

**Georgia's Logistics Industry: Regional Economic Impacts
of the
Provider Logistics Sector (PLS)**

Prepared for: The Center of Innovation: Maritime Logistics

Prepared by: Bureau of Business Research and Economic Development at Georgia
Southern University

January 22, 2009



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EXECUTIVE SUMMARY

The purpose of this study is to demonstrate the economic impact of that segment of the logistics industry in Georgia defined as the Provider Logistics Sector (PLS) and to present forecasts of the expected growth in jobs arising from growth in the Provider Logistics Sector of logistics industry in Georgia. The impact analysis extends beyond direct jobs in the Provider Logistics Sector to the impact of those direct jobs on gross state/regional product, labor income, value added and proprietor's income. The regional input-output model IMPLAN is used to estimate the total economic impact of the PLS enterprises on total state jobs, gross product and labor income.

It must be noted that the definition of the Provider Logistics Sector of the logistics industry in Georgia was derived by the Center of Innovation: Maritime Logistics, hereafter the logistics center. Further, the PLS segment of the logistics industry was divided into three sub-categories created through a process of describing enterprises as: core to the logistics industry; related to the logistics industry; or support to the logistics industry. Therefore, the measure of direct employment in the PLS enterprises in Georgia may differ from other estimates of employment developed based on broader criteria such as those used by Rosalyn Wilson in the *Annual State of Logistics Reports*.

The estimated number of direct jobs in the Provider Logistics Sector of the logistics industry was calculated using the NETS (National Establishment Time Series) database. The direct job estimation was completed by the logistics center and GrowthEconomics in a joint process of identifying those PLS businesses considered by the logistics center to be central to the innovation processes and therefore the portion of the logistics industry for which the innovation center was founded to serve.

Employing the estimated number of direct jobs in the Provider Logistics Sector of the logistics industry calculated by GrowthEconomics, the total economic impact of the SLP enterprises was estimated for the state and for seven sub-regions of Georgia. The key findings were:

1. Statewide, the **total** economic impact of the logistics industry was estimated to account for 5.0 % of Gross State Product and 3.5% of total state employment.
2. State-wide the Provider Logistics Sector's direct \$11.2 billion as a share of Georgia Gross State Product is about 2.8% of Georgia's \$396,504 million 2007 economy. To place the **direct** impact of the Provider Logistics Sector in context, in the June 2007 *Annual State of Logistics Report*, it is estimated that nationally, logistics accounts for slightly less than 10% of the Gross Domestic Product.¹ Assuming that the logistics industry, broadly defined, in Georgia is like the national logistics industry, the Provider Logistics Sector of the

¹ *CSCMP Annual State of Logistics Report*. Rosalyn Wilson, June 6, 2007.

logistics industry in Georgia represents approximately one-third of the total logistics industry in Georgia. Statewide the Georgia logistics industry is an estimated \$33.6 billion industry.

3. Statewide the 80,000 jobs in the Provider Logistics Sector of the logistics industry support 60,000 jobs for a total employment impact of 139,300 jobs.² To place this in perspective, in the current recession 2008/09, it is estimated that Georgia will come out of the recession in 2010 with approximately 140,000 to 170,000 fewer jobs. Removing the Provider Logistics Sector from the Georgia economy would create the equivalent of the worst depression in the state since 1929.
4. The \$11.2 billion produced in Gross State Product by the Provider Logistics Sector of the logistics industry has a total economic impact of \$18.4 billion.³
5. The \$4.2 billion in direct labor income in the Provider Logistics Sector of the logistics industry has a total statewide impact of \$6.6 billion in labor income.
6. Again, based on the comparison to a broader definition of logistics, the impact of the overall logistics industry in Georgia is estimated at about three times the impact of the Provider Logistics Sector.
7. The Provider Logistics Sector has an output multiplier of 1.64. This is a relatively large multiplier. For example, the retail service multiplier, one associated with a significant portion of tourism has an output multiplier of only 1.4.
8. The Provider Logistics Sector has an employment multiplier of 1.74. Again, this is a relatively large multiplier. For example, the typical jobs multiplier in tourism is 1.3.

The economic impact of the PLS segment of the logistics industry is not uniform or homogeneous across the seven regions, but the PLS segment of the logistics industry is important in all regions. As a share of the region, the PLS segment of the logistics and PLS logistics-dependent employment represents 7% of the Southeast region. For the Coastal Region and the Inland Coastal Region, the PLS segment of logistics and PLS logistics-dependent employment represent a 5% share of each economy. In terms of size of share, the North Central region ranks third, with the PLS segment of logistics and PLS logistics-dependent employment representing 4% of the economy. In the Mountain and West Georgia Regions, the PLS segment of the logistics and PLS logistics-dependent employment make up 3% of the economy. The PLS segment of the logistics and PLS logistics-dependent employment are a 2% of the East Central Region.

To illustrate some of the findings that lead to the conclusion that the PLS segment of the

² In 2007 total employment in Georgia was 4.0 million.

³ In 2007 total Gross State Product in current dollars was \$396,504 million.

logistics industry is not homogeneous in Georgia, it is noted that for example, the largest employment multiplier is found in the Southeast Region, 1.82 compared to a state average multiplier of 1.74. Thus this region is slightly more labor intensive in logistics production than other regions.

Of the PLS logistics-dependent jobs, the most, 22%, are created in IT and Professional Services sectors. It should be noted that while 5% of manufacturing and construction employment is PLS logistics-dependent, 13% of manufacturing and construction Gross State Output is PLS logistics-dependent.

A forecast of logistics employment was prepared from the baseline 2007 REMI forecasts for Georgia and each of the seven sub-regions of the Georgia economy. The REMI baseline forecasts was not limited to the PLS segment and in fact is build on a standard and broad definition of the logistics industry. The forecasts indicate that growth in jobs in Truck Transportation will remain virtually flat between 2010 and 2040. Jobs in Rail and Air Transportation are expected to decrease for the same period. However, jobs in Warehousing and Storage are expected to grow by approximately 25% between 2010 and 2040. This report also identifies the percent of the growth in logistics jobs that will likely be accounted for by the PLS segment of the logistics industry.

The forecast of logistics employment by industry sector was converted to a forecast of employment by occupation. It is expected that employment in logistics occupations will increase by 12% between 2010 and 2040. The two highest rates of growth within the logistics occupations will be in Supervisory occupations and Motor Vehicle operators.

INTRODUCTION

The Center of Innovation: Maritime Logistics, hereafter the logistics center, has developed a series of definitions of the enterprises that make up Georgia's Provider Logistics Sector (PLS) of the logistics industry. The PLS has been further defined as: core to the industry; related to the industry; or support the industry. Based on the definitions developed by the logistics center, GrowthEconomics employed the NETS database for Georgia to determine the number of enterprises, the number of employees by enterprise and sales by enterprise in the PLS segment of the industry and the defined sub-segments segments: core; related; and, support.

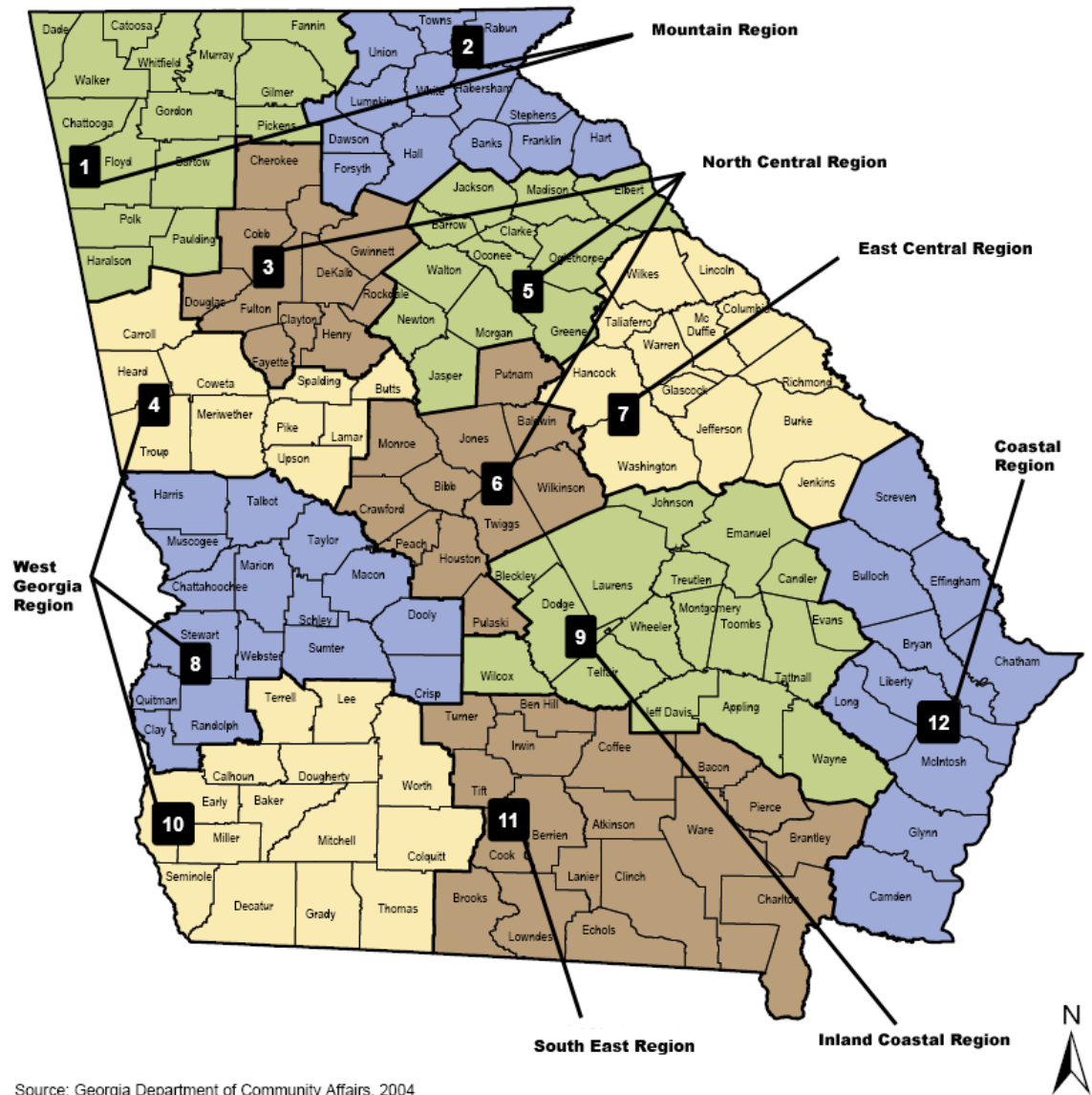
However, estimated employment is only one dimension of total economic activity. Labor is combined with capital and other resources to produce a final product and therefore a wide range of economic impacts go beyond just counting jobs. The purpose of this economic impact analysis is to identify the total or full economic impact of the PLS segment of the logistics economy by region of impact as well as the economic impact statewide. The total economic impact will be estimated using the regional input-output model IMPLAN.

Additionally, a purpose of this study is to examine the growth of the logistics industry and its long-term impact on the state and, in particular, to determine if the growth by region differs from the expected growth for the state. A final step converts the expected growth of employment in the logistic industry from growth in employment to growth in jobs by occupation. The growth analysis will relies on the REMI model.

DATA AND METHODOLOGY: IMPACT ANALYSIS

A series of steps were required to prepare the raw NETS data for use in the IMPLAN model. First, the number of employees and sales by PLS enterprise were sorted into geographic locations. For the purposes of this study the employment in the various sub-segments of the PLS segment of the logistics industry were converted to employment by NACIS code and the NACIS codes were then correlated with processing sectors in the regional input-output model IMPLAN. Finally, to match the regions of analysis in the impact analysis to the regions in the REMI model, the forecasting analysis, the county level data were sorted into seven regions as shown in Figure 1.

Figure 1



The number of employees by region, by industry category in the PLS segment of the logistics industry, were used as the initial input or measure of direct demand for logistics goods and services. The regional input-output model IMPLAN was used to estimate the total impact of the PLS segment of the logistics industry using five measures of economic impact.⁴ The modeled impacts included:

- the impact of employment in the core, support and related PLS businesses on employment in other sectors of each region's economy;
- the economic impact of value-added;
- the economic impact of gross regional output;
- the total value of labor income and total jobs; and,
- the total value of proprietors income.

However, the proper measure of direct demand had to be estimated sequentially. The reason for sequential or iterative estimation of direct demand is that IMPLAN will calculate the number of jobs in linked-sectors that are associated with direct demand. There was therefore some potential that the defined related and support enterprises selected from the NETS database would be captured by IMPLAN and thus the injection of related and support enterprises in the direct demand would result in double counting of the linked-sector jobs.

To insure against creating a double counting in the impact analysis, in the initial analysis only the employment in core PLS businesses were used. Hence, the process adopted in the analysis was to first insert only core PLS employment into the model, run the model and determine the number of jobs created by IMPLAN in support and related sectors. The IMPLAN estimates of jobs in related and support business were compared to the number of those jobs identified in the region from the NETS data. If not enough jobs were created in the IMPLAN sectors linked to the core PLS industry sectors, a second IMPLAN model was run placing additional jobs from the support and related categories into the appropriate IMPLAN sectors. The process was repeated until the total number of direct jobs, as identified by the NETS database, was created in each sub-region of the state.

⁴A description of the IMPLAN model is attached in Appendix B. IMPLAN is a product of the Minnesota IMPLAN Group.

STATEWIDE AND REGIONAL IMPACTS OF THE PROVIDER LOGISTICS SECTOR OF THE LOGISTICS INDUSTRY

Each table below shows the direct, indirect, induced and total effects for the state and for each of the seven regions for five key measures of economic impact: employment; Gross Regional Output; Labor Income; Proprietor's Income; and Value Added. Tables 1 through 5 display the statewide⁵ and regional impact of the PLS segment of the logistics industry on: value added; Gross Regional Output; employment; labor income; and proprietor's income.

Table 1
Total Provider Logistics Statewide Employment

Region	Direct	Indirect	Induced	Total
Mountain Region	8,286	2,271	2,642	13,199
North Central Region	47,842	16,850	20,740	85,431
West Georgia Region	7,090	1,915	2,568	11,573
East Central Region	2,420	793	836	4,050
Inland Coastal Region	2,521	711	628	3,860
South East Region	5,228	1,956	2,355	9,539
Coastal Region	6,714	2,201	2,736	11,651
Total	80,101	26,697	32,505	139,303

Table 2
Total Provider Logistics Statewide Gross Regional Output

Region	Direct	Indirect	Induced	Total
Mountain Region	1,155.5	276.9	273.5	1,705.9
North Central Region	6,580.8	2,303.8	2,553.1	11,437.8
West Georgia Region	831.8	223.2	253.0	1,308.0
East Central Region	309.5	91.4	83.5	484.4
Inland Coastal Region	295.8	75.8	54.9	426.5
South East Region	982.1	259.6	215.4	1,457.1
Coastal Region	1,011.2	288.8	280.6	1,580.6
Total	11,166.8	3,519.5	3,714.0	18,400.3

*All number are in millions of 2007 dollars

⁵ Note the total state-wide impact shown in the tables is the sum of the regions. This is actually a slight under estimated of the total statewide impact. When the state as a whole is run as the region of impact it captures the interaction effect between regions.

Table 3
Total Providers Logistics Statewide Labor Income

Region	Direct	Indirect	Induced	Total
Mountain Region	351.4	98.8	81.4	531.6
North Central Region	2,663.4	882.9	823.0	4,369.3
West Georgia Region	307.2	78.4	76.4	462.1
East Central Region	104.2	33.2	25.6	163.0
Inland Coastal Region	86.6	27.0	15.5	129.0
Southeast Region	299.2	84.7	63.6	447.5
Coastal Region	356.8	95.5	86.9	539.2
Total	4,168.8	1,300.4	1,172.4	6,641.6

*All number are in millions of 2007 dollars

Table 4
Total Provider Logistics Statewide Proprietors Income

Region	Direct	Indirect	Induced	Total
Mountain Region	42.2	14.9	9.6	66.7
North Central Region	283.5	112.5	93.5	489.4
West Georgia Region	70.9	16.4	8.4	95.8
East Central Region	11.2	4.3	2.3	17.8
Inland Coastal Region	16.0	7.0	1.8	24.9
South East Region	69.9	23.5	8.1	101.5
Coastal Region	22.1	9.7	7.8	39.6
Total	515.7	188.4	131.5	835.6

*All number are in millions of 2007 dollars

Table 5
Total Provider Logistics Statewide Value Added

Region	Direct	Indirect	Induced	Total
Mountain Region	451.3	146.6	167.0	764.9
North Central Region	3,346.5	1,305.4	1,568.9	6,220.9
West Georgia Region	399.7	115.7	151.3	666.6
East Central Region	141.0	47.9	50.7	239.6
Inland Coastal Region	112.6	38.4	33.3	184.3
South East Region	402.9	119.6	129.6	652.0
Coastal Region	468.3	138.6	172.1	779.0
Total	5,322.3	1,912.2	2,272.9	9,507.4

*All number are in millions of 2007 dollars

Statewide Economic Impact of the Logistics Industry

Statewide, the creation of approximately 80,000 jobs by the PLS enterprises results in a total impact of more than 139,000 jobs. In other words, of those establishments identified in the NETS data base as in the core, related, and support PLS businesses the

defined enterprises create 80,000 direct jobs providing logistics good and services. The economic activity of the identified PLS establishments and the money spent by their employees results in the creation of an additional 59,000 jobs. The result is that statewide a total of 139,000 jobs are in PLS segment of the logistics industry or depend on PLS segment of the logistics industry. That is a job multiplier of 1.74, or for every 1000 new jobs created in the logistics sector an additional 740 jobs are created in other sectors of the economy. This is quite a large jobs multiplier. For example a typical jobs multiplier in tourism is about 1.3.

The direct statewide Gross State Output, the value of all output in the PLS segment of the logistics industry, is \$11.2 billion in 2007 dollars. That is the direct production of the PLS segment of the logistics industry's goods and services is 2.8 % of total state GDP.⁶ The impact of that production of course multiplies to all other sectors of the economy for a total impact of \$18.4 billion. The total output of PLS and the business dependent on the PLS sector of the logistic industry accounts for 5.0% of Gross State Product.

In the case of the output impact of the PLS the output multiplier is 1.64 or for every \$1.0 million in new services produced by the PLS segment of the logistics industry the other sectors in the state's economy grows by an additional \$640,000. This is a fairly large multiplier. For example the retail services multiplier is only about 1.4.

The other measures of economic activity reported from the IMPLAN analysis are essential sub-components of the estimated Gross Regional Product. Value added is merely a calculation that shows the difference between the cost of material and services purchased to make a good or service and the selling price of the good or service. Statewide, the direct value added by PLS logistics firms is \$5.3 billion in 2007 dollars. Since value added is largely made up of the payments to factors of production, as one might expect, direct value added is very close to direct labor income.

Direct labor income, statewide, from the PLS segment of the logistics industry is \$4.2 billion in 2007 dollars. The direct labor income multiplies to a total labor income impact of \$6.6 billion. That is a labor income multiplier of 1.59 or for every \$1.0 million in new SAP segment logistics labor income, total labor income statewide grows by an additional \$590,000.

In IMPLAN proprietor's income measures the income of business owners. This is not a measure of the return to the investors in capital, but the income of the owners of business enterprises. Statewide, direct proprietor's income of PLS segment logistics business is \$516.0 million or about one-half billion in 2007 dollars. With the multiplier effect, the total economic impact of the \$516.0 million in direct proprietor's income is \$836.0 million. The multiplier for proprietor's income is 1.62, or for every \$1.0 million in new PLS logistics proprietor's income, statewide total proprietor's income grows by \$620,000.

⁶ In 2007, Georgia Gross State Product was \$396,504 million in current 2007 dollars. See www.bea.gov/regional/gsp.

Regional Economic Impacts of the Provider Logistics Sector of the Logistics Industry: A Comparison

Relative Size of the Regional Impacts: Gross Regional Output

Referring to Tables 1 through 5, the absolute size of the PLS segment of the logistics industry is largest by all measures in the North Central Region. The Coastal Region, made up only of the State Service Delivery Region 12 which includes the Ports of Savannah and Brunswick, and the Mountain Region are the second largest regions as measured by Gross Regional Output. The PLS segment of the logistics industry accounts for slightly more than \$1.0 billion dollars of regional output in each region. The Southeast and West Georgia regions follow the Coastal Region and Mountain Region in size of the impact of the PLS segment of the logistics industry as measured by Gross Regional Output. The economic impact of the PLS segment of the logistics industry in each of these regions is slightly less than \$1.0 billion. The East Central and the Inland Coastal Region show relatively small impacts for the PLS segment of the logistics industry when viewed in absolute terms. In each of these regions the estimated economic impact of the PLS segment of the logistics industry is approximately \$300.0 million in Gross Regional Product.

Indicated Variations in Productivity: Employment and Output Ranks Differ

However, when one looks at employment, there is a different rank by size of the regions. From Tables 1 and 2 above, the North Central region is still first based on total the employment impact for the PLS segment of the logistics industry. However, both West Georgia and the Mountain Region exceed the Coastal Region in total employment, but not in gross output. With higher gross output and relatively lower employment the conclusion is that Coastal Region specializes in high value production or has the most productive of the logistics industry's labor forces in the state. Note, this productivity effect is not necessarily limited to the PLS segment since PLS businesses in this region may simply be supported by more specialized, more productive logistics businesses and higher PLS productivity may contribute to higher non-PLS business productivity. The Coastal Region's higher productivity, more output per job, is probably due to the intensive capital investment needed for port operations and the increasingly capital intensive nature of primary distribution centers.

Measures of the Impact of the PLS Segment of the Logistics Industry Relative to Each Region's Economy

When the employment in PLS segment of the logistics industry in each region is compared to the base of total employment in each region, the PLS logistics economy is approximately equally important in all regions of the state. Table 6 shows total PLS segment employment and PLS dependent employment as a percent of each region's total employment in 2007. On a percent basis, PLS segment of the logistics industry is a larger share of the Southeast region's employment compared to all other regions. It is an equally important share of the Coastal Region and the Inland Coastal economies, suggesting that these two economies are indeed linked in structure. The North Central region has only the third highest share of any economy that is dependent on the PLS segment of the logistics industry. The PLS segment of the logistics economy makes up

3% each of economy in the Mountain and West Georgia regions. The logistics industry is only 2% of the East Central economy based on employment. Statewide the PLS segment of the logistics industry and PLS logistics dependent industry represents about 3% of total state employment.

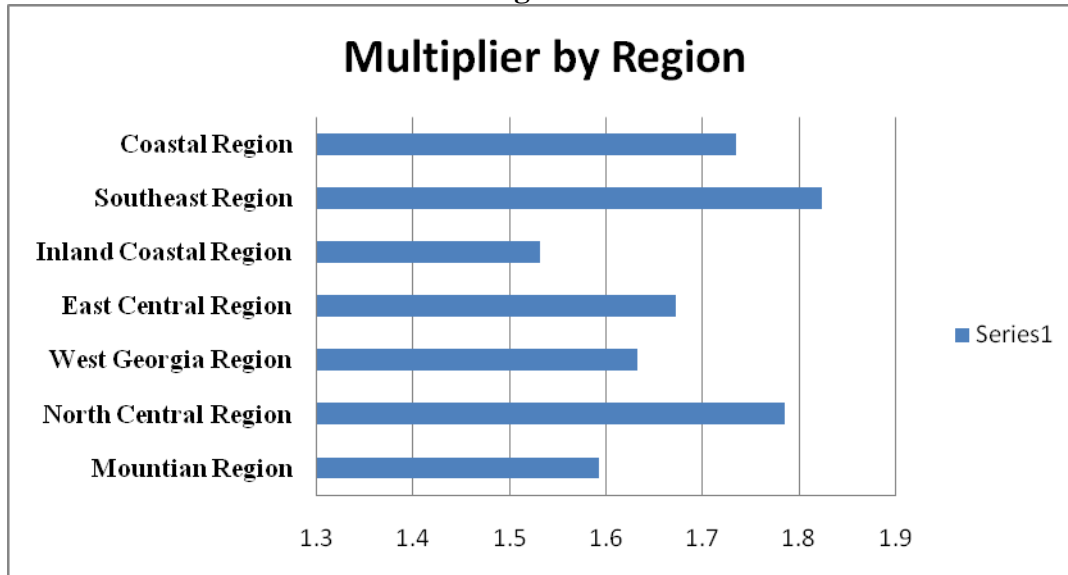
Table 6
Total Provider Employment: Total Statewide Employment

Region	Population	Total Employment	Logistics Employment	Total/Logt
Mountain Region	1,308,622	484,833	13,199	3%
North Central Region	5,026,471	2,431,924	85,431	4%
West Georgia Region	1,157,236	431,154	11,573	3%
East Central Region	447,230	179,506	4,050	2%
Inland Coastal Region	272,894	82,532	3,860	5%
South East Region	351,588	145,915	9,539	7%
Coastal Region	370,654	251,601	11,651	5%
Total	8,934,695	4,007,465	139,303	

Regional Differences in the Employment Multiplier Effects

Figure 2 below shows that the employment multipliers also differ between regions and for regions compared to the state. For example, statewide the employment multiplier is 1.74. The large employment multiplier in the Southeast region, 1.82 explains why the region which was small in absolute terms in direct employment is large in the percent share of PLS logistics employment relative to total employment. The North Central region, as expected given the area's complex and large economy, has the second largest employment multiplier at nearly 1.78. The Coastal Region's employment multiplier is closest to the average total employment multiplier of 1.74, suggesting that it, like the North Central economy, contains logistics service specialists that serve other regions.

Figure 2



Impacts of the Logistics Industry: Distribution by Type of Employment

The multipliers measure the backward and forward linkages of the PLS segment of the logistics industry to other sectors of the economy. However, because of these linkages a variety of jobs are created across diverse sectors within each regional economy. The following figures present these linkages in terms of the percentage distribution of the impact of the Provider Logistics Sector on other sectors of the economy.

Employment, Labor Income and Output Impacts by Sector

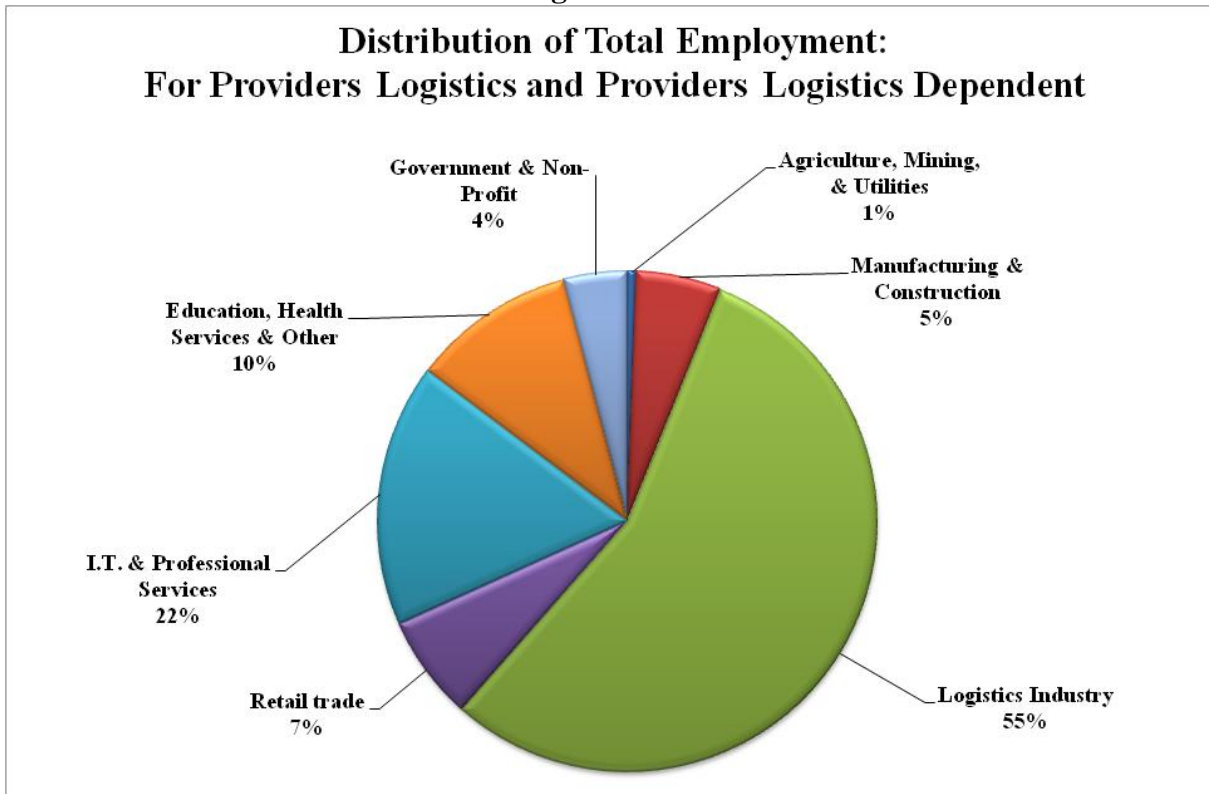
The multiplier effects capture the linkages between the PLS segment of the logistics industry and the rest of the economy. As displayed below, approximately 50% of the impact of growth in the PLS segment of the logistics industry spills over to non-logistics sectors. However, since the PLS segment is supplying service to the logistic industry, PLS stimulates substantial job additional job growth in logistics.

With respect to employment impacts, as noted previously, statewide the total impact of the PLS segment of the logistic industry and the PLS segment of the logistics industry-dependent jobs is about 3.5% of total Georgia employment. As shown in Table 7 and in Figure 3, 48% of all jobs generate by growth in the PLS segment of the logistics industry are in non-logistics employment sectors. Outside the logistics sector the highest employment impacts in terms of jobs are 22% of dependent jobs created in IT and Professional Services. The education, health and other services sector is about 10% of the impact in terms of jobs dependent on the SAP segment of the logistics industry. Six percent, 6%, of retail and 5% of the jobs in Manufacturing and Construction respectively are dependent on the PLS segment of the logistics industry.

Table 7
Provider Logistics Sector:
Statewide Total Employment By Industry Sector

Industry	Total	Percentage
Ag, Mining, Utilities	877	1%
Manufacturing and Construction.	8,510	5%
Logistics Industry	85,467	55%
Retail trade	10,437	7%
Information technology and Professional Services	36,640	22%
Educational and Health, Other Services	16,387	10%
Government and non-profit	6,313	4%

Figure 3



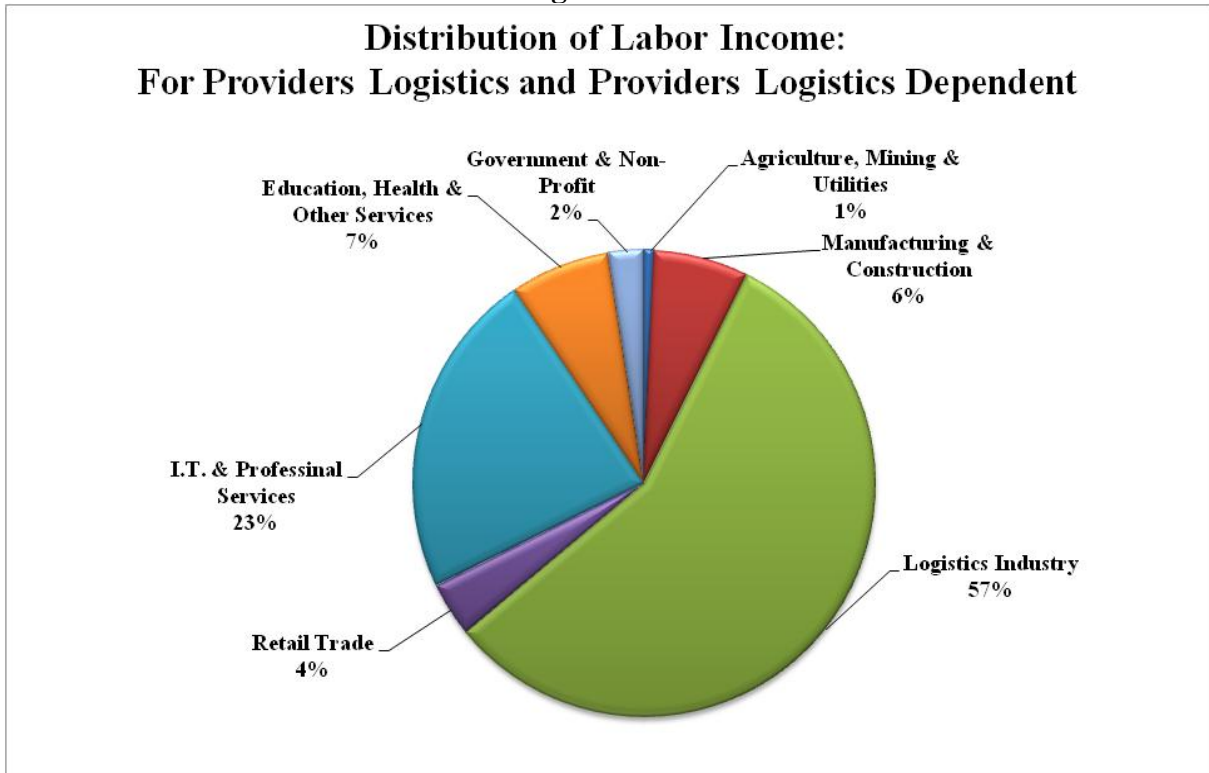
Comparing Table 8 and Figure 4, the distribution of labor income, with Table 7 Figure 3 the distribution of employment, one can note that the jobs in logistics, manufacturing and IT/Professional Services are higher paying than jobs created in the other sectors. This is evidenced by the fact that in these sectors the percent of labor income by sector is larger than the percent of dependent jobs in these sectors.

Table 8
Provider Logistics Sector:
Statewide Total Labor Income By Industry Sector

Industry	Total	Percentage
Agriculture, Mining & Utilities	54,928,361	1%
Manufacturing & Construction	496,203,052	6%
Logistics Industry	4,263,179,008	57%
Retail Trade	282,585,504	4%
I.T. & Professional Services	1,710,373,704	22%
Educational, Health & Other Services	523,598,568	7%
Government & Non-Profit	187,743,056	2%

Figure 4

Distribution of Labor Income:
For Providers Logistics and Providers Logistics Dependent



The Total Gross State Product/Output in 2007 was \$396,504⁷. The PLS segment of the logistics industry and PLS logistics-dependent sectors gross state output represents about 5.0 % of total state output. As shown in Table 9 and Figure 5, forty-nine percent, 49%, of the impact of growth in the PLS segment of the logistics industry, as measured by Gross State Output, spills over to non-logistics sectors. Compared to the distribution of employment, one should note that while employment in logistics-dependent-manufacturing and construction is only 5% of all jobs, logistics-dependent-manufacturing and construction represent about 13% of gross output for logistics and logistics-

⁷ Source: www.bea.gov/regional/gsp/action.cfm

dependent industries. The conclusion is that PLS-logistics dependent manufacturing and construction have higher than average productivity.

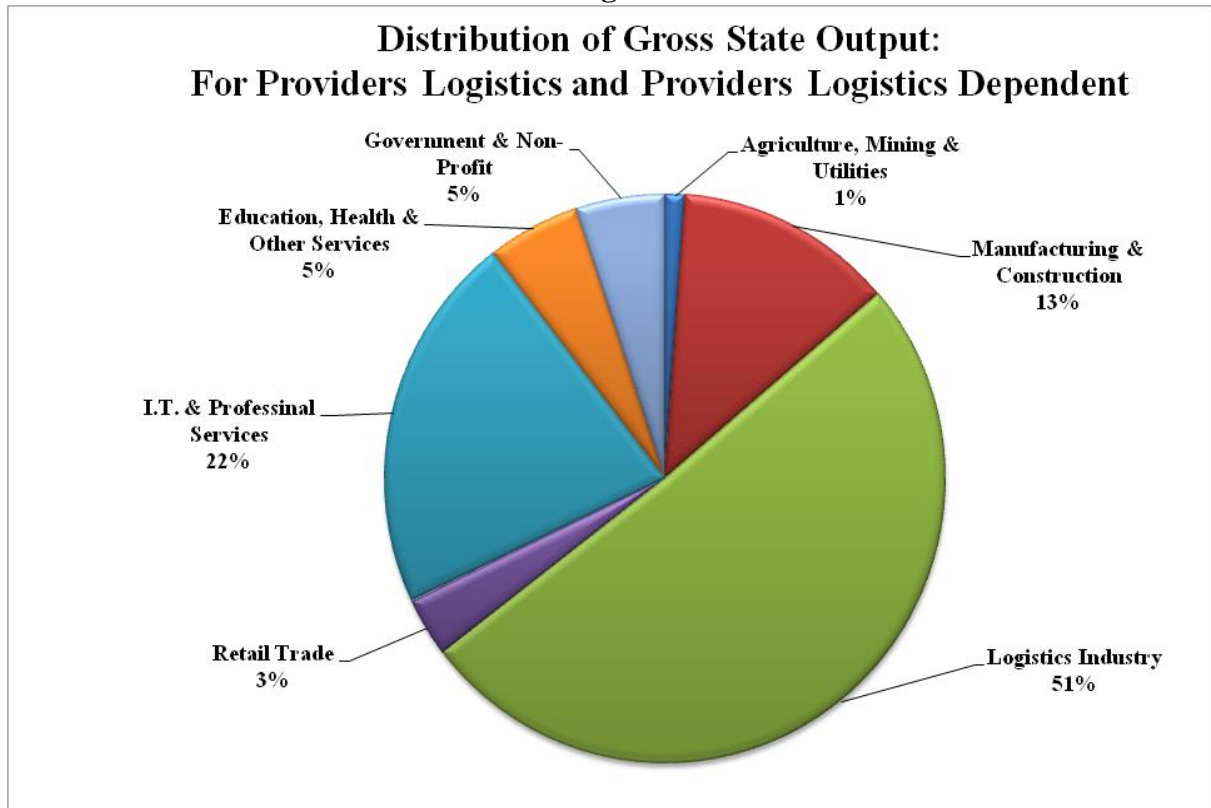
Table 9
Provider Logistics Sector:

Statewide Total Employment By Gross State Output

Industry	Total	Percentage
Agriculture, Mining & Utilities	242,575,230	1%
Manufacturing & Construction	2,631,941,804	13%
Logistics Industry	10,604,344,448	51%
Retail Trade	697,188,352	3%
I.T. & Professional Services	4,502,036,160	22%
Educational, Health & Other Services	1,118,181,968	5%
Government & Non-Profit	1,067,540,800	5%

Figure 5

**Distribution of Gross State Output:
For Providers Logistics and Providers Logistics Dependent**



LOGISTICS INDUSTRY FORECASTS: DEFINED ENTREPRISES AS A SHARE OF THE REMI BASELINE FORECAST 2007

To evaluate the expected future impact of the PLS segment of the logistics industry as defined for this study, a REMI forecast was prepared. The original intent of the forecasting exercise was to modify the REMI forecasts using an analysis of the growth rates of the selected enterprise groups that make up the defined: core; related, and support sub-sectors of the PLS segment of the logistics industry from the NETS database. Several growth rate models were employed to calculate the growth rates of the PLS logistics enterprises in Georgia as defined by the core, related and support categories. However, the recession of 1980-82 interrupted the time-series and in the post recession period there seemed to be evidence of a structural shift in many industry sub-sectors. The result was insufficient post-recession data to reliably extract growth rates. It was therefore decided to rely on the REMI baseline forecasts.

REMI is a dynamic forecasting model and employs sector specific production functions that reflect national trends in changes in technology, productivity and other factors effecting the employment of labor and capital.⁸ For that reason it was felt that the baseline forecast provides a reasonable forecast of the expected future performance of the logistics industry in Georgia. Note, however, that the REMI baseline forecast and the underlying production functions are based on broader definition of the logistics industry.

The following analysis is based on the 2007 REMI model and therefore both the short-term and long-term forecast will not reflect the current 2008/09 recession. For planning purposes this is the most reasonable forecast to employ.

A statewide forecast was prepared as well as a forecast for each of the seven regions for which an impact analysis was performed. The forecasts of employment by sector were converted to expected employment by occupation.

The first step in producing the forecasts was to allocate the NETS data to the REMI model. To do this allocation, BBRED correlated the NETS data to REMI sectors using the same NAICS codes previously used in defining the IMPLAN sectors for the impact analysis. Next the baseline forecasts was reviewed and then selected as the forecast presented in Tables 10 through 17.

Two simplifying assumption were made in reviewing the forecasts. First, it should be noted that in REMI-sectors where the NETS data did not equal 1% of the activity indicated by REMI, it was assumed that the low levels of employment meant negligible economic activity in that sector. In that case for the given region that sector was not include in the analysis. Further, an additional simplification was to assign the NETS data identified as Wholesale Trade and Warehouse and Storage into the Warehouse Storage Category. This category better represents the activity of those wholesale enterprises

⁸ See Appendix C for a description of the REMI model. REMI is a product of REMI, Inc. Amherst, MA, www.remi.com.

selected from the NETS database based on the logistics center's definitions. From a modeling perspective the Warehouse Storage Category's production function is the more appropriate for examining the expected growth in the sector.

Table 10
REMI Forecast Statewide

	2010	2020	2030	2040
Air transportation	39,980	39,225	35,429	32,267
Total proportion captured by NETS	7%			
Rail transportation	5,833	5,312	4,796	4,366
Total proportion captured by NETS	68%			
Water transportation	340	368	418	473
Total proportion captured by NETS	107%			
Truck transp; Couriers, msngrs	98,147	100,291	100,389	99,679
Total proportion captured by NETS	43%			
Scenic, sightseeing transp; supp	21,246	21,508	19,757	18,013
Total proportion captured by NETS	7%			
Warehousing, storage	29,695	33,565	35,430	36,761
Total proportion captured by NETS	42%			

Table 10 shows the statewide forecast of employment growth for each of the major logistics sectors. The percent shown below each of the forecasts for 2010, are the percent employment estimated to be accounted for by the PLS segment enterprise from the NETS data base.

In Tables 11 through 17 the forecasts of employment for each sector in which logistics enterprise were defined as part of the core, related or support sub-sectors are presented. Since the PLS segment of the logistics industry represents only a portion of the REMI defined sectors the percent below each forecast shows the expected portion of the forecasts that will likely be accounted for by the PLS segment of the logistics industry.⁹ For example, in the Mountain Region there is an expected decline in employment in rail transportation employment from slightly more than 350 jobs in 2010 to approximately 275 jobs in 2040. Of the jobs, the PLS segment employment from the NETS database for the region indicated that about 49% of the rail transportation employment was captured in the enterprises defined as core, related or support. It is impossible from the modeling perspective to say whether the Provider Logistics Sector jobs will follow the industry trend. Hence, over time the PLS segment may increase as a share of rail transport, meaning that the jobs losses are concentrated in the non-provider portion of the industry, or whether the job losses in the rail transportation sector will follow the trend in losses.

⁹ As noted previously, REMI's definition of the logistics industry conforms to the broader more commonly defined logistics industry based on the NAICS classification. The Provider Logistics Sector is a sub-component of the broader definition.

Table 11
REMI Forecast Mountain Region

	2010	2020	2030	2040
Rail transportation	366	334	302	276
Total proportion captured by NETS	49%			
Truck transp; Couriers, msngers	11,736	11,987	12,041	11,976
Total proportion captured by NETS	50%			
Warehousing, storage	4,452	5,053	5,358	5,566
Total proportion captured by NETS	19%			

**Air Transportation, Water Transportation, Scenic, sightseeing,transp: supp were less than 1%

Table 12
REMI Forecast North Central Region

	2010	2020	2030	2040
Air transportation	37,040	36,377	32,885	29,966
Total proportion captured by NETS	7%			
Rail transportation	2,712	2,499	2,269	2,074
Total proportion captured by NETS	92%			
Truck transp; Couriers, msngers	60,322	62,107	62,369	62,062
Total proportion captured by NETS	40%			
Scenic, sightseeing transp; supp	12,727	12,994	11,972	10,930
Total proportion captured by NETS	70%			
Warehousing, storage	14,842	16,888	17,886	18,601
Total proportion captured by NETS	62%			

**Water Transportation was less than 1%

Table 13
REMI Forecast West Georgia Region

	2010	2020	2030	2040
Air transportation	904	869	772	695
Total proportion captured by NETS	6%			
Rail transportation	729	657	589	534
Total proportion captured by NETS	53%			
Truck transp; Couriers, msngers	8,658	8,723	8,666	8,560
Total proportion captured by NETS	46%			
Scenic, sightseeing transp; supp	1,010	1,010	922	837
Total proportion captured by NETS	404%			
Warehousing, storage	2,791	3,127	3,281	3,392
Total proportion captured by NETS	48%			

**Water Transportation was less than 1%

Table 14
REMI Forecast East Central Region

	2010	2020	2030	2040
Rail transportation	379	340	304	275
Total proportion captured by NETS	32%			
Truck transp; Couriers, msngrs	3,975	3,985	3,946	3,892
Total proportion captured by NETS	47%			
Scenic, sightseeing transp; supp	764	762	695	630
Total proportion captured by NETS	29%			
Warehousing, storage	1,135	1,268	1,329	1,374
Total proportion captured by NETS	20%			

**Air Transportation, Water Transportation were less than 1%

Table 15
REMI Forecast Inland Coastal Region

	2010	2020	2030	2040
Rail transportation	199	179	160	145
Total proportion captured by NETS	16%			
Truck transp; Couriers, msngrs	3,500	3,510	3,481	3,432
Total proportion captured by NETS	56%			
Scenic, sightseeing transp; supp	343	341	312	283
Total proportion captured by NETS	24%			
Warehousing, storage	786	880	923	952
Total proportion captured by NETS	43%			

**Air Transportation, Water Transportation were less than 1%

Table 16
REMI Forecast Southeast Region

	2010	2020	2030	2040
Rail transportation	959	863	774	701
Total proportion captured by NETS	92%			
Truck transp; Couriers, msngrs	4,665	4,686	4,647	4,582
Total proportion captured by NETS	39%			
Scenic, sightseeing transp; supp	479	477	435	395
Total proportion captured by NETS	205%			
Warehousing, storage	2,753	3,082	3,232	3,337
Total proportion captured by NETS	6%			

**Air Transportation, Water Transportation were less than 1%

Table 17
REMI Forecast Coastal Region

	2010	2020	2030	2040
Rail transportation	491	441	396	360
Total proportion captured by NETS	162%			
Water transportation	257	276	313	354
Total proportion captured by NETS	26%			
Truck transp; Couriers, msngrs	5,290	5,292	5,239	5,174
Total proportion captured by NETS	44%			
Scenic, sightseeing transp; supp	4,475	4,457	4,075	3,711
Total proportion captured by NETS	7%			
Warehousing, storage	2,936	3,267	3,421	3,539
Total proportion captured by NETS	25%			

**Air Transportation not included due to Statistical significance

State and Regional Forecasts of Employment in the Core, Related and Support Logistics

Statewide and in all regions employment in air and rail transportation is expected to decline between 2010 and 2040. This is due largely to the on-going technology changes in both sectors that have increased productivity. Water transportation employment is, as should be expected, almost exclusively a Coastal Region activity. It is expected to grow but will remain a small segment of the logistics economy. Growth in truck transportation employment is virtually flat.

It is expected that Warehousing and Storage employment will post substantial gains in employment. Between 2010 and 2040 the number of jobs in the sector is expected to increase by approximately 25%.

Conversion of Employment Forecasts by Sector to Employment Forecasts by Occupation

Table 18 shows the distribution of employment by occupation rather than by industrial sector. The REMI model employs the Bureau of Economic Analysis, BEA method for converting employment by industry sector to employment by occupation.

First, in Table 18, jobs by occupation, it should be note that for Transportation and Materials Moving the percent change in employment between 2010 and 2040 is only expected to be 12%. However, as shown in the impact analysis growth by PLS segment logistics enterprises generates over half of its employment growth in non-logistics sectors. The spillover effect identified in the impact analysis was largest in Management, Business, Financial and IT, 22%. The forecast of jobs by occupation Management/Professional IT group shows an expected 31% increase in jobs in those occupations. Logistics also had high spillover impacts in manufacturing and construction, about 5%. Occupations in these sectors are expected to grow by, 11% in Production Occupations, and by 23% Construction, Extraction Occupations.

Table 18
Forecast of Jobs by Occupation
For Logistics and Logistics Dependent

	2010	2020	2030	2040	% Change
Management, Business, Financial occ	518,193	589,007	630,955	678,401	31%
Advertising, marketing, promotions	26,609	30,119	31,981	33,923	27%
Operations specialties managers	61,216	68,363	72,587	77,099	26%
Top executives	95,491	106,779	112,840	119,820	25%
Financial specialists	96,133	108,629	115,275	122,346	27%
Other management occupations	107,846	122,853	132,225	143,701	33%
Business operations specialists	130,897	152,265	166,046	181,512	39%
Comp, math, arch, eng occ	226,080	263,849	286,844	309,303	37%
Life, phys, soc sci occ	46,893	53,099	57,074	61,532	31%
Comm, soc serv occ	80,231	96,092	107,688	120,849	51%
Legal occ	44,590	50,738	54,126	57,223	28%
Educ, train, lib occ	292,543	353,802	397,871	452,835	55%
Postsecondary teachers	59,265	76,569	90,535	107,660	82%
Primary, secondary, and special edu	145,795	174,735	194,718	219,861	51%
Other teachers and instructors	26,497	31,297	34,656	38,794	46%
Librarians, curators, and archivist	9,980	11,084	11,606	12,303	23%
Other education, training, and libr	51,007	60,117	66,356	74,218	46%
Arts, des, enter, sports, media occ	77,378	88,132	94,451	100,963	30%
Healthcare occ	345,820	435,631	503,364	567,338	64%
Health diagnosing and treating prac	138,501	173,125	197,791	220,397	59%
Health technologists and technician	87,006	105,998	118,908	130,329	50%
Other healthcare practitioners and	4,113	4,906	5,467	6,043	47%
Nursing, psychiatric, and home heal	66,610	86,996	105,243	124,338	87%
Occupational and physical therapist	4,582	6,136	7,394	8,582	87%
Other healthcare support occupation	45,007	58,470	68,561	77,649	73%
Protective service occ	119,569	134,810	142,260	151,468	27%
Food prep, serving rel occ	414,814	466,514	487,961	513,429	24%
Blding, grnds, pers care, serv occ	409,544	473,116	514,886	563,748	38%
Sales, office, admin occ	1,518,610	1,585,475	1,576,058	1,572,727	4%
Supervisors, sales workers	56,879	57,873	55,461	53,790	-5%
Retail sales workers	340,905	354,187	342,500	336,281	-1%
Sales representatives, services	50,691	54,565	55,924	57,067	13%
Sales representatives, wholesale an	73,107	77,026	77,508	78,406	7%
Other sales and related workers	55,240	58,594	59,316	60,145	9%
Supervisors, office and administrat	58,464	62,043	62,938	63,796	9%
Communications equipment operators	9,180	8,069	6,867	5,508	-40%
Financial clerks	149,406	158,283	159,934	161,449	8%
Information and record clerks	228,248	246,851	253,586	260,351	14%
Material recording, scheduling, dis	142,717	136,550	127,720	120,963	-15%
Secretaries and administrative assi	164,760	174,815	177,389	178,438	8%
Other office and administrative sup	189,013	196,618	196,915	196,532	4%
Farm, fish, forestry occ	64,301	60,887	57,881	56,143	-13%

cont; Table 18
Cont; Forecast of Jobs by Occupation
For Logistics and Logistics Dependent

	2010	2020	2030	2040	% Change
Constr, extraction occ	300,788	331,805	343,875	370,518	23%
Supervisors, construction and extra	26,679	29,499	30,564	33,019	24%
Construction trades and related wor	231,552	254,489	262,747	282,460	22%
Helpers, construction trades	21,596	23,446	23,876	25,420	18%
Other construction trades and relat	17,522	20,778	22,836	25,394	45%
Extraction workers	3,439	3,592	3,851	4,225	23%
Install, maint, repair occ	252,900	276,337	289,218	306,777	21%
Supervisors of installation, mainte	21,736	23,846	25,022	26,620	22%
Electrical and electronic equipment	25,897	25,963	25,206	24,798	-4%
Vehicle and mobile equipment mechan	72,846	79,563	82,511	86,762	19%
Other installation, maintenance, an	132,420	146,965	156,478	168,598	27%
Production occ	360,551	366,882	383,944	400,424	11%
Supervisors, production workers	24,676	25,632	27,288	28,999	18%
Assemblers and fabricators	59,666	64,437	70,206	75,143	26%
Food processing occupations	32,240	33,946	33,539	33,663	4%
Metal workers and plastic workers	53,596	55,421	59,514	62,217	16%
Printing occupations	14,562	14,915	15,704	16,341	12%
Textile, apparel, and furnishings o	47,754	40,497	38,862	38,113	-20%
Woodworkers	11,603	11,852	13,342	14,649	26%
Plant and system operators	9,510	10,059	10,495	11,074	16%
Other production occupations	106,944	110,122	114,993	120,224	12%
Transp, mat moving occ	423,196	450,520	461,126	474,566	12%
Supervisors, transportation and mat	17,333	18,533	19,036	19,693	14%
Air transportation occupations	8,853	9,280	8,963	8,774	-1%
Motor vehicle operators	166,053	181,343	188,919	197,811	19%
Rail transportation occupations	3,044	2,909	2,739	2,620	-14%
Water transportation occupations o	1,845	1,914	1,882	1,872	1%
Other transportation workers	13,818	13,847	13,290	12,942	-6%
Material moving occupations	212,250	222,694	226,298	230,854	9%

APPENDIX A
DETAILED SECTOR ANALYSIS BY REGION

The following are the detailed sub-regional impacts as distributed across the various sectors of each sub-region's economy.

Mountain Region

Total Provider Logistics Output: Mountain Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	236,299	2,351,583	2,587,883
Mining	0	28,501	9,898	38,399
Utilities	0	2,715,635	5,543,702	8,259,337
Construction	0	2,962,661	1,616,990	4,579,651
Manufacturing	324,485,152	37,965,744	23,844,418	386,295,328
Wholesale Trade	914,136	32,161,918	14,285,420	47,361,472
Transportation & Warehousing	829,667,072	93,359,384	5,376,204	928,402,624
Retail trade	479,655	8,716,647	41,476,552	50,672,856
Information	0	10,518,935	7,799,497	18,318,432
Finance & insurance	0	16,819,556	15,955,109	32,774,664
Real estate & rental	0	15,995,860	14,592,576	30,588,436
Professional- scientific & tech svcs	0	20,212,166	7,117,616	27,329,782
Management of companies	0	4,528,061	1,027,917	5,555,978
Administrative & waste services	0	8,619,905	5,228,571	13,848,475
Educational svcs	0	203,930	4,221,684	4,425,614
Health & social services	0	190,486	39,739,548	39,930,036
Arts- entertainment & recreation	0	541,842	3,567,677	4,109,518
Accommodation & food services	0	2,932,484	17,659,878	20,592,362
Other services	0	9,412,416	12,436,563	21,848,978
Government & non NAICs	0	8,773,789	49,634,492	58,408,280
Totals	1,155,546,015	276,896,219	273,485,892	1,705,928,103

Total Provider Logistics Value Added: Mountain Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	89,366	859,326	948692
Mining	0	8,150	3,374	11524
Utilities	0	2,150,519	4,407,043	6557562
Construction	0	1,233,156	660,783	1893939
Manufacturing	49,701,496	11,665,305	6,894,204	68261005
Wholesale Trade	613,557	21,586,700	9,588,206	31788463
Transportation & Warehousing	400,577,792	52,178,460	2,789,259	455545511
Retail trade	393,614	5,643,928	26,773,066	32810608
Information	0	4,755,947	3,371,615	8127562
Finance & insurance	0	9,699,834	9,864,654	19564488
Real estate & rental	0	10,096,211	9,934,705	20030916
Professional- scientific & tech svcs	0	11,406,980	3,722,357	15129337
Management of companies	0	2,358,659	535,440	2894099
Administrative & waste services	0	4,736,030	3,012,482	7748512
Educational svcs	0	103,651	2,294,382	2398033
Health & social services	0	90,766	24,486,666	24577432
Arts- entertainment & recreation	0	266,044	1,930,158	2196202
Accommodation & food services	0	1,499,655	8,090,395	9590050
Other services	0	4,085,441	5,956,592	10042033
Government & non NAICs	0	2,981,829	41,830,156	44811985
TOTALS	451,286,459	146,636,631	167,004,863	764,927,953

Total Provider Logistics Employment: Mountain Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	2	30	32
Mining	0	0	0	0
Utilities	0	7	15	22
Construction	0	30	16	46
Manufacturing	1,085	140	83	1308
Wholesale Trade	6	211	94	311
Transportation & Warehousing	7,186	906	55	8146
Retail trade	9	131	630	770
Information	0	41	30	71
Finance & insurance	0	95	84	179
Real estate & rental	0	99	100	198
Professional- scientific & tech svcs	0	174	73	247
Management of companies	0	29	7	35
Administrative & waste services	0	152	109	261
Educational svcs	0	4	90	94
Health & social services	0	1	491	493
Arts- entertainment & recreation	0	14	79	93
Accomodation & food services	0	56	369	424
Other services	0	134	264	398
Government & non NAICs	0	46	26	71
Totals	8,286	2,271	2,642	13,199

Total Provider Logistics Labor Income: Mountain Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	56,385	504,737	561,122
Mining	0	4,956	2,136	7,092
Utilities	0	594,055	1,222,023	1,816,078
Construction	0	1,190,833	643,870	1,834,703
Manufacturing	44,974,636	8,214,054	4,495,317	57,684,004
Wholesale Trade	344,685	12,127,007	5,386,476	17,858,168
Transportation & Warehousing	305,758,016	42,160,952	2,242,130	350,161,088
Retail trade	311,383	3,457,078	16,519,009	20,287,470
Information	0	2,297,056	1,603,377	3,900,433
Finance & insurance	0	4,924,329	4,293,288	9,217,616
Real estate & rental	0	2,871,585	2,528,204	5,399,789
Professional- scientific & tech svcs	0	9,361,925	3,250,858	12,612,783
Management of companies	0	1,830,332	415,504	2,245,836
Administrative & waste services	0	3,581,040	2,421,796	6,002,836
Educational svcs	0	95,757	2,114,440	2,210,197
Health & social services	0	65,651	21,069,600	21,135,250
Arts- entertainment & recreation	0	209,531	1,320,326	1,529,858
Accomodation & food services	0	962,476	5,559,917	6,522,393
Other services	0	3,067,363	4,796,068	7,863,430
Government & non NAICs	0	1,749,421	1,002,337	2,751,757
TOTALS	351,388,720	98,821,783	81,391,411	531,601,902

Total Provider Logistics Proprietors Income: Mountain Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	34,311	357,825	392,135
Mining	0	611	348	959
Utilities	0	21,323	45,287	66,610
Construction	0	331,470	179,150	510,620
Manufacturing	536,320	969,540	487,140	1,993,000
Wholesale Trade	11,352	399,408	177,406	588,167
Transportation & Warehousing	41,591,496	7,739,773	210,112	49,541,380
Retail trade	15,826	252,170	1,218,390	1,486,386
Information	0	63,417	46,228	109,645
Finance & insurance	0	376,644	347,357	724,001
Real estate & rental	0	1,524,020	1,518,005	3,042,025
Professional- scientific & tech svcs	0	1,846,635	738,579	2,585,214
Management of companies	0	-4,013	-911	-4,924
Administrative & waste services	0	395,445	267,679	663,124
Educational svcs	0	9,278	177,352	186,630
Health & social services	0	13,155	2,507,975	2,521,130
Arts- entertainment & recreation	0	110,499	290,569	401,069
Accomodation & food services	0	108,556	271,601	380,157
Other services	0	699,163	791,339	1,490,502
TOTALS	42,154,995	14,891,405	9,631,430	66,677,830

North Central Region

Total Provider Logistics Output: North Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	1,234,680	8,452,843	9,687,523
Mining	0	931,593	464,446	1,396,039
Utilities	0	35,582,856	72,521,112	108,103,960
Construction	0	16,705,340	11,349,772	28,055,112
Manufacturing	350,834,304	153,335,056	217,822,848	721,992,192
Wholesale Trade	26,095,642	185,614,352	154,394,304	366,104,320
Transportation & Warehousing	5,081,389,056	644,098,304	68,643,176	5,794,130,432
Retail trade	20,247,960	52,994,884	327,917,120	401,159,936
Information	358,499,680	153,390,480	93,749,864	605,640,064
Finance & insurance	0	222,241,408	249,443,872	471,685,280
Real estate & rental	30,555,650	187,378,864	141,246,960	359,181,472
Professional- scientific & tech svcs	680,959,616	267,858,240	110,522,208	1,059,340,096
Management of companies	0	61,150,660	29,575,672	90,726,336
Administrative & waste services	32,259,108	160,832,080	51,522,588	244,613,776
Educational svcs	0	3,249,398	46,740,912	49,990,308
Health & social services	0	1,507,979	327,308,704	328,816,672
Arts- entertainment & recreation	0	21,059,568	32,503,718	53,563,288
Accommodation & food services	0	56,692,592	149,054,752	205,747,344
Other services	0	48,886,636	102,249,704	151,136,336
Government & non NAICs	0	29,062,606	357,618,592	386,681,184
Totals	6,580,841,016	2,303,807,577	2,553,103,167	11,437,751,670

Total Provider Logistics Value Added: North Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	473,320	3,123,820	3,597,140
Mining	0	79,886	23,075	102,961
Utilities	0	26,522,658	53,630,036	80,152,694
Construction	0	7,642,509	4,916,306	12,558,815
Manufacturing	52,433,992	34,562,464	61,678,820	148,675,276
Wholesale Trade	17,626,096	125,371,744	104,284,416	247,282,256
Transportation & Warehousing	2,567,551,744	378,985,120	37,718,096	2,984,254,960
Retail trade	15,766,224	35,093,424	216,580,112	267,439,760
Information	185,760,448	78,138,560	47,606,552	311,505,560
Finance & insurance	0	126,702,544	136,509,280	263,211,824
Real estate & rental	13,749,224	117,163,000	93,878,576	224,790,800
Professional- scientific & tech svcs	475,300,160	156,379,664	62,698,316	694,378,140
Management of companies	0	37,324,200	18,051,944	55,376,144
Administrative & waste services	18,347,316	96,543,240	32,223,416	147,113,972
Educational svcs	0	2,079,376	29,795,332	31,874,708
Health & social services	0	785,791	205,633,264	206,419,055
Arts- entertainment & recreation	0	14,959,522	19,691,378	34,650,900
Accommodation & food services	0	30,864,158	77,667,192	108,531,350
Other services	0	24,821,000	56,132,640	80,953,640
Government & non NAICs	0	10,924,783	307,055,744	317,980,527
TOTALS	3,346,535,204	1,305,416,963	1,568,898,315	6,220,850,482

Total Provider Logistics Employment: North Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	12	106	119
Mining	0	3	1	4
Utilities	0	41	84	125
Construction	0	158	101	259
Manufacturing	1,267	394	519	2180
Wholesale Trade	124	882	734	1740
Transportation & Warehousing	39,075	5845	630	45550
Retail trade	288	757	4714	5759
Information	957	423	218	1598
Finance & insurance	0	1007	1129	2136
Real estate & rental	164	970	805	1938
Professional- scientific & tech svcs	5,803	1925	872	8600
Management of companies	0	289	140	429
Administrative & waste services	164	2159	833	3155
Educational svcs	0	44	773	817
Health & social services	0	10	3671	3681
Arts- entertainment & recreation	0	281	565	846
Accomodation & food services	0	925	2593	3518
Other services	0	565	2099	2663
Government & non NAICs	0	161	154	315
Totals	47,842	16,850	20,740	85,431

Total Provider Logistics Labor Income: North Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	324,882	2,158,264	2,483,146
Mining	0	47,461	13,946	61,407
Utilities	0	7,562,246	15,417,564	22,979,812
Construction	0	7,421,700	4,750,269	12,171,968
Manufacturing	57,436,008	23,828,714	34,637,156	115,901,880
Wholesale Trade	9,900,353	70,419,712	58,575,228	138,895,296
Transportation & Warehousing	1,964,980,096	305,358,368	29,951,660	2,300,290,048
Retail trade	11,974,215	21,533,376	133,570,224	167,077,808
Information	112,809,296	41,547,616	20,746,010	175,102,928
Finance & insurance	0	76,268,552	81,286,248	157,554,800
Real estate & rental	7,114,720	32,662,212	24,396,980	64,173,908
Professional- scientific & tech svcs	488,359,456	132,636,600	53,761,544	674,757,632
Management of companies	0	28,963,414	14,008,229	42,971,644
Administrative & waste services	10,859,141	74,364,704	25,746,860	110,970,712
Educational svcs	0	1,970,173	27,681,212	29,651,386
Health & social services	0	568,939	175,962,976	176,531,904
Arts- entertainment & recreation	0	11,566,313	13,838,488	25,404,802
Accomodation & food services	0	20,156,502	52,484,568	72,641,072
Other services	0	18,516,570	47,160,408	65,676,976
Government & non NAICs	0	7,168,393	6,863,218	14,031,611
TOTALS	2,663,433,285	882,886,446	823,011,052	4,369,330,740

Total Provider Logistics Proprietors Income: North Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	151,322	1,284,460	1,435,782
Mining	0	4,913	1,450	6,363
Utilities	0	3,753,957	7,612,077	11,366,034
Construction	0	1,869,356	1,197,338	3,066,694
Manufacturing	1,123,796	1,304,122	3,584,648	6,012,566
Wholesale Trade	492,248	3,501,285	2,912,374	6,905,907
Transportation & Warehousing	144,906,080	33,194,962	1,728,061	179,829,104
Retail trade	251,808	1,696,520	10,498,963	12,447,291
Information	26,504,000	10,316,960	5,108,076	41,929,036
Finance & insurance	0	5,678,419	7,634,802	13,313,222
Real estate & rental	275,221	11,900,333	10,546,866	22,722,420
Professional- scientific & tech svcs	109,191,384	28,787,322	11,361,983	149,340,688
Management of companies	0	-130,436	-63,086	-193,522
Administrative & waste services	705,729	5,138,301	1,775,553	7,619,583
Educational svcs	0	99,073	1,333,229	1,432,302
Health & social services	0	81,650	17,588,744	17,670,394
Arts- entertainment & recreation	0	2,478,089	1,628,624	4,106,712
Accomodation & food services	0	900,178	2,181,800	3,081,978
Other services	0	1,744,056	5,581,645	7,325,701
TOTALS	283,450,265	112,470,381	93,497,605	489,418,254

West Georgia Region

Total Provider Logistics Output: West Georgia Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	737,888	2,996,663	3,734,550
Mining	0	16,747	9,660	26,407
Utilities	0	2,668,680	5,754,048	8,422,727
Construction	0	2,094,601	1,265,619	3,360,220
Manufacturing	101,677,192	16,216,976	21,454,076	139,348,240
Wholesale Trade	255,381	16,704,341	11,310,780	28,270,502
Transportation & Warehousing	720,419,904	76,921,176	5,903,954	803,244,992
Retail trade	0	6,373,649	37,153,488	43,527,140
Information	0	10,703,415	8,341,890	19,045,304
Finance & insurance	0	22,104,346	21,657,426	43,761,772
Real estate & rental	0	16,772,953	10,179,274	26,952,226
Professional- scientific & tech svcs	0	18,070,010	7,049,536	25,119,546
Management of companies	0	6,435,040	2,359,837	8,794,877
Administrative & waste services	0	7,673,537	4,241,263	11,914,799
Educational svcs	0	50,716	1,634,434	1,685,151
Health & social services	0	129,421	38,159,108	38,288,528
Arts- entertainment & recreation	0	358,950	2,774,766	3,133,716
Accommodation & food services	0	2,369,522	15,845,412	18,214,934
Other services	0	6,620,802	10,931,699	17,552,500
Government & non NAICs	9,422,432	10,211,700	43,994,004	63,628,136
Totals	831,774,909	223,234,468	253,016,935	1,308,026,267

Total Provider Logistics Value Added: West Georgia Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	240,509	1,298,802	1,539,311
Mining	0	9,491	5,035	14,526
Utilities	0	2,077,855	4,458,072	6,535,928
Construction	0	901,046	521,324	1,422,370
Manufacturing	18,993,198	4,497,399	6,262,015	29,752,612
Wholesale Trade	170,648	11,162,031	7,557,992	18,890,672
Transportation & Warehousing	371,072,352	42,059,372	3,124,967	416,256,704
Retail trade	0	4,103,870	23,862,196	27,966,066
Information	0	4,650,819	3,500,347	8,151,165
Finance & insurance	0	11,349,907	12,120,076	23,469,984
Real estate & rental	0	9,219,342	6,484,146	15,703,487
Professional- scientific & tech svcs	0	9,748,735	3,519,136	13,267,870
Management of companies	0	3,678,473	1,348,958	5,027,430
Administrative & waste services	0	4,277,121	2,446,055	6,723,175
Educational svcs	0	27,053	915,265	942,318
Health & social services	0	59,666	23,278,440	23,338,104
Arts- entertainment & recreation	0	146,647	1,392,569	1,539,215
Accommodation & food services	0	1,157,181	7,067,355	8,224,537
Other services	0	2,906,052	5,603,178	8,509,229
Government & non NAICs	9,422,431	3,380,637	36,551,400	49,354,468
Total	399,658,629	115,653,204	151,317,325	666,629,171

Total Provider Logistics Employment: West Georgia Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	5	37	41
Mining	0	0	0	0
Utilities	0	7	16	23
Construction	0	23	13	37
Manufacturing	373	70	91	533
Wholesale Trade	2	131	89	221
Transportation & Warehousing	6,631	762	65	7458
Retail trade	0	102	598	700
Information	0	47	37	83
Finance & insurance	0	122	114	236
Real estate & rental	0	87	67	153
Professional- scientific & tech svcs	0	176	74	249
Management of companies	0	35	13	48
Administrative & waste services	0	138	95	233
Educational svcs	0	1	41	42
Health & social services	0	1	498	499
Arts- entertainment & recreation	0	10	68	78
Accommodation & food services	0	49	346	395
Other services	0	94	274	367
Government & non NAICs	84	57	35.4	176.4
Totals	7,090	1,915	2,568	11,573

Total Provider Logistics Labor Income: West Georgia Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	167,806	977,274	1,145,080
Mining	0	5,817	3,223	9,040
Utilities	0	574,670	1,240,060	1,814,730
Construction	0	889,941	514,850	1,404,791
Manufacturing	16,680,995	3,280,652	3,866,565	23,828,212
Wholesale Trade	95,838	6,268,749	4,244,672	10,609,258
Transportation & Warehousing	281,711,776	33,424,600	2,469,651	317,606,016
Retail trade	0	2,509,682	14,702,998	17,212,680
Information	0	2,577,100	1,941,393	4,518,493
Finance & insurance	0	6,309,341	5,949,328	12,258,669
Real estate & rental	0	3,241,667	1,848,240	5,089,907
Professional- scientific & tech svcs	0	7,844,619	3,030,342	10,874,961
Management of companies	0	2,854,530	1,046,804	3,901,334
Administrative & waste services	0	3,347,516	2,028,317	5,375,833
Educational svcs	0	23,704	832,576	856,281
Health & social services	0	43,204	20,070,402	20,113,606
Arts- entertainment & recreation	0	111,635	957,580	1,069,216
Accommodation & food services	0	753,835	4,874,222	5,628,057
Other services	0	2,199,147	4,679,144	6,878,291
Government & non NAICs	8,752,716	1,995,254	1,123,470	11,871,439
TOTALS	307,241,325	78,423,467	76,401,108	462,065,891

Total Provider Logistics Proprietors Income: West Georgia Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	54,550	568,845	623,395
Mining	0	844	253	1,097
Utilities	0	31,499	75,165	106,664
Construction	0	225,295	130,350	355,645
Manufacturing	5,614,325	189,155	262,097	6,065,577
Wholesale Trade	6,025	394,110	266,859	666,994
Transportation & Warehousing	65,281,272	9,887,109	331,825	75,500,208
Retail trade	0	205,517	1,204,320	1,409,837
Information	0	328,568	231,281	559,849
Finance & insurance	0	373,267	363,020	736,287
Real estate & rental	0	1,425,611	816,007	2,241,618
Professional- scientific & tech svcs	0	2,564,868	958,944	3,523,812
Management of companies	0	-3,254	-1,193	-4,448
Administrative & waste services	0	260,998	171,288	432,287
Educational svcs	0	1,676	57,963	59,639
Health & social services	0	5,357	1,939,853	1,945,210
Arts- entertainment & recreation	0	50,929	161,104	212,033
Accomodation & food services	0	45,504	177,546	223,050
Other services	0	398,366	701,808	1,100,174
TOTALS	70,901,622	16,439,970	8,417,335	95,758,928

East Central Region

Total Provider Logistics Output: East Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	92,525	500,176	592,702
Mining	0	14,126	4,845	18,971
Utilities	0	1,092,673	2,643,814	3,736,487
Construction	0	666,896	399,234	1,066,130
Manufacturing	33,654,264	5,975,494	6,898,357	46,528,116
Wholesale Trade	0	7,256,044	3,655,800	10,911,844
Transportation & Warehousing	273,070,240	38,560,192	2,094,997	313,725,408
Retail trade	0	2,817,241	12,078,011	14,895,251
Information	0	4,043,884	2,601,977	6,645,861
Finance & insurance	0	7,423,400	6,186,963	13,610,362
Real estate & rental	0	5,570,976	3,319,823	8,890,799
Professional- scientific & tech svcs	0	6,805,849	2,419,771	9,225,619
Management of companies	0	956,373	257,520	1,213,893
Administrative & waste services	0	2,825,190	1,644,836	4,470,026
Educational svcs	0	34,909	824,867	859,776
Health & social services	0	106,583	12,870,656	12,977,239
Arts- entertainment & recreation	0	125,661	1,073,467	1,199,128
Accommodation & food services	0	934,821	5,438,286	6,373,107
Other services	860,171	2,945,076	3,636,340	7,441,587
Government & non NAICs	1,915,089	3,192,045	14,904,868	20,012,002
Totals	309,499,764	91,439,959	83,454,604	484,394,307

Total Provider Logistics Value Added: East Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	31,125	207,717	238,841
Mining	0	7,925	2,673	10,598
Utilities	0	875,564	2,119,354	2,994,918
Construction	0	283,256	165,301	448,557
Manufacturing	8,172,147	1,555,083	1,928,476	11,655,706
Wholesale Trade	0	4,866,082	2,451,670	7,317,751
Transportation & Warehousing	130,481,584	20,824,734	1,135,894	152,442,208
Retail trade	0	1,811,342	7,745,051	9,556,393
Information	0	1,769,072	1,114,190	2,883,261
Finance & insurance	0	4,075,679	3,635,439	7,711,118
Real estate & rental	0	3,013,376	2,158,073	5,171,449
Professional- scientific & tech svcs	0	3,689,785	1,280,641	4,970,426
Management of companies	0	445,529	119,966	565,495
Administrative & waste services	0	1,577,928	960,664	2,538,592
Educational svcs	0	19,199	468,475	487,675
Health & social services	0	50,005	7,929,447	7,979,452
Arts- entertainment & recreation	0	54,812	597,484	652,296
Accommodation & food services	0	486,960	2,475,012	2,961,972
Other services	405,895	1,347,041	1,847,701	3,600,637
Government & non NAICs	1,915,089	1,150,087	12,369,698	15,434,874
Total	140,974,714	47,934,584	50,712,924	239,622,219

Total Provider Logistics Employment: East Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	1	10	10
Mining	0	0	0	0
Utilities	0	2	6	8
Construction	0	7	4	11
Manufacturing	82	20	24	126
Wholesale Trade	0	49	25	74
Transportation & Warehousing	2,298	374	22	2693
Retail trade	0	45	193	238
Information	0	19	12	30
Finance & insurance	0	44	35	78
Real estate & rental	0	29	21	51
Professional- scientific & tech svcs	0	63	24	87
Management of companies	0	7	2	9
Administrative & waste services	0	51	34	85
Educational svcs	0	1	19	19
Health & social services	0	1	161	161
Arts- entertainment & recreation	0	4	21	25
Accomodation & food services	0	18	117	135
Other services	26	39	93	158
Government & non NAICs	14	20	16	50
Totals	2,420	793	836	4,050

Total Provider Logistics Labor Income: East Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	24,153	187,781	211,934
Mining	0	4,902	1,684	6,586
Utilities	0	237,756	575,492	813,247
Construction	0	276,305	162,439	438,743
Manufacturing	4,954,459	963,693	1,199,031	7,117,182
Wholesale Trade	0	2,734,224	1,377,579	4,111,803
Transportation & Warehousing	96,905,120	16,530,697	902,088	114,337,904
Retail trade	0	1,129,059	4,853,325	5,982,384
Information	0	957,377	588,567	1,545,943
Finance & insurance	0	2,281,570	1,809,334	4,090,904
Real estate & rental	0	1,006,895	584,001	1,590,897
Professional- scientific & tech svcs	0	3,375,138	1,168,417	4,543,555
Management of companies	0	345,731	93,094	438,824
Administrative & waste services	0	1,215,101	778,391	1,993,492
Educational svcs	0	15,832	406,523	422,354
Health & social services	0	36,199	6,770,542	6,806,741
Arts- entertainment & recreation	0	41,181	393,535	434,716
Accomodation & food services	0	305,382	1,689,865	1,995,247
Other services	520,638	1,007,149	1,591,050	3,118,837
Government & non NAICs	1,778,971	709,717	473,763	2,962,451
TOTALS	104,159,187	33,198,059	25,606,497	162,963,742

Total Provider Logistics Proprietors Income: East Central Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	8,309	91,034	99,342
Mining	0	194	34	229
Utilities	0	8,050	19,483	27,532
Construction	0	41,471	24,373	65,843
Manufacturing	33,139	4,021	8,105	45,265
Wholesale Trade	0	35,036	17,652	52,688
Transportation & Warehousing	11,187,206	2,839,406	84,994	14,111,606
Retail trade	0	64,728	277,317	342,046
Information	0	14,458	9,957	24,416
Finance & insurance	0	121,451	89,178	210,630
Real estate & rental	0	337,104	234,256	571,360
Professional- scientific & tech svcs	0	585,453	197,068	782,520
Management of companies	0	-1,173	-316	-1,489
Administrative & waste services	0	80,007	49,029	129,036
Educational svcs	0	1,118	24,198	25,317
Health & social services	0	4,687	832,766	837,453
Arts- entertainment & recreation	0	7,724	41,860	49,584
Accomodation & food services	0	29,807	73,942	103,749
Other services	5,188	147,617	211,266	364,072
TOTALS	11,225,533	4,329,470	2,286,197	17,841,200

Inland Coastal Region

Total Provider Logistics Output: Inland Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	87,395	1,136,863	1,224,258
Mining	0	26	15	41
Utilities	0	1,421,918	2,443,373	3,865,291
Construction	0	599,639	266,143	865,782
Manufacturing	54,257,356	2,387,025	3,133,065	59,777,444
Wholesale Trade	0	5,573,849	2,085,139	7,658,988
Transportation & Warehousing	239,177,328	39,617,580	1,594,935	280,389,856
Retail trade	0	2,704,229	9,392,249	12,096,477
Information	0	2,893,858	1,333,800	4,227,658
Finance & insurance	0	4,076,917	3,340,014	7,416,931
Real estate & rental	0	1,388,149	937,816	2,325,966
Professional- scientific & tech svcs	1,641,193	3,089,259	923,336	5,653,788
Management of companies	0	4,073,197	665,610	4,738,806
Administrative & waste services	709,042	1,927,552	783,100	3,419,695
Educational svcs	0	25,163	449,315	474,477
Health & social services	0	74,797	8,168,418	8,243,215
Arts- entertainment & recreation	0	61,618	370,753	432,371
Accommodation & food services	0	665,295	3,612,477	4,277,772
Other services	0	2,749,233	2,408,207	5,157,440
Government & non NAICs	0	2,388,885	11,891,681	14,280,566
Totals	295,784,920	75,805,582	54,936,308	426,526,820

Total Provider Logistics Value Added: Inland Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	32,269	415,819	448,088
Mining	0	18	10	28
Utilities	0	1,128,161	1,937,516	3,065,678
Construction	0	229,789	101,770	331,559
Manufacturing	9,892,958	741,000	723,149	11,357,107
Wholesale Trade	0	3,700,947	1,384,499	5,085,447
Transportation & Warehousing	101,331,808	19,614,132	768,978	121,714,920
Retail trade	0	1,703,890	5,892,980	7,596,869
Information	0	1,264,021	570,775	1,834,796
Finance & insurance	0	2,382,522	2,157,966	4,540,488
Real estate & rental	0	817,063	611,271	1,428,334
Professional- scientific & tech svcs	797,236	1,629,261	471,081	2,897,577
Management of companies	0	1,999,447	326,734	2,326,181
Administrative & waste services	587,609	945,405	399,862	1,932,877
Educational svcs	0	10,995	216,456	227,451
Health & social services	0	37,065	4,710,181	4,747,246
Arts- entertainment & recreation	0	14,344	132,076	146,420
Accommodation & food services	0	311,531	1,523,607	1,835,137
Other services	0	1,108,827	1,111,894	2,220,721
Government & non NAICs	0	726,911	9,877,828	10,604,739
TOTALS	112,609,611	38,397,597	33,334,451	184,341,662

Total Provider Logistics Employment: Inland Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	1	20	21
Mining	0	0	0	0
Utilities	0	3	5	8
Construction	0	7	3	9
Manufacturing	166	15	15	197
Wholesale Trade	0	54	20	74
Transportation & Warehousing	2,303	370	18	2691
Retail trade	0	46	162	208
Information	0	13	6	19
Finance & insurance	0	28	21	48
Real estate & rental	0	11	9	20
Professional- scientific & tech svcs	21	31	10	62
Management of companies	0	28	5	33
Administrative & waste services	31	30	16	77
Educational svcs	0	1	12	13
Health & social services	0	1	135	136
Arts- entertainment & recreation	0	3	15	17
Accomodation & food services	0	14	83	97
Other services	0	44	66	110
Government & non NAICs	0	13	7	21
Totals	2,521	711	628	3,860

Total Provider Logistics Labor Income: Inland Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	23,193	313,932	337,126
Mining	0	13	7	20
Utilities	0	306,830	527,087	833,917
Construction	0	222,259	100,479	322,738
Manufacturing	8,459,702	575,770	535,596	9,571,068
Wholesale Trade	0	2,078,924	777,711	2,856,635
Transportation & Warehousing	76,736,664	15,465,167	612,472	92,814,304
Retail trade	0	1,068,473	3,715,596	4,784,069
Information	0	599,600	272,608	872,208
Finance & insurance	0	1,148,595	860,181	2,008,775
Real estate & rental	0	293,940	180,425	474,366
Professional- scientific & tech svcs	805,175	1,401,699	411,754	2,618,628
Management of companies	0	1,551,551	253,542	1,805,093
Administrative & waste services	592,226	664,005	302,440	1,558,671
Educational svcs	0	10,239	202,748	212,987
Health & social services	0	26,829	4,059,505	4,086,334
Arts- entertainment & recreation	0	12,565	93,651	106,215
Accomodation & food services	0	203,289	1,054,434	1,257,723
Other services	0	873,392	948,274	1,821,666
Government & non NAICs	0	427,962	250,210	678,172
TOTALS	86,593,767	26,954,293	15,472,653	129,020,715

Total Provider Logistics Proprietors Income: Inland Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	9,422	181,807	191,229
Mining	0	12	7	19
Utilities	0	12,122	20,854	32,976
Construction	0	54,418	24,571	78,989
Manufacturing	38,986	24,000	26,221	89,207
Wholesale Trade	0	88,466	33,095	121,561
Transportation & Warehousing	15,585,305	5,672,783	133,780	21,391,868
Retail trade	0	77,485	271,339	348,824
Information	0	15,212	6,690	21,902
Finance & insurance	0	97,877	63,312	161,189
Real estate & rental	0	146,262	94,991	241,253
Professional- scientific & tech svcs	260,865	427,010	120,606	808,482
Management of companies	0	-9,035	-1,477	-10,512
Administrative & waste services	137,135	127,391	66,449	330,976
Educational svcs	0	1,682	25,597	27,279
Health & social services	0	3,747	498,373	502,120
Arts- entertainment & recreation	0	8,189	37,537	45,726
Accomodation & food services	0	23,897	44,316	68,213
Other services	0	233,964	182,779	416,743
Total	16,022,292	7,014,904	1,830,848	24,868,043

Southeast Region

Total Provider Logistics Output: South East Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	3,562,149	3,417,118	6,979,267
Mining	0	39,243	4,831	44,075
Utilities	0	1,327,357	3,268,376	4,595,733
Construction	0	1,444,327	1,056,822	2,501,149
Manufacturing	409,415,520	77,466,616	13,740,109	500,622,240
Wholesale Trade	0	21,136,464	8,868,464	30,004,928
Transportation & Warehousing	572,690,432	78,473,544	6,904,495	658,068,416
Retail trade	0	3,567,951	35,537,052	39,105,004
Information	0	7,081,186	6,352,852	13,434,038
Finance & insurance	0	9,294,000	12,609,366	21,903,366
Real estate & rental	0	16,186,698	8,458,706	24,645,404
Professional- scientific & tech svcs	0	15,892,142	5,355,055	21,247,196
Management of companies	0	5,383,861	1,463,603	6,847,463
Administrative & waste services	0	5,395,832	3,760,628	9,156,459
Educational svcs	0	12,781	628,071	640,851
Health & social services	0	69,157	34,291,852	34,361,008
Arts- entertainment & recreation	0	302,982	2,632,970	2,935,952
Accommodation & food services	0	3,399,213	15,646,438	19,045,652
Other services	0	4,465,498	10,307,649	14,773,147
Government & non NAICs	0	5,051,683	41,136,044	46,187,724
Totals	982,105,952	259,552,683	215,440,499	1,457,099,071

Total Providers Logistics Value Added: South East Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	937,991	1,343,438	2,281,429
Mining	0	18,436	2,595	21,032
Utilities	0	1,041,796	2,564,524	3,606,320
Construction	0	576,652	418,939	995,590
Manufacturing	72,612,560	17,595,868	2,784,214	92,992,648
Wholesale Trade	0	14,071,671	5,904,209	19,975,880
Transportation & Warehousing	330,300,832	45,843,792	3,706,119	379,850,752
Retail trade	0	2,282,473	22,678,652	24,961,124
Information	0	3,507,620	3,003,901	6,511,521
Finance & insurance	0	5,643,056	7,943,196	13,586,252
Real estate & rental	0	8,350,485	5,505,492	13,855,976
Professional- scientific & tech svcs	0	8,849,512	2,777,964	11,627,476
Management of companies	0	2,618,952	711,962	3,330,915
Administrative & waste services	0	2,986,923	2,136,399	5,123,322
Educational svcs	0	6,348	319,746	326,094
Health & social services	0	29,121	20,530,276	20,559,396
Arts- entertainment & recreation	0	102,836	1,261,225	1,364,061
Accommodation & food services	0	1,717,907	6,856,645	8,574,552
Other services	0	1,770,123	4,885,675	6,655,797
Government & non NAICs	0	1,609,174	34,229,584	35,838,758
Totals	402,913,392	119,560,735	129,564,753	652,038,895

Total Providers Logistics Employment: South East Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	21	40	61
Mining	0	0	0	0
Utilities	0	4	10	14
Construction	0	16	12	28
Manufacturing	1,631	350	53	2035
Wholesale Trade	0	188	79	266
Transportation & Warehousing	3,597	685	73	4355
Retail trade	0	57	568	625
Information	0	29	25	54
Finance & insurance	0	61	77	138
Real estate & rental	0	68	55	123
Professional- scientific & tech svcs	0	144	59	203
Management of companies	0	38	10	48
Administrative & waste services	0	110	84	194
Educational svcs	0	0	20	21
Health & social services	0	1	470	470
Arts- entertainment & recreation	0	10	68	78
Accomodation & food services	0	71	352	423
Other services	0	77	273	350
Government & non NAICs	0	28	27	55
Totals	5,228	1,956	2,355	9,539

Total Providers Logistics Labor Income: South East Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	641,996	1,021,518	1,663,514
Mining	0	9,418	1,637	11,055
Utilities	0	292,177	723,848	1,016,026
Construction	0	562,318	415,245	977,564
Manufacturing	68,590,208	14,352,634	1,917,990	84,860,832
Wholesale Trade	0	7,906,147	3,317,271	11,223,417
Transportation & Warehousing	230,605,472	36,716,760	2,937,270	270,259,488
Retail trade	0	1,422,213	14,212,243	15,634,457
Information	0	1,973,266	1,574,419	3,547,685
Finance & insurance	0	2,623,385	3,309,024	5,932,409
Real estate & rental	0	2,931,126	1,514,401	4,445,526
Professional- scientific & tech svcs	0	7,321,497	2,427,734	9,749,230
Management of companies	0	2,032,312	552,484	2,584,796
Administrative & waste services	0	2,365,895	1,739,579	4,105,474
Educational svcs	0	5,788	304,907	310,695
Health & social services	0	21,082	17,590,402	17,611,484
Arts- entertainment & recreation	0	73,657	788,118	861,775
Accomodation & food services	0	1,080,663	4,695,342	5,776,005
Other services	0	1,393,490	3,661,073	5,054,563
Government & non NAICs	0	952,072	911,058	1,863,129
TOTALS	299,195,680	84,677,895	63,615,561	447,489,123

Total Providers Logistics Proprietors Income: South East Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	155,050	595,233	750,283
Mining	0	3,136	882	4,018
Utilities	0	13,655	35,365	49,020
Construction	0	120,845	89,151	209,995
Manufacturing	401,934	145,073	54,609	601,616
Wholesale Trade	0	165,886	69,603	235,489
Transportation & Warehousing	69,513,080	17,330,312	633,094	87,476,480
Retail trade	0	82,688	826,676	909,365
Information	0	969,635	701,157	1,670,792
Finance & insurance	0	188,655	242,348	431,002
Real estate & rental	0	1,455,764	585,042	2,040,806
Professional- scientific & tech svcs	0	2,200,159	682,979	2,883,138
Management of companies	0	-6,073	-1,651	-7,724
Administrative & waste services	0	252,339	198,051	450,390
Educational svcs	0	939	41,729	42,668
Health & social services	0	3,199	2,151,587	2,154,786
Arts- entertainment & recreation	0	30,932	117,149	148,081
Accommodation & food services	0	108,651	183,319	291,970
Other services	0	326,221	845,741	1,171,962
TOTALS	69,915,014	23,547,065	8,052,063	101,514,135

Coastal Region

Total Provider Logistics Output: Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	679,025	795,463	1,474,488
Mining	0	41,171	7,451	48,622
Utilities	0	2,794,351	6,389,173	9,183,524
Construction	0	1,031,816	871,544	1,903,360
Manufacturing	312,541,568	60,895,824	12,726,340	386,163,744
Wholesale Trade	11,507,122	28,417,394	15,773,078	55,697,592
Transportation & Warehousing	650,397,440	88,096,488	9,413,941	747,907,904
Retail trade	0	4,599,345	40,162,256	44,761,600
Information	0	10,147,717	10,039,945	20,187,662
Finance & insurance	0	14,265,730	19,588,338	33,854,068
Real estate & rental	0	19,122,938	16,110,509	35,233,448
Professional- scientific & tech svcs	13,749,177	25,964,542	9,469,824	49,183,544
Management of companies	0	7,091,431	2,247,648	9,339,079
Administrative & waste services	0	10,513,670	6,124,856	16,638,525
Educational svcs	0	376,628	4,639,717	5,016,345
Health & social services	0	81,950	41,867,032	41,948,984
Arts- entertainment & recreation	0	483,267	4,146,422	4,629,689
Accommodation & food services	0	4,509,907	19,937,526	24,447,432
Other services	0	5,809,808	12,239,146	18,048,954
Government & non NAICs	23,051,136	3,866,465	48,025,708	74,943,312
Totals	1,011,246,443	288,789,465	280,575,916	1,580,611,875

Total Provider Logistics Value Added: Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	196,238	402,200	598,438
Mining	0	548	163	712
Utilities	0	2,217,220	5,079,539	7,296,759
Construction	0	396,032	321,821	717,853
Manufacturing	68,636,848	7,688,229	1,775,848	78,100,928
Wholesale Trade	7,745,814	19,128,662	10,617,366	37,491,840
Transportation & Warehousing	362,892,352	51,583,160	4,899,222	419,374,752
Retail trade	0	2,963,295	25,824,024	28,787,318
Information	0	4,613,910	4,192,669	8,806,579
Finance & insurance	0	7,859,051	11,059,790	18,918,842
Real estate & rental	0	11,221,411	10,759,694	21,981,104
Professional- scientific & tech svcs	5,996,488	13,939,366	4,915,475	24,851,328
Management of companies	0	3,709,924	1,175,871	4,885,795
Administrative & waste services	0	5,803,643	3,485,928	9,289,570
Educational svcs	0	210,448	2,717,028	2,927,476
Health & social services	0	36,184	25,969,610	26,005,792
Arts- entertainment & recreation	0	267,083	2,362,077	2,629,160
Accommodation & food services	0	2,500,466	9,689,980	12,190,447
Other services	0	2,834,641	6,219,524	9,054,164
Government & non NAICs	23,051,134	1,420,932	40,597,584	65,069,648
Totals	468,322,636	138,590,441	172,065,410	778,978,503

Total Provider Logistics Employment: Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	4	9	13
Mining	0	0	0	0
Utilities	0	7	16	22
Construction	0	10	8	17
Manufacturing	1,170	101	24	1295
Wholesale Trade	66	163	91	320
Transportation & Warehousing	5,229	945	92	6266
Retail trade	0	71	621	692
Information	0	43	37	79
Finance & insurance	0	84	106	190
Real estate & rental	0	107	108	215
Professional- scientific & tech svcs	70	228	93	391
Management of companies	0	45	14	59
Administrative & waste services	0	202	127	330
Educational svcs	0	6	87	93
Health & social services	0	1	512	513
Arts- entertainment & recreation	0	12	80	92
Accomodation & food services	0	73	385	458
Other services	0	75	286	361
Government & non NAICs	180	27	41	247
Totals	6,714	2,201	2,736	11,651

Total Provider Logistics Labor Income: Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	130,122	293,154	423,276
Mining	0	383	117	500
Utilities	0	627,083	1,456,222	2,083,304
Construction	0	372,540	307,797	680,337
Manufacturing	65,295,296	5,548,811	1,130,690	71,974,800
Wholesale Trade	4,351,970	10,747,401	5,965,346	21,064,716
Transportation & Warehousing	261,850,032	42,133,616	3,890,593	307,874,240
Retail trade	0	1,874,268	16,380,386	18,254,654
Information	0	2,584,484	2,069,902	4,654,386
Finance & insurance	0	4,051,402	5,259,924	9,311,325
Real estate & rental	0	3,273,938	2,762,313	6,036,251
Professional- scientific & tech svcs	3,926,065	11,719,184	4,241,270	19,886,520
Management of companies	0	2,878,946	912,490	3,791,435
Administrative & waste services	0	4,548,508	2,796,382	7,344,890
Educational svcs	0	199,876	2,505,066	2,704,941
Health & social services	0	26,208	22,345,468	22,371,676
Arts- entertainment & recreation	0	193,770	1,554,477	1,748,247
Accomodation & food services	0	1,550,297	6,528,142	8,078,439
Other services	0	2,071,218	5,163,730	7,234,948
Government & non NAICs	21,412,736	938,329	1,307,323	23,658,388
TOTALS	356,836,099	95,470,382	86,870,789	539,177,273

Total Provider Logistics Proprietors Income: Coastal Region

Industry	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	42,183	173,436	215,619
Mining	0	290	95	384
Utilities	0	13,623	32,267	45,889
Construction	0	70,083	57,857	127,940
Manufacturing	0	17,037	6,624	23,662
Wholesale Trade	91,692	226,438	125,685	443,815
Transportation & Warehousing	21,192,532	4,323,628	278,920	25,795,080
Retail trade	0	106,318	921,810	1,028,127
Information	0	160,693	124,280	284,973
Finance & insurance	0	235,537	333,442	568,978
Real estate & rental	0	1,146,729	1,176,495	2,323,224
Professional- scientific & tech svcs	769,066	2,571,580	882,693	4,223,338
Management of companies	0	-1,596	-506	-2,102
Administrative & waste services	0	519,158	318,054	837,212
Educational svcs	0	9,354	98,986	108,340
Health & social services	0	3,571	2,214,330	2,217,901
Arts- entertainment & recreation	0	61,780	151,518	213,298
Accomodation & food services	0	49,400	178,472	227,872
Other services	0	183,972	690,332	874,304
TOTALS	22,053,290	9,739,777	7,764,788	39,557,854

APPENDIX B IMPLAM

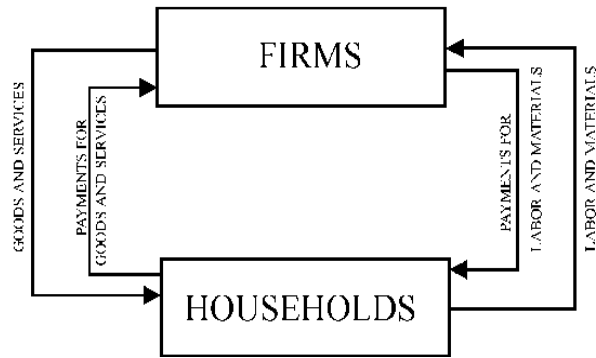
Impact Analysis for PLANning is nationally recognized as one of the best economic input-output modeling systems and includes a database for the state of Georgia and each of its counties. The estimates were prepared using the 2000 database, which is the most current database available. Since the expenditure data is in years 2000 dollars, the program automatically inflates the dollars to 2007. Therefore, all of the estimates impacts are reported in current year 2007 dollars. Input-Output analysis, a branch of economic modeling and statistics, has the ability to illustrate and quantify the economic interdependence of producing industries in any regional or local economy. Just as each industry produces goods and services; it is also a consumer by purchasing other goods and services for use in the production process. Using the input-output analysis technique, the impact of a specific industry or economic activity can be traced throughout all sectors of the economy.

Economists often view the economy as if it were a series of transactions that flow in a circle. They often summarize the economy by describing it as a series of transactions. Each transaction by one sector has a counterbalancing transaction in at least one other sector.

In Figure 1, the outside loop refers to such things as goods, services, labor, and capital. The households provide firms with such things and labor materials.¹⁰ In return, the firms provide households with such things as goods and services for sale. The inner loop, on the other hand, identifies the payments for the transaction of the goods and services, which are part of the outer loop. The firm pays the household wages and other payments for labor and materials. The household, however, provides payments back to the firms for the goods and services it produces.

¹⁰ In a private, market economy, the households are the ultimate owners of all the productive resources.

Figure 1



Equilibrium in this simple economy will be maintained as long as there are no leakages from the system. Leakages include savings, imports, and taxes. A leakage means that the amount of payments going to the firm for its goods and services is less than the income obtained by the household. When leakages occur, the total amount of income and goods will shrink unless new spending injections occur to offset the losses. Some examples of these injections are: 1) the investment of savings by the firms; 2) consumers from outside of the region buying the firm's goods, exports; and/or; 3) government purchase of goods with generated tax revenue. The economy will balance if injections continue to equal leakages. If injections are greater than leakages, the economy will grow. When leakages exceed injections, the economy will shrink.

Input-output models begin by simply assigning dollars to the flow of transactions between businesses, households, and other major consumer groups in the economy such as governments. The transactions are recorded in the hypothetical transactions table shown in Figure 2. The rows display the transaction of things, goods, and services. The columns reveal the payments associated with each transaction. The system balances in that all injections and leakages are accounted for. In other words, **Total Output (Expenditures)** is equal to **Total Payments (Income/Revenue)**.

Figure 2

HYPOTHETICAL TRANSACTIONS TABLE

Outputs*	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Inputs*	A	B	C	D	E	F	Gross inventory accumul- ation(+)	Exports to foreign countries	Govern- ment purchases	Gross private capital formation	House- holds	Total Gross Output
[1] Industry A	10	15	1	2	5	6	2	5	1	3	14	64
[2] Industry B	5	4	7	1	3	8	1	6	3	4	17	59
[3] Industry C	7	2	8	1	5	3	2	3	1	3	5	40
[4] Industry D	11	1	2	8	6	4	0	0	1	2	4	39
[5] Industry E	4	0	1	14	3	2	1	2	1	3	9	40
[6] Industry F	2	6	7	6	2	6	2	4	2	1	8	46
[7] Gross inventory depletion (-)	1	2	1	0	2	1	0	1	0	0	0	8
[8] Imports	2	1	3	0	3	2	0	0	0	0	2	13
[9] Payments to government	2	3	2	2	1	2	3	2	1	2	12	32
[10] Depreciation allowances	1	2	1	0	1	0	0	0	0	0	0	5
[11] Households	19	23	7	5	9	12	1	0	8	0	1	85
[12] Total Gross Outlays	64	59	40	39	40	46	12	23	18	18	72	431

The transactions table is more than a numerical version of the circular flow of transactions illustrated in Figure 1. The table is actually a set of equations that depict the linkage between the final demand for goods and services, and the payments, income or revenue, associated by the production of those goods and services. The solution of the system of equations results in a set of multipliers which show the relationship between the final demand for a good or service and the intermediate demand among the producers who supply goods and services at the various stages of production. The mathematical

manipulation required to solve the set of equations will not be discussed here.¹¹

Input-output models are driven by final demand (consumption). Industries selling to customers respond to the demand for their products by supplying customers directly. However, in order to supply consumer demand, the directly impacted industries must buy goods and services from other businesses. Hence, indirectly impacted producers supply goods and services to the industries responding to direct demand, which means that in turn they must buy goods and services from yet other producers. Each industry that produces goods and services generated demand for other goods and services and so on, in a round by round fashion. These round by round incremental effects are described as multipliers. Within the general framework of input-output analysis, various methodologies can be employed to solve the mathematical equations and derive the multipliers.

IMPLAN relies on a complex database of linked expenditure patterns between 528 processing sectors in the economy. Using data specific down to the county level for the state of Georgia, the program is capable of generating five separate impact measures in the form of multipliers. These are: 1) output multipliers; 2) personal income multipliers; 3) total income multipliers; 4) value-added multipliers; and, 5) employment multipliers. Each of the multipliers is composed of several components or effects. These effects are denoted: 1) direct effects; 2) indirect effects; and, 3) induced effects. There are three types of multipliers which may be estimated in a system of input-output equations. These are termed Type I, Type II, and Type III Sam multipliers. Type I multipliers include only the direct and indirect effects. Type II multipliers are almost a complete estimate of a full impact including the direct, indirect, and induced effects.¹²

¹¹ A general discussion of the mathematical process for deriving multipliers is found in *The Elements of Input-Output Analysis*, by William H. Miernyk. IMPALN estimates Leontief Type I multipliers and a modified form of Miernyk's Type III multipliers.

¹² Induced effects may be estimated by either Type II or Type III Leontief Multipliers. The primary difference between the two types of multipliers arises from the type of constraint imposed on the system of equations. The Type III multipliers used in IMPACN assumes that the economy is at full employment. Therefore, any change in final demand either increased or decreases population by the number of jobs created or lost. It is therefore assumed that wages do not adjust, only the number of people employed. Each person added or lost adds to or deducts from the average expenditures per person.

The direct effects on any given producer or industry are the output and employment associated with the immediate effects of change in final demand. Final demands consist of purchases of goods and services for final consumption, as opposed to an intermediate purchase where the goods will be further re-manufactured by a supplier of final demand. For example, expenditures for new bridge construction are direct final demand.

The indirect effects are the output or employment associated with backward linkages in industry demand. These are the inter-industry effects i.e. producers buying from other local businesses. To produce the output necessary to serve final demand, directly impacted industries must demand inputs from supporting producers. In order for supporting businesses to produce the intermediate demand for output going to the directly impacted industries, they require the input of goods and services from other businesses and employment. Therefore, some portion of the demand for each intermediate producer is attributable to the primary supplier of final demand. The induced effects are changes in demand associated with the household income generated by the direct and indirect effects of output or employment. Household consumption is related to household income in a stable way and is typically estimated by the propensity to consume. Hence, employment and output generate income, which the household uses in turn to demand goods and services. Some part of each region's consumption, therefore, is dependent on household income generated by the owners and employees of both directly and indirectly impacted producers. Input-output analysis traces how the final demand for goods and services has direct, indirect, and induced effects on industry final demand, total industry output, and employment.

Type II multipliers, on the other hand, assume that employment income increases or decreases as final demand changes. Therefore, it is assumed that wages adjust, but not employment. As each employee's income increases, the model assumes that expenditures on all personal consumption items increase.

APPENDIX C

REMI:

A Dynamic Regional Economic Model: REMI

The dynamic policy modeling approach to economic modeling developed by REMI Policy Insight provides an interesting companion analysis to economic impact analysis as typically done with regional input-output analysis. While IMPLAN and regional input-output models show the final effect of a change from one equilibrium state to another, a dynamic model describes the underlying paths, the adjustments made in a series of markets that carry one from one state of equilibrium to another. The REMI model for 2007 which is currently employed by BBRED also incorporates an important regional modeling tool that captures the forces described in the New Economic Geography.⁵ There are three important attributes of REMI which make it a strong modeling technique for the analysis of a rapidly changing industry such as logistics. First, REMI is a model of market behaviors, including constant revisions of the model to insure that the impact of changes in technology, workforce productivity and relative U.S. and international prices are reflected in the model's market adjustment engine. Second, as already mentioned, it includes measures of the forces described in theories of the New Economic Geography. This is most relevant since one expects that economic activities like major ports will create cluster or aggregation effect that pulls dependent company and skills toward specific locations. Third, the model is a policy analysis model designed to allow one to model the potential economic impacts of changes in economic development strategies for a region.

REMI Models Market Behaviors

Methodologically REMI is a macroeconomic modeling system for small open economies which recognizes that regional open economies do not share all of the policy parameters or barriers to factor mobility that small open national economies face. The focus of the model is on the interactions between the region of interest and all other regions.

⁵See Paul Krugman *Development, Geography, and Economic Theory; Geography and Trade*; and *The Spatial Economy* (with Masahisa Fujita and Anthony Venables).

However, unlike counterpart models of small open economies in an international context, the free movement between regions of goods, services, capital, labor and population is assumed.

REMI's regional modeling system is built on market behaviors. Firms make decisions about what and where to produce goods and services based on relative wages, prices, profits and amenities. Households make decisions about where to live and work based on net demand for labor, relative wages, relative prices and amenities. Based on the movement of firms and jobs, capital and labor move between regions. Movements between regions result in changes in the market shares of regions, changes in regional gross output, changes in residential housing and business capital stocks and changes in regional amenities. This means that when forecasting regional population and employment, the future is not totally dependant on past trends, but on a region's relative competitiveness.

REMI Models New Economic Geography Forces

New Economic Geography adds the dimension that there are powerful forces which tend to create clusters of centralized development. Typically classified as economies of agglomeration the New Economic Geography components of REMI model the impacts of the forces of agglomeration on the costs of labor, the costs of other inputs and transportation. For example, the Silicone Valley is a self-sustaining cluster of economic growth in high-technology. On the surface the costs of doing business and the costs of living in the area appear prohibitively high for attracting new firms. However, because of the high productivity of labor created by the effect of pooling highly specialized knowledge workers in one location the region is actually a low cost area for high-technology firms.

REMI Models the Impact of Changes in Economic Development Strategy

State Governments, Development Authorities and Communities all seek to manage growth, and indeed the purpose of the Logistic Center, is to change the course of growth in logistics enterprises by working with enterprises in Georgia specializing in innovations

in logistics. REMI is designed specifically to help analyze the impact of policies designed to change trends in growth. For example, both the IMPLAN analysis and the REMI analysis in the above report suggest that the logistics industry is growing differently in different regions. This suggests that each region within Georgia maybe distinctively aligned with different segments of the U.S. logistics industry. For example, the Coastal Regional and the Rural Coastal Dependent Region have higher rates of output per job than other regions, suggesting that the changes in port related technology drives growth and employment in this region independently of what maybe happening in other regions of Georgia.