,240	777	$36,676,720
Total	$27,737,507,105	149,347	$6,772,549,782

Source: Georgia Department of Labor, Current Employment and Wages; IMPLAN Analysis by EII

Table 3-3 provides a comparison between the output, employment and compensation estimates derived in the 2004, 2005 and current study. All sectors showed increases between the 2004 and 2005 estimates, with the largest increases seen in the manufacturing sector. Between 2005 and 2006, however, all sectors declined by small amounts in employment and income, except for transportation, communications and public utilities (TCPU), and retail and wholesale trade, which showed slight increases. All sectors (except mining) did show increases in output between 2005 and 2006.

Table 3-3: Total Impacts by Major Sector, Comparison of 2004, 2005 and 2006

		Output	
Sector	**2004**	**2005**	**2006**
Agriculture, Forestry, Fishing and Hunting	$1,543,749,376	$1,784,738,944	$2,156,272,640
Mining	$10,116,655	$9,394,378	$12,363,923
Construction	$75,519,600	$99,402,200	$65,916,184
Manufacturing	$13,735,080,960	$15,910,316,032	$17,130,132,480
Transportation, Communication, Utilities	$1,315,964,544	$1,386,277,568	$1,447,932,544
Retail and Wholesale Trade	$1,744,596,096	$1,878,141,504	$1,966,226,240
Finance, Insurance, Real Estate	$1,116,676,320	$1,172,346,080	$1,186,114,112
Services	$3,183,728,832	$3,731,612,280	$3,772,548,982
Total	$22,729,379,114	$25,972,228,986	$27,737,507,105
		Employment	
Sector	**2004**	**2005**	**2006**
Agriculture, Forestry, Fishing and Hunting	11,485	14,232	13,603
Mining	45	38	41
Construction	932	1,080	696
Manufacturing	65,308	65,910	65,227
Transportation, Communication, Utilities	7,922	8,717	8,536
Retail and Wholesale Trade	17,792	19,300	17,187
Finance, Insurance, Real Estate	6,130	6,702	6,684
Services	35,329	38,167	37,373
Total	144,944	154,147	149,347
		Compensation	
Sector	**2004**	**2005**	**2006**
Agriculture, Forestry, Fishing and Hunting	$338,932,384	$434,053,728	$424,170,944
Mining	$3,208,737	$2,995,445	$3,647,826
Construction	$35,359,572	$42,347,132	$28,779,840
Manufacturing	$3,260,418,560	$3,407,663,872	$3,458,342,400
Transportation, Communication, Utilities	$411,695,640	$446,305,832	$456,504,768
Retail and Wholesale Trade	$728,154,016	$823,291,008	$751,127,360
Finance, Insurance, Real Estate	$292,130,984	$328,468,368	$328,850,848
Services	$1,206,317,500	$1,341,399,612	$1,321,125,796
Total	$6,276,217,393	$6,826,524,997	$6,772,549,782

Source: Georgia Department of Labor, Current Employment and Wages; IMPLAN Analysis by EII

Note: Contains revised values for 2004 and 2005 to correct sector aggregation errors in IMPLAN reports.

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 2006

Sector	Employment	Wages & Salaries
Food Processing	72,099	$2,872,175,430
Forestry Industry	67,743	$2,744,945,397
Textiles	72,190	$2,393,142,439
Transportation Equipment	46,227	$2,410,259,632
Fabricated Metal Products	27,977	$1,044,358,379
Machinery	24,697	$1,034,231,350
Chemicals	21,085	$1,160,012,760
Printing	21,012	$886,551,366
Electrical Equipment and Appliances	14,980	$837,594,394
Computers and Electronic Products	13,188	$910,811,991
Apparel	6,631	$230,295,940

Source: Georgia Department of Labor, Current Employment and Wages

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 sawmill 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 used to define 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 (103 using employment and 101 using income) 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%

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

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

	Number of Counties	
	Employment	Wages & Salaries
Critically Dependent	22	16
Very Dependent	15	13
Moderately Dependent	18	26
Somewhat Dependent	50	42
Not Dependent	54	62
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 three 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 4-3 Forestry Dependency Over Time: Employment

	Number of Counties		
	2004	2005	2006
Critically Dependent	19	19	22
Very Dependent	18	18	15
Moderately Dependent	20	20	18
Somewhat Dependent	49	49	50
Not Dependent	53	53	54

Table 4-4 Forestry Dependency Over Time: Income

	Number of Counties		
	2004	2005	2006
Critically Dependent	14	14	16
Very Dependent	17	17	13
Moderately Dependent	26	26	26
Somewhat Dependent	42	42	42
Not Dependent	60	60	62

Figure 4-1
Forestry Dependency Based on Employment 2006

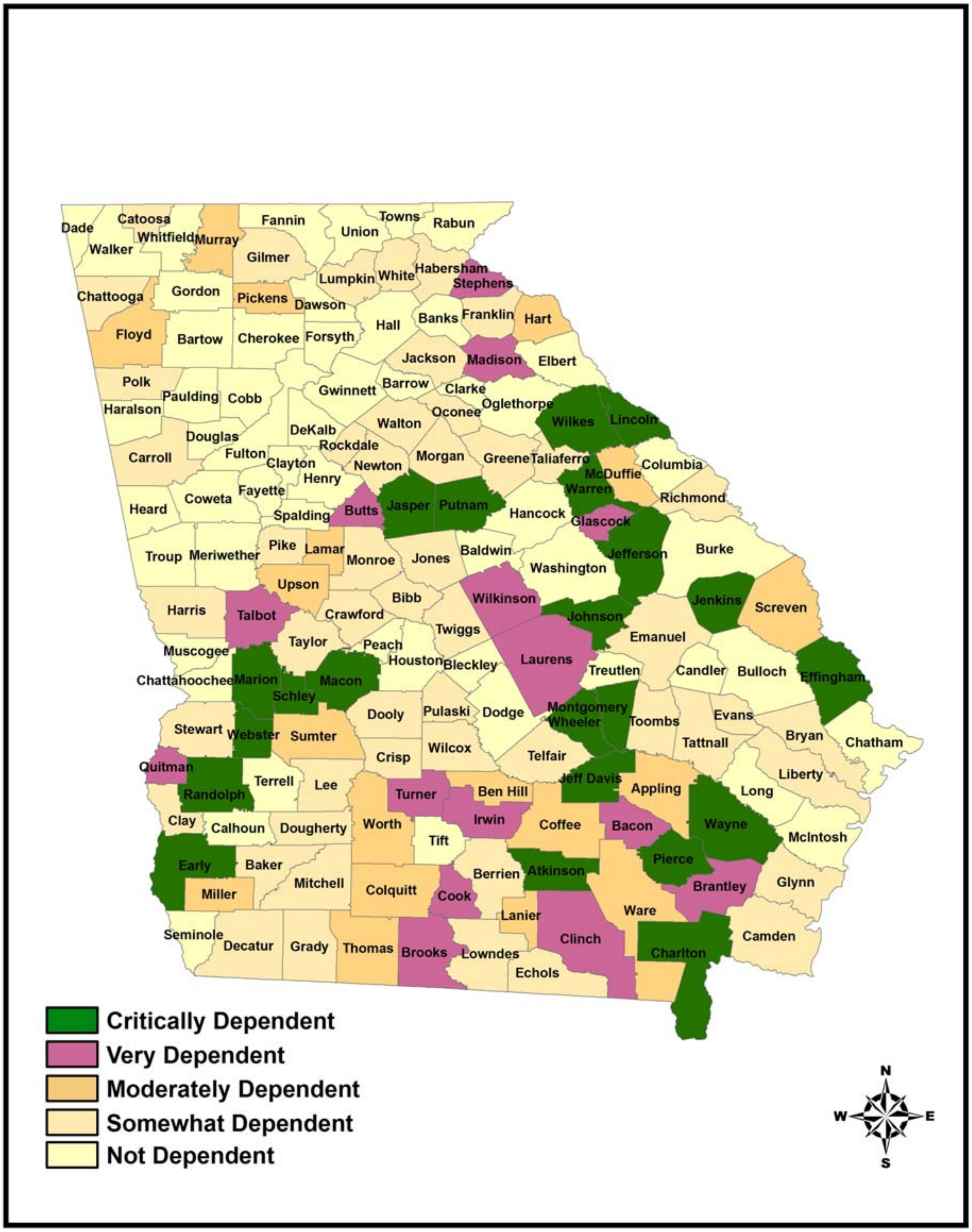


Figure 4-2
Forestry Dependency Based on Income

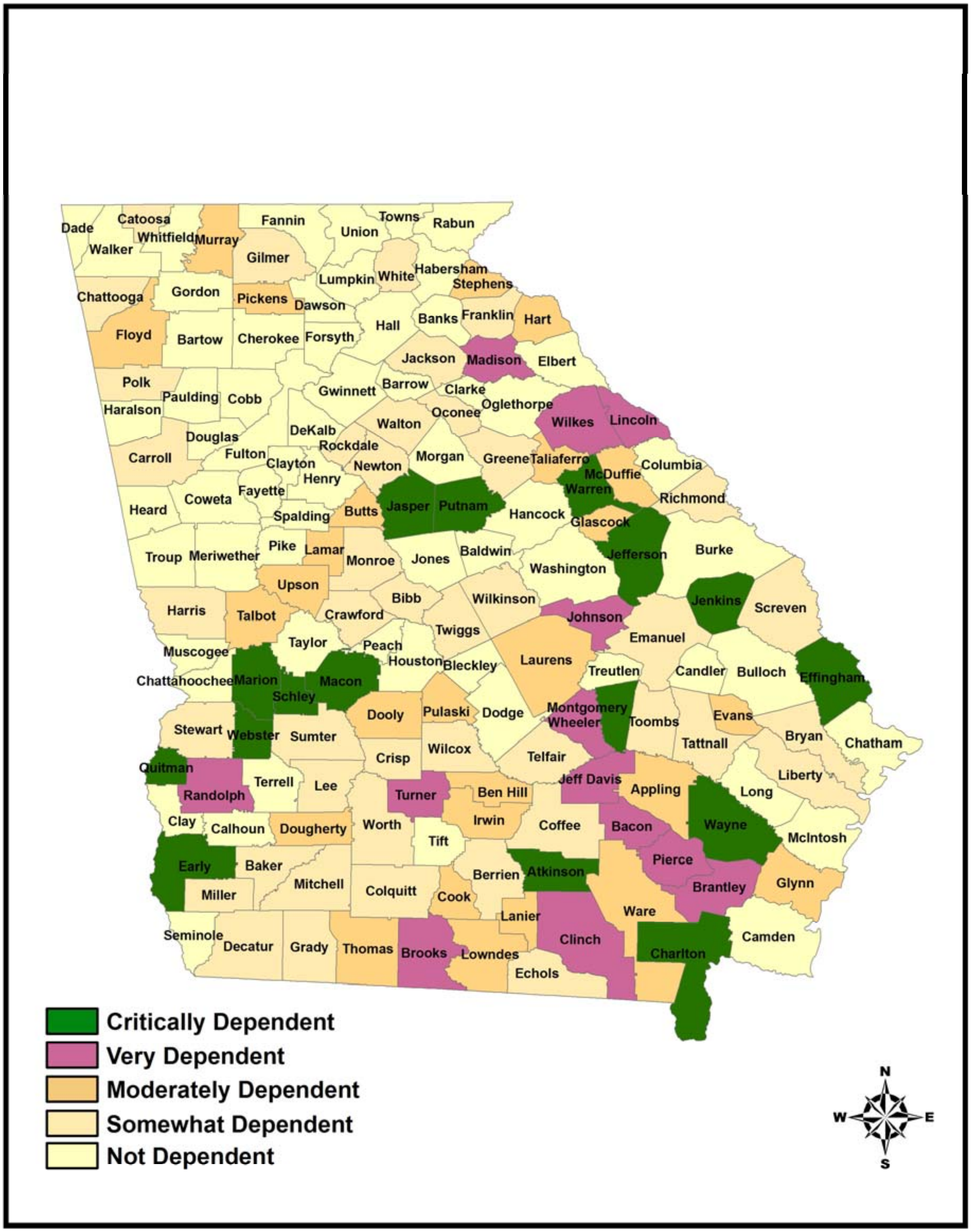


Table 4-3: Level and Percent of Forestry in County Economies

County	2006 Employment	2006 Wages and Salaries	Percent of State Totals: Employment	Percent of State Totals: Wages and Salaries
Appling	378	$14,490,009	5.70%	6.90%
Atkinson	610	$21,301,250	32.00%	43.70%
Bacon	302	$9,771,414	8.20%	11.20%
Baker	14	$335,579	2.60%	2.60%
Baldwin	314	$6,072,398	1.60%	1.10%
Banks	59	$1,560,602	1.50%	1.50%
Barrow	169	$7,328,245	1.10%	1.60%
Bartow	511	$15,803,207	1.50%	1.40%
Ben Hill	433	$12,828,002	5.00%	5.70%
Berrien	110	$2,918,813	2.20%	2.20%
Bibb	1,682	$90,202,165	2.00%	3.10%
Bleckley	45	$1,391,302	1.30%	1.40%
Brantley	198	$5,943,327	9.20%	11.70%
Brooks	266	$9,041,310	8.50%	12.50%
Bryan	100	$3,309,942	1.70%	2.10%
Bulloch	354	$10,536,657	1.50%	1.70%
Burke	36	$826,817	0.60%	0.40%
Butts	504	$15,097,197	7.70%	8.30%
Calhoun	13	$249,219	0.90%	0.70%
Camden	276	$9,189,547	1.80%	2.00%
Candler	31	$804,974	1.00%	1.10%
Carroll	993	$46,434,905	2.70%	4.00%
Catoosa	318	$8,988,543	2.00%	2.00%
Charlton	458	$13,874,867	18.50%	22.00%
Chatham	1,529	$89,774,097	1.10%	1.90%
Chattahoochee	1	$21,840	0.10%	0.10%
Chattooga	156	$4,623,907	2.40%	2.60%
Cherokee	694	$20,450,663	1.50%	1.40%
Clarke	558	$21,203,327	0.90%	1.00%
Clay	17	$354,408	2.70%	1.60%
Clayton	432	$17,057,632	0.40%	0.40%
Clinch	235	$7,720,808	9.30%	11.80%
Cobb	2,770	$105,521,843	0.90%	0.80%
Coffee	703	$22,540,579	4.00%	4.90%
Colquitt	832	$18,737,077	5.10%	4.80%
Columbia	405	$12,917,355	1.50%	1.60%
Cook	324	$9,321,100	6.60%	8.50%
Coweta	123	$4,301,638	0.40%	0.50%
Crawford	37	$1,217,768	2.70%	3.50%
Crisp	261	$7,448,916	2.90%	3.30%
Dade	18	$385,945	0.50%	0.40%
Dawson	35	$1,164,479	0.50%	0.70%
Decatur	302	$8,245,540	2.90%	3.20%
DeKalb*	2,150	$99,114,242	0.80%	0.80%

Dodge	102	$2,731,044	1.50%	1.70%
Dooly	137	$6,465,462	4.00%	7.40%
Dougherty	1,499	$95,848,256	2.90%	5.70%
Douglas	113	$3,959,061	0.30%	0.40%
Early	797	$59,037,353	16.80%	35.20%
Echols	24	$632,357	3.20%	4.60%
Effingham	1,667	$99,303,448	18.40%	33.60%
Elbert	40	$1,263,929	0.60%	0.70%
Emanuel	207	$6,656,501	2.70%	3.40%
Evans	170	$6,741,745	3.60%	5.60%
Fannin	48	$1,112,487	0.90%	0.80%
Fayette	481	$26,388,564	1.20%	1.90%
Floyd	1,898	$87,310,082	4.40%	6.00%
Forsyth	766	$28,655,125	1.50%	1.50%
Franklin	207	$5,575,999	2.60%	2.50%
Fulton	3,638	$182,136,053	0.50%	0.40%
Gilmer	269	$6,978,342	3.00%	3.10%
Glascock	43	$1,030,004	7.20%	6.20%
Glynn	990	$68,857,565	2.50%	5.30%
Gordon	135	$2,613,469	0.60%	0.40%
Grady	220	$5,799,553	3.30%	3.60%
Greene	148	$4,545,020	2.80%	2.80%
Gwinnett	3,264	$116,640,735	1.00%	0.80%
Habersham	286	$6,955,389	2.00%	1.70%
Hall	1,048	$33,783,853	1.50%	1.40%
Hancock	6	$179,404	0.40%	0.60%
Haralson	21	$526,873	0.30%	0.20%
Harris	104	$3,589,447	2.50%	3.80%
Hart	372	$15,996,182	5.40%	8.30%
Heard	33	$1,092,199	1.30%	1.50%
Henry	482	$14,907,174	1.00%	1.00%
Houston	301	$14,625,789	0.50%	0.70%
Irwin	219	$4,386,276	8.30%	7.00%
Jackson	505	$26,429,041	2.60%	4.50%
Jasper	694	$24,946,196	25.70%	33.50%
Jeff Davis	557	$17,962,990	11.90%	14.80%
Jefferson	675	$24,187,521	12.10%	15.50%
Jenkins	423	$10,162,969	15.90%	15.60%
Johnson	235	$6,010,621	11.30%	11.40%
Jones	63	$1,488,827	1.80%	1.70%
Lamar	178	$7,544,137	4.90%	7.30%
Lanier	83	$2,124,841	5.70%	6.20%
Laurens	1,276	$57,990,561	6.30%	9.40%
Lee	128	$3,654,360	2.60%	2.90%
Liberty	413	$21,103,871	2.40%	4.00%
Lincoln	156	$5,027,222	10.30%	14.10%
Long	12	$378,865	1.30%	1.80%
Lowndes	1,629	$66,029,429	3.20%	5.00%
Lumpkin	111	$2,174,476	1.70%	1.10%
McDuffie	374	$19,399,658	4.70%	9.00%

McIntosh	4	$81,814	0.20%	0.20%
Macon	417	$23,243,469	11.10%	21.10%
Madison	325	$12,929,579	8.60%	12.40%
Marion	618	$21,476,470	36.20%	53.90%
Meriwether	4	$69,230	0.10%	0.10%
Miller	76	$1,773,182	4.30%	4.20%
Mitchell	187	$6,729,658	2.10%	3.30%
Monroe	169	$5,695,819	2.90%	3.30%
Montgomery	486	$20,198,697	26.00%	41.80%
Morgan	121	$3,151,351	1.80%	1.70%
Murray	630	$20,545,319	4.90%	5.50%
Muscogee		$0	0.00%	0.00%
Newton	395	$15,672,520	1.80%	2.10%
Oconee	165	$5,585,648	2.00%	2.30%
Oglethorpe	21	$442,871	1.20%	1.10%
Paulding	219	$7,586,499	1.10%	1.40%
Peach	10	$286,410	0.10%	0.10%
Pickens	339	$14,486,199	4.60%	6.80%
Pierce	420	$12,826,261	10.00%	12.30%
Pike	46	$1,250,639	1.80%	1.90%
Polk	301	$10,910,501	2.50%	3.20%
Pulaski	89	$4,675,434	2.70%	5.10%
Putnam	1,079	$33,511,771	15.00%	16.50%
Quitman	45	$1,846,157	9.60%	17.20%
Rabun	51	$1,359,575	0.90%	0.90%
Randolph	228	$7,166,642	10.20%	12.90%
Richmond	2,036	$115,229,834	2.00%	3.40%
Rockdale	1,332	$59,246,609	3.30%	4.30%
Schley	245	$6,883,131	17.00%	16.10%
Screven	170	$4,570,219	4.30%	4.50%
Seminole	6	$106,513	0.20%	0.20%
Spalding	264	$9,870,469	1.10%	1.40%
Stephens	689	$21,104,827	6.90%	7.60%
Stewart	32	$1,145,084	2.90%	4.50%
Sumter	645	$14,775,465	5.00%	4.30%
Talbot	58	$1,299,363	7.10%	5.90%
Taliaferro	6	$349,224	2.50%	7.10%
Tattnall	178	$4,335,997	3.10%	3.20%
Taylor	41	$521,782	2.20%	1.00%
Telfair	99	$2,236,491	2.10%	2.30%
Terrell	26	$507,477	1.10%	0.90%
Thomas	1,411	$35,715,655	5.80%	5.00%
Tift	333	$11,087,561	1.60%	1.90%
Toombs	235	$8,459,233	2.00%	2.80%
Towns	11	$230,961	0.30%	0.30%
Treutlen	7	$237,658	0.60%	0.90%
Troup	368	$10,529,052	1.20%	1.00%
Turner	247	$6,948,217	9.20%	11.70%
Twiggs	41	$1,190,620	3.30%	2.70%
Union	20	$507,880	0.30%	0.30%

Upson	342	$11,479,235	4.30%	5.50%
Walker	26	$765,707	0.20%	0.20%
Walton	354	$13,076,713	1.70%	2.10%
Ware	782	$22,454,749	5.00%	5.50%
Warren	297	$10,048,728	21.30%	29.00%
Washington	94	$3,023,960	1.20%	1.20%
Wayne	1,193	$78,168,468	13.10%	27.90%
Webster	258	$7,942,321	47.40%	55.60%
Wheeler	159	$4,968,602	10.60%	13.00%
White	177	$3,504,586	2.60%	2.10%
Whitfield	812	$22,821,326	1.30%	1.10%
Wilcox	43	$825,838	3.30%	2.80%
Wilkes	435	$10,767,690	12.20%	11.90%
Wilkinson	190	$4,881,711	6.40%	4.70%
State Total	67,110	$2,718,684,451		

Source: Georgia Department of Labor, Current Employment and Wages

References

Georgia Department of Labor, ES202 Wage and Employment Data: 2006.

U.S. Bureau of the Census, "Census of Manufacturers 2002," http://www.census.gov/epcd/ec97/ga/GA000.HTM

U.S. Department of Labor, Bureau of Labor Statistics, "Employer Costs for Employee Compensation," http://data.bls.gov/cgi-bin/surveymost

North American Industrial Classification System (NAICS), http://www.census.gov/epcd/www/naicstab.htm

Bureau of Economic Analysis Input-Output Sectors as contained in "IMPLAN Pro: Data Guide," Minnesota IMPLAN Group, Inc., Stillwater, Minn., 1997.