2. Georgia's Freight Economy

2.1. Importance of Freight Movement to the State

Georgia's multimodal transportation network carried nearly half a billion tons of freight in 2019, valued at $673 trillion. Over 100 million additional tons of freight traveling between other states also moved across Georgia highways. The system delivered essentially all of the household goods the people of Georgia needed and used: food for their tables, clothes to wear, cars to drive and fuel to run them, materials for building and repair, telecommunications and entertainment devices, and a host of other consumer products. The businesses of the state received their supplies and shipped goods to markets near and far, and the quality of the system kept businesses competitive and household budgets in line.

Five major industry groups are the sources of this Georgia-based traffic, all of them vital to the state's economy: food and agriculture, manufacturing, distribution and e-commerce, construction, and energy. Forecasts of freight volumes project a 91 percent increase in tonnage and 141 percent increase in the value of goods carried by 2050 – almost doubling today's tonnage and more than doubling today's value over the next three decades. Road traffic passing through the state nearly doubles as well. While some industry volumes grow more than others, all of them grow robustly. Trucks carry more than 80 percent of Georgia's tonnage today and are forecast to carry 87 percent of the new tonnage coming on stream by 2050, indicating that highways will shoulder most of the burden of growth. Even so, traffic by every mode will climb substantially, as Georgia's supply chains continue to take advantage of the state's modal diversity.

This chapter begins with the contribution of freight-supported industries to the Georgia economy. It then describes the composition of Georgia's current and forecast freight activity, with industry and modal detail and portrayal of foreign trade. This is followed by profiles of the five major industry groups, and the chapter concludes with a review of the key traffic patterns by industry.

2.1.1. Sources of Freight Traffic Data

Freight traffic analysis by industry and mode in this plan is based principally on the commercial commodity flow database Transearch, produced by S&P Global (formerly IHS Markit) and used by GDOT in past freight studies. Transearch portrays Standard Transportation Commodity Code (STCC)-level commodity flow volumes nationally by freight mode, with origin and destination by county along with highway and rail routing information. Annual traffic volumes are reported in tons and product value; tons reflect physical demand on infrastructure, and product value reflects economic activity. Data from this source, covering both base year 2019 flows and forecasted 2050 flows, identifies key freight corridors in Georgia, captures volumes passing through the state (such as between Florida and Tennessee) and segregates traffic specifically associated with key Georgia-based supply chains ("Georgia-based" signifies traffic with an origin and/or destination in Georgia, thus contributing directly to the state economy). Data for rail traffic is derived from the federal Surface Transportation Board Carload Waybill Sample for 2019, aggregated and integrated into Transearch.

The Transearch forecast is post-pandemic, meaning that it incorporates up-to-date assumptions about the outlook for industries and trade in the wake of supply chain disruptions associated with COVID-19. S&P Global is one of the country's leading econometric forecasting houses, utilizing linked models of economic activity at the regional, national and worldwide levels to project future volumes. New developments announced in Georgia and other states are incorporated in their models.

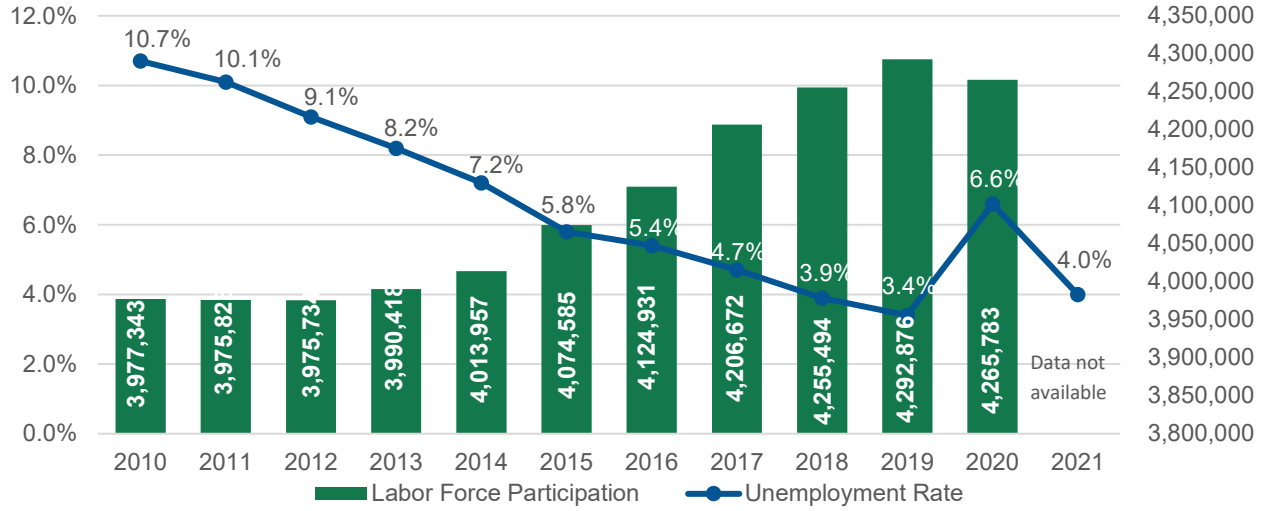
Supplementing Transearch is commodity flow data for foreign trade from the U.S. DOT Freight Analysis Framework (FAF) version 5.2, depicting 2019 annual volumes. While Transearch includes most foreign trade, it does not capture international air cargo, and it does not identify foreign trading partners for any traffic other than with Mexico and Canada. FAF uses a different commodity coding system that is not compatible with the industry groupings employed for analysis with Transearch, and its geographic detail in Georgia is limited to the Atlanta and Savannah metropolitan areas alongside the rest of the state. Nevertheless, its capture of overseas trading partners provides an important baseline from which to understand sourcing and coastal shifts as supply chains now strive to reduce supplier and logistical risks.

2.2. Economic Structure and Freight Supported Industries in Georgia

Georgia's network of roads, bridges, railways, seaports, inland ports and airports plays a critical role in everyday life for residents and businesses across the state and serves as the backbone of the state's robust and resilient freight related economy. The state is home to nearly 900 million square feet of warehouse distribution space, with metro Atlanta – the largest market in Georgia and sixth largest in the U.S. – accounting for 600 million square feet

Labor force participation trends for the population aged 25-64 show a rapid increase in the state's labor force beginning in 2015, with a slight decline in 2020 likely due to the COVID-19 pandemic. Between 2014 and 2019, the state's labor force increased by nearly 300,000, with an average annual growth rate of 1.35 percent. As of 2020, nearly 4.3 million individuals aged 25-64 are in the state's labor force, second only to Florida in the southeast.

Figure 4. Labor Force Participation (Population 25-64 years), 2010-2020 and Unemployment Rate



Sources: 2010 Decennial Census, 1-year ACS Estimates for 2011-2019, 2020 Decennial Census, Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics – Expanded State Employment Status Demographic Data

While the state's unemployment rate has steadily decreased since 2010, 2019 saw Georgia's unemployment rate fall below the southeast average as a whole. Preliminary data from the Bureau of Labor Statistics (BLS) for 2021 estimates the statewide unemployment rate at four percent, slightly below the southeast regional unemployment rate of 4.3 percent, and second only to Alabama at 3.6 percent in the southeast. Since 2010, Georgia's unemployment rate has improved from 43rd ranked in the nation to 16th (2021). This trend was also observed in the southeast, where Georgia improved from 6th in southeast in 2017 to 2nd in 2021.

Employment and unemployment data is available for 2017 through 2020 by county and across Georgia's twelve regional commission areas from Neighborhood Nexus, which was used to identify employment trends. Labor force participation rates are typically highest in the Atlanta Region and Coastal Region, while unemployment rates are typically higher in Southern Georgia. The state's lowest unemployment rates are typically in Georgia Mountains, Central Savannah River Area, and Northwest Georgia counties, while the Coastal Region and Southwest Georgia have continuously had the highest (shown in **Figure 5**). In 2020, 20 Georgia counties had a civilian unemployment rate under 2 percent. Additional details are provided below.

- **Central Savannah River Area** – Glascock and Hancock counties have 2020 civilian unemployment rates under 1 percent.
- **Heart of Georgia Altamaha** – Telfair County has 2020 civilian unemployment rate of 0.6 percent and has been at one percent or under since 2018. This county has a 2020 population of approximately 12,500 and is home to McRae Correctional Facility.
- **River Valley** - Chattahoochee County has the highest rate of labor force participation at 78.3 percent of the population 16+. Chattahoochee County is part of the Columbus Metropolitan Statistical Area and is home to Fort Benning Military Post. They also have the youngest median age of any county in the state, at 24 years of age. The counties of

Quitman and Crisp had the highest civilian unemployment rates at 9.5 percent and 6.9 percent, respectively.

Figure 5. Civilian Unemployment Rate (2020)

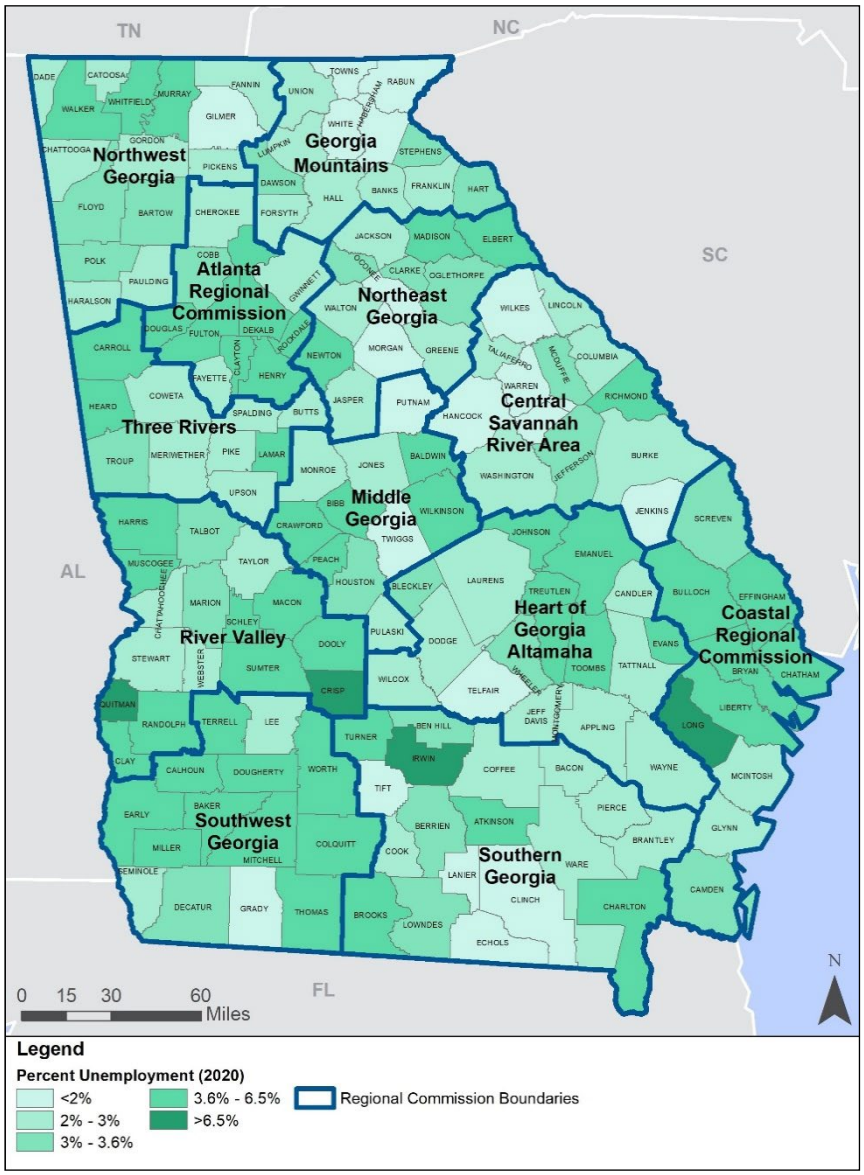


Table 6 shows projected employment growth by the state's 12 regional commissions. Parallel trends for both population and employment are observed across the state, with both the Atlanta Regional Commission (ARC) and Northeast Georgia region expected to contribute nearly 75 percent of total anticipated statewide employment growth. The Three Rivers region southwest of Atlanta is expected to exceed 200,000 people by 2050, with a total anticipated growth of 25 percent.

Table 6. Statewide Employment Growth by Region

Region	2015	2050	Change	Percent Change
Atlanta Regional Commission	**2,156,247**	**2,952,817**	**796,570**	**37%**
Central Savannah River Area	169,765	196,948	27,183	16%
Coastal Regional Commission	263,438	318,347	54,909	21%
Georgia Mountains	157,302	184,176	26,874	17%
Heart of Georgia Altamaha	86,202	101,027	14,825	17%
Middle Georgia	189,574	214,513	24,939	13%
Northeast Georgia	**184,366**	**246,996**	**62,630**	**34%**
Northwest Georgia	254,819	295,428	40,609	16%
River Valley	135,072	157,856	22,784	17%
Southern Georgia	137,115	160,082	22,967	17%
Southwest Georgia	124,416	147,028	22,612	18%
Three Rivers	160,964	201,878	40,914	25%

Sources: Georgia Statewide Travel Demand Model

2.2.1. Occupations

Occupation data was collected from the Georgia Department of Economic Development Site Selector website, which sources its information from JobsEQ, a company that provides data related to the workforce, education, and site selection. Occupation data is broken down into 22 distinct categories, listed in **Table 7**. The top six occupations in terms of size make up 54 percent of labor force. They include:

- Office and Administrative Support
- Sales
- Transportation and Material Moving
- Food Prep and Serving
- Management
- Production

Of these, transportation and material moving, and production related occupations hold a location quotient over 1.3. Other freight-related sectors including construction and extraction and farming, fishing, and forestry also hold a location quotient over 1, demonstrating Georgia's position as a freight intensive economy. An occupation's or industry's location quotient is used to identify sectors that are clustered or specialized in a particular place relative to national benchmarks.

Table 7. Top Occupations by Size of Labor Force

Occupation	Median Wage	Labor Force	LQ
Office and Administrative Support Occupations	$38,363.74	595,441	1.00
Sales and Related Occupations	$39,397.28	494,309	1.09
Transportation and Material Moving Occupations	$35,391.67	454,954	1.32
Food Preparation and Serving Related Occupations	$22,677.02	430,483	1.09
Management Occupations	$109,229.02	308,902	1.02
Production Occupations	$35,955.40	304,296	1.56
Education, Training, and Library Occupations	$50,427.92	277,743	1.11
Business and Financial Operations Occupations	$73,793.17	265,017	1.14
Healthcare Practitioners and Technical Occupations	$81,234.11	255,895	1.04
Installation, Maintenance, and Repair Occupations	$46,510.56	199,673	1.14
Construction and Extraction Occupations	$43,080.14	194,299	1.08
Building and Grounds Cleaning and Maintenance Occupations	$27,431.64	155,243	0.99
Computer and Mathematical Occupations	$87,155.46	149,500	1.33
Healthcare Support Occupations	$29,934.40	148,872	0.77
Personal Care and Service Occupations	$28,307.81	130,378	0.98
Protective Service Occupations	$40,046.95	108,896	1.20
Arts, Design, Entertainment, Sports, and Media Occupations	$58,334.03	88,212	1.14
Community and Social Service Occupations	$47,823.01	67,588	0.90
Architecture and Engineering Occupations	$82,945.79	67,257	0.96
Legal Occupations	$100,090.30	39,196	1.22
Life, Physical, and Social Science Occupations	$70,820.34	32,543	0.93
Farming, Fishing, and Forestry Occupations	$30,925.32	20,546	4.28

Source: Georgia Department of Economic Development, Site Selector.

Other occupations also show a strong concentration across the state, with reported location quotients above 1.2. These include:

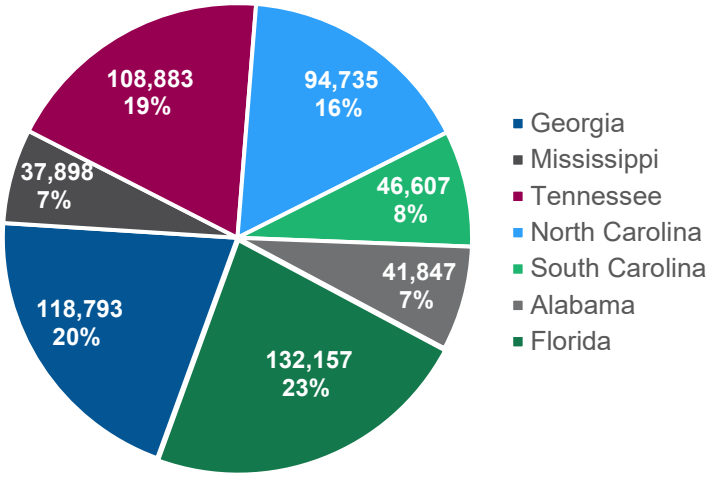
- Computer and Mathematics
- Protective Services
- Legal Occupations
- Farming, Fishing, and Forestry

In total, occupations with a location quotient at or above 1.2 make up approximately 22 percent of the total state's labor force. Three of these provide Georgia workers with median wages over $40,000: Computer and Mathematics, Legal, and Protective Service.

2.2.2. Freight Intensive Employment

Annual averages from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) were used to better understand the role that freight intensive industries (defined as the combination of freight moving and freight generating sectors) play across the state. While Georgia makes up approximately 17 percent of the population in the southeast, defined as Georgia, Mississippi, Tennessee, North Carolina, South Carolina, Alabama, and Florida, it contributes approximately 20 percent (118,793)[34]

Figure 6. Employment in Freight Moving Industries (2020)

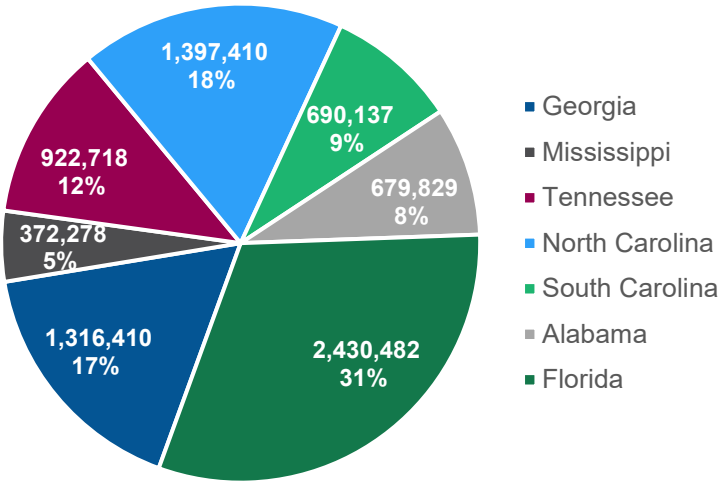


Beyond this, Georgia represents about 17 percent of total employment in freight generating industries, defined as the following NAICS industry sectors:

- Agriculture, Forestry, Fishing, (11)
- Mining (21)
- Utilities (22)
- Construction (23)
- Manufacturing (31-33)
- Wholesale Trade (42)
- Retail Trade (44-45)

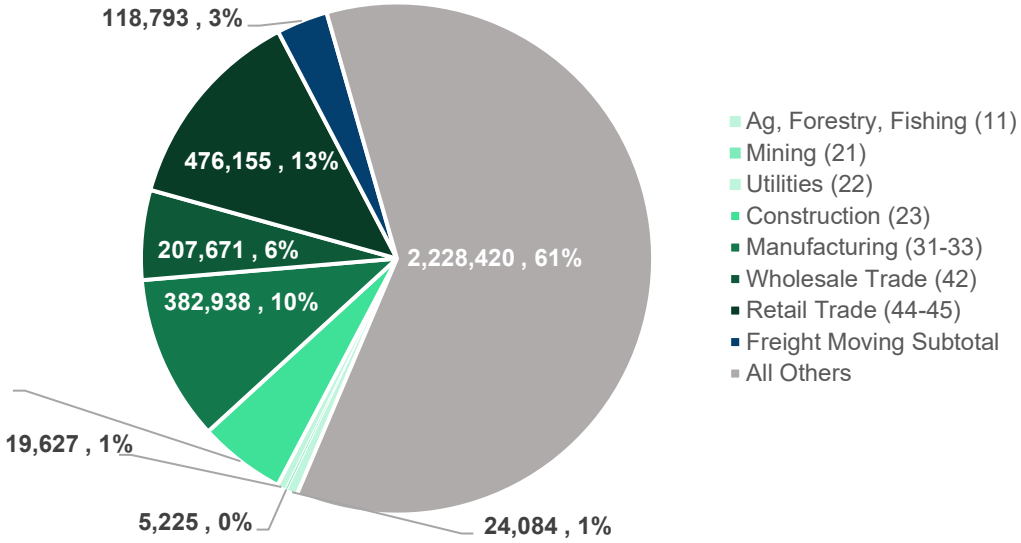
[4] Freight moving industries defined as scheduled freight air transportation (481112), nonscheduled air freight chartering (481212), inland water freight transportation (483211), general freight trucking (4841), specialized freight trucking (4842), pipeline transportation (486), general warehousing and storage (49311), refrigerated warehousing and storage (49312), farm product warehousing and storage (49313), and other warehousing and storage (49319).

Figure 7. Employment in Freight Generating Industries (2020)



Together, freight intensive industries make up approximately 40 percent of total Georgia employment.

Figure 8. Statewide – Freight Intensive Share of Total Employment (2020)



As Georgia continues to grow, maintaining and growing a talented labor pool will be key to continued economic growth and success. The Georgia Freight Advisory Committee ranked workforce as their top concern, while acknowledging that this is a national issue (and the location quotients cited above suggest that Georgia is relatively better off in this regard). In addition, there are a few key factors that may support current and future successes across the state. These include supporting an adequately trained and educated workforce, sustaining high participation in the labor force, and continuing to support industries and occupations in which Georgia is a leader. The Georgia Center of Innovation for Logistics specializes in logistics and serves as a go-between for industry and educators, tapping a network of logistics programs from 30 institutions within the university system, 23 technical colleges, and 37 college and

career academies.[5] The state offers programs through the Department of Economic Development's Workforce Division and the Georgia Department of Labor, - notably Georgia Quick Start, which has provided training customized to the needs of employers for five decades.

2.3. Summary and Forecast of Georgia Commodity Flows

This section presents a summary of freight flow in the state of Georgia in 2019 along with a forecast of freight volumes in the state for the year 2050.

As shown in Table 8, Georgia handled more than 585 million tons of freight in 2019. Inbound freight was the largest directional flow by tonnage with 181 million tons, 31 percent of the total. Georgia outbound tonnage was 25 percent of the total at 146 million tons. Inbound traffic is significant in that it supports both the population and Georgia's extensive industrial base. Outbound tonnage represents the materials and products produced by agriculture, food processing, and manufacturing, moved in distribution, or used in construction and energy. The inbound and outbound traffic also includes regional traffic that moves back and forth across state lines between Georgia and the neighboring states.

The total volume of freight movement within Georgia was 143 million tons (24 percent), while 115 million tons (20 percent) of freight volume passed through the state. Intra Georgia traffic reflects both materials and products to supply the population and provision industries throughout the state. The through traffic includes volume moving in all directions coming to and from other states such as that moving on Interstate 75, a primary north-south route from the Midwest to the southern states or Interstate 20 passing east-west between Alabama and South Carolina.

The maps and more detailed information about the five primary industrial groups included in further sections of this chapter show how dependent the state is on highway flow. The Interstate highways are the core of the network but regional and rural roads also are critical, as they carry traffic that is vital to agriculture and forestry and bring goods to rural populations. The highway access to the ports and the intermodal hubs is also crucial as this multi-modal connectivity helps makes Georgia the premier freight and logistics hub in the southeast. The forecasts of freight tonnage shown in 2050 present a challenge if Georgia is to support the predicted level of growth, and a clear economic opportunity.

As will be shown, much of the cargo flow is centered around Atlanta as the largest population center, a hub for intermodal operations and a center for warehousing and logistics. Additionally, the Interstate highways connecting through Atlanta making this region a source for congestion, safety concerns, and environmental impacts.

[5] Georgia Center of Innovation, https://www.georgia.org/center-of-innovation/areas-of-expertise/logistics?gclid=Cj0KCQiA4OybBhCzARIsAIcfn9mUuktBbFaXT-liRLPN3eRPRffvzANPwf3aXQG3tiLVbEVO_px8k90aAivWEALw_wcB

Table 8. Georgia Freight Flow Summary by Tonnage, 2019

Direction of Flow	Tons - 2019	% of Total Tonnage
Inbound to GA	181 M	31%
Outbound from GA	146 M	25%
Within GA	143 M	24%
Through	115 M	20%
Grand Total	**585 M**	**100%**

Source: Analysis of Transearch and STB Waybill Data

By 2050, total freight volume is projected to increase by over 92 percent from 585 million tons to 1,122 million tons. Freight traffic moving within Georgia is projected to increase at the fastest rate from 2019 to 2050 at 117 percent growth, or a Compound Annual Growth Rate (CAGR) of 2.5 percent. Inbound flows are projected to grow at the slowest rate over the forecast period. By volume, inbound flows will still account for the largest directional flow at 319 million tons, followed closely by tonnage within Georgia at 310 million tons.

Table 9. Georgia Freight Flow Summary by Tonnage, 2050

Direction of Flow	Tons - 2050	Tons Growth 2019 - 2050	Tons Growth CAGR 2019 - 2050
Inbound to GA	319 M	76%	1.9%
Outbound from GA	271 M	86%	2.1%
Within GA	310 M	117%	2.6%
Through	222 M	93%	2.2%
Grand Total	**1,122 M**	**92%**	**2.2%**

Source: Analysis of Transearch and STB Waybill Data

By value, Georgia handled more than $906 billion of freight in 2019. Outbound freight was the most valuable directional cargo flow at $276 billion, representing 30 percent of total value. Inbound freight was second at $239 billion (26 percent), followed by passthrough cargo at $233 billion (26 percent).

Table 10. Georgia Freight Flow Summary by Value, 2019

Direction of Flow	Value ($) - 2019	% of Total Value
Inbound to GA	239 B	26%
Outbound from GA	276 B	30%
Within GA	158 B	17%
Through	233 B	26%
Grand Total	**906 B**	**100%**

Source: Analysis of Transearch and STB Waybill Data

The value of Georgia-based cargo is projected to increase by 132 percent between 2019 and 2050, outpacing tonnage growth over the same period, and indicating an expected shift to higher-value commodities and industries in Georgia. The value of freight transported within the state is projected to grow at the fastest rate (CAGR of 3.8 percent) over the forecast period. Outbound flows are expected to account for the highest share of value in 2050 at $591 billion, followed by inbound flows at $526 billion. Again, this points toward increasing value of Georgia produced goods and materials.

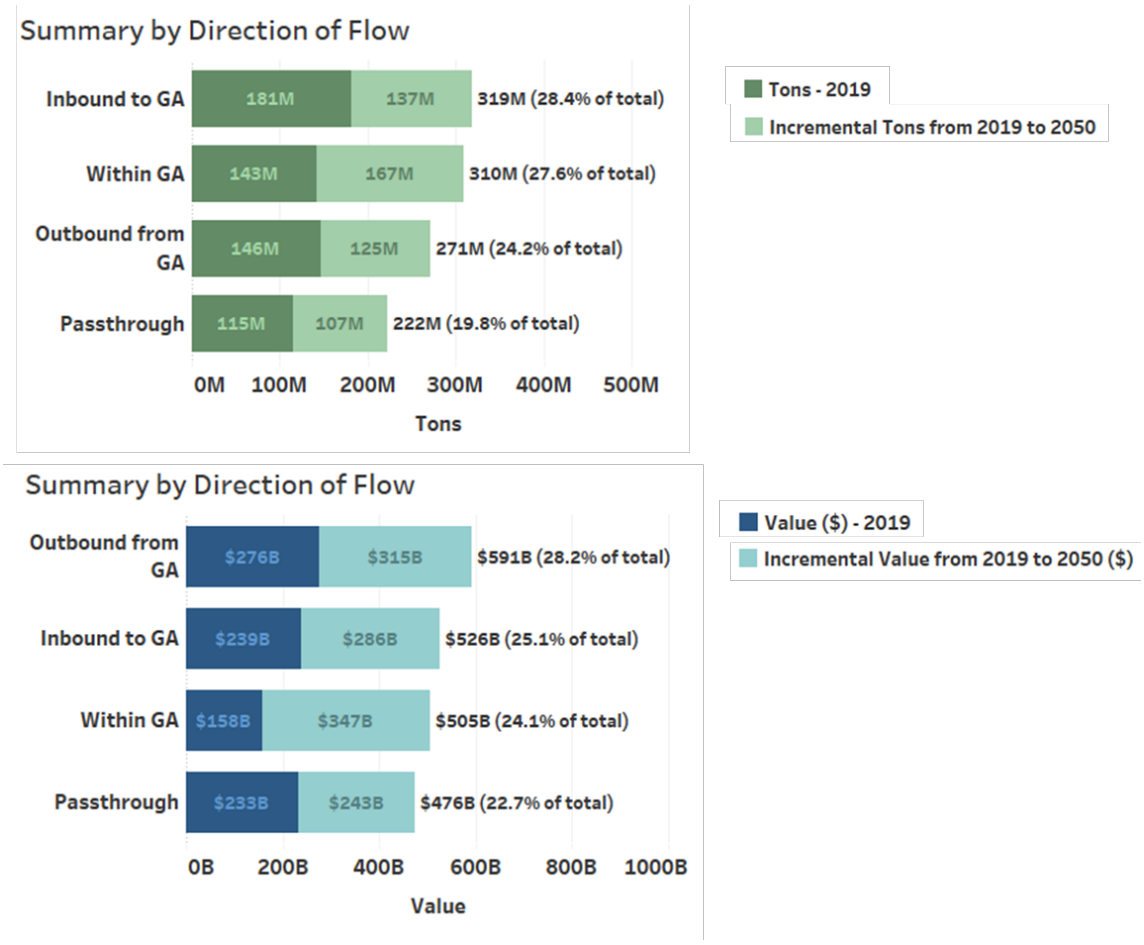
Table 11. Georgia Freight Flow Summary by Value, 2050

Direction of Flow	Value ($) 2050	Value ($) Growth	Value ($) Growth CAGR
Inbound to GA	526 B	120%	2.7%
Outbound from GA	591 B	114%	2.6%
Within GA	505 B	219%	3.9%
Through	476 B	105%	2.4%
Grand Total	**2,098 B**	**132%**	**2.8%**

Source: Analysis of Transearch and STB Waybill Data

Figure 9 shows freight flow in 2019 and the 2050 forecast by direction and tonnage (top chart) and value (bottom chart). By tonnage, inbound traffic will account for the highest share (over 28 percent) by 2050, followed by intrastate traffic (under 28 percent). By value, outbound flow accounts for the largest share of value (over 28 percent) by 2050, followed by inbound flow (just over 25 percent).

Figure 9. Base Year (2019) and Forecast Year (2050) freight flows by direction



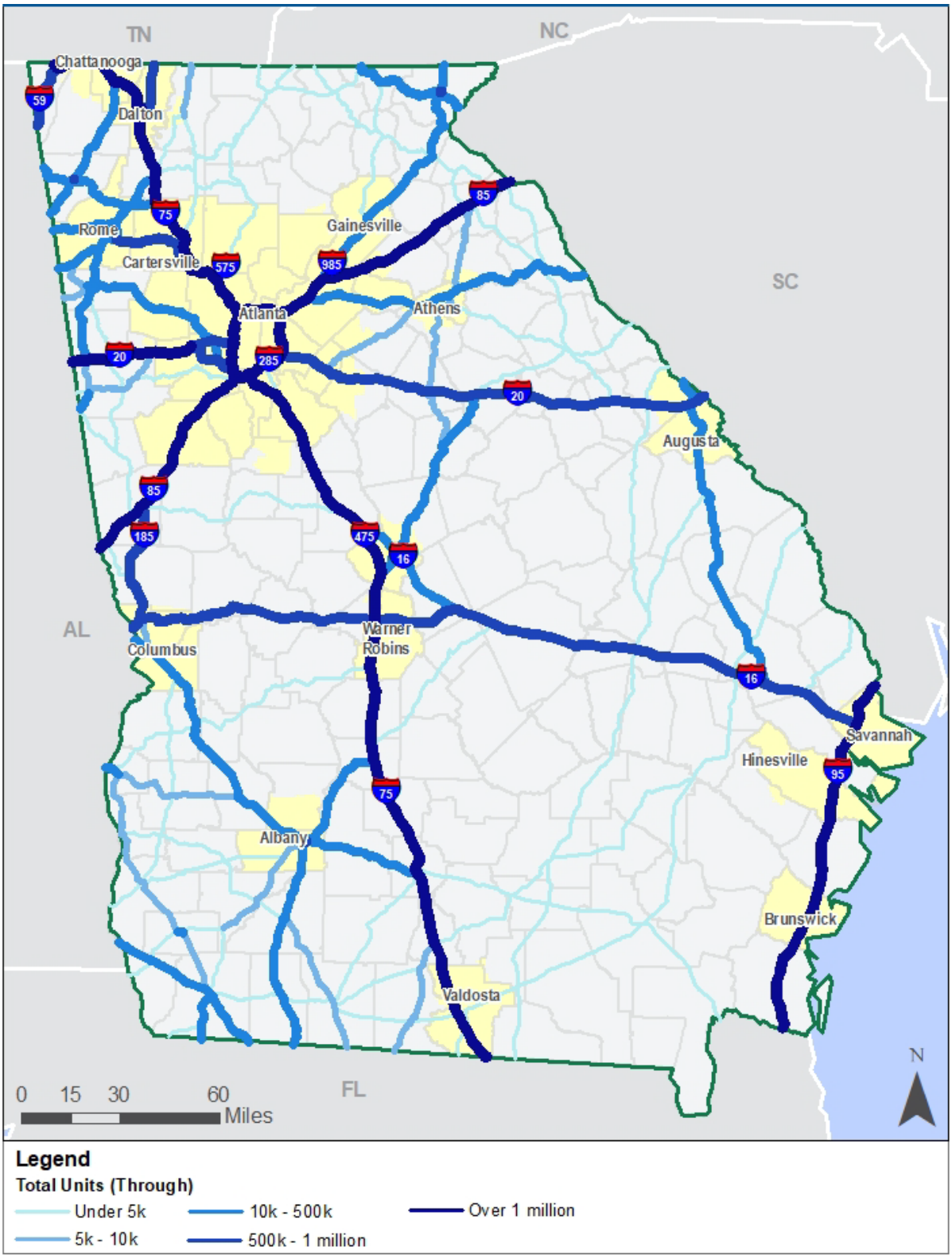
Source: Analysis of Transearch and STB Waybill Data

In terms of both tonnage and value, the Georgia-based freight flow significantly outweighs the passthrough freight. By 2050, passthrough freight is expected to account for less than 20 percent of all tonnage and about 23 percent of value.

Figure 10 shows the passthrough traffic by numbers of trucks in 2019. The darker lines represent more heavily traversed routes. The heaviest passthrough routes are Interstates:

- I-75 which extends north-south across the state, passing through the central Atlanta area, effectively connecting Florida through to Michigan.
- I-85 which extends east-west across the state, also passing through Atlanta, effectively connecting Alabama and states west with South Carolina.
- I-95 along the southeastern coast of the state. The 95 corridor is a primary lane from the northeast through to Florida.

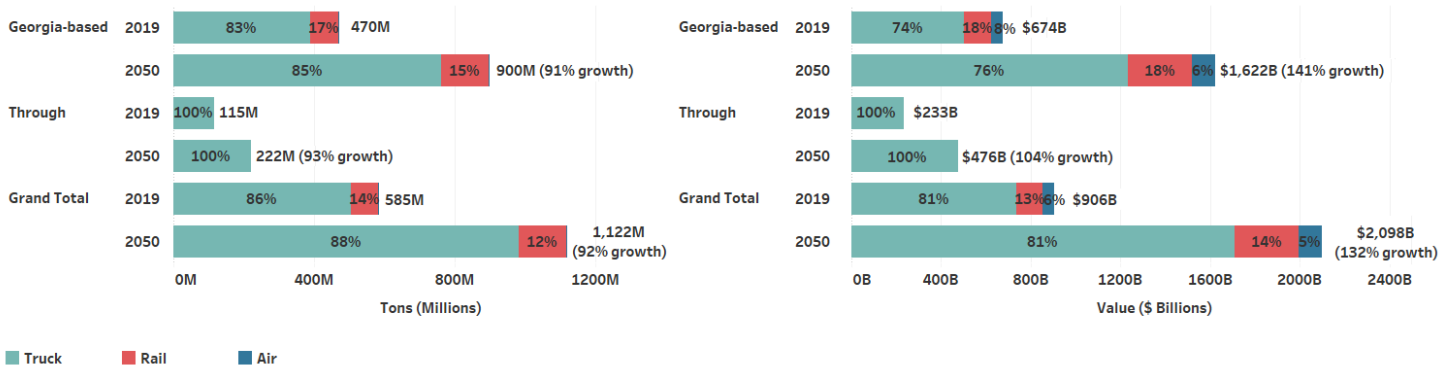
Figure 10. Through traffic by Truck Units (2019)



Source: Analysis of Transearch Data

The majority of Georgia-based freight in 2019 moved by truck, both by tonnage (83 percent of total tonnage) and value (74 percent of total value). These proportions are projected to rise by 2050, as trucking carries 87 percent of the incremental traffic through the forecast horizon and 77 percent of the incremental value. Rail is expected to handle 13 percent of the tonnage growth through 2050 and even more (17 percent) of the value, due to growth in intermodal traffic from Georgia's ports and in domestic lanes. Air cargo, with its high value commodities, accounts for 5 percent of the growth based on value.

Figure 11. Freight Flow by Mode for Non-Through Traffic (Base Year and Forecast Year)

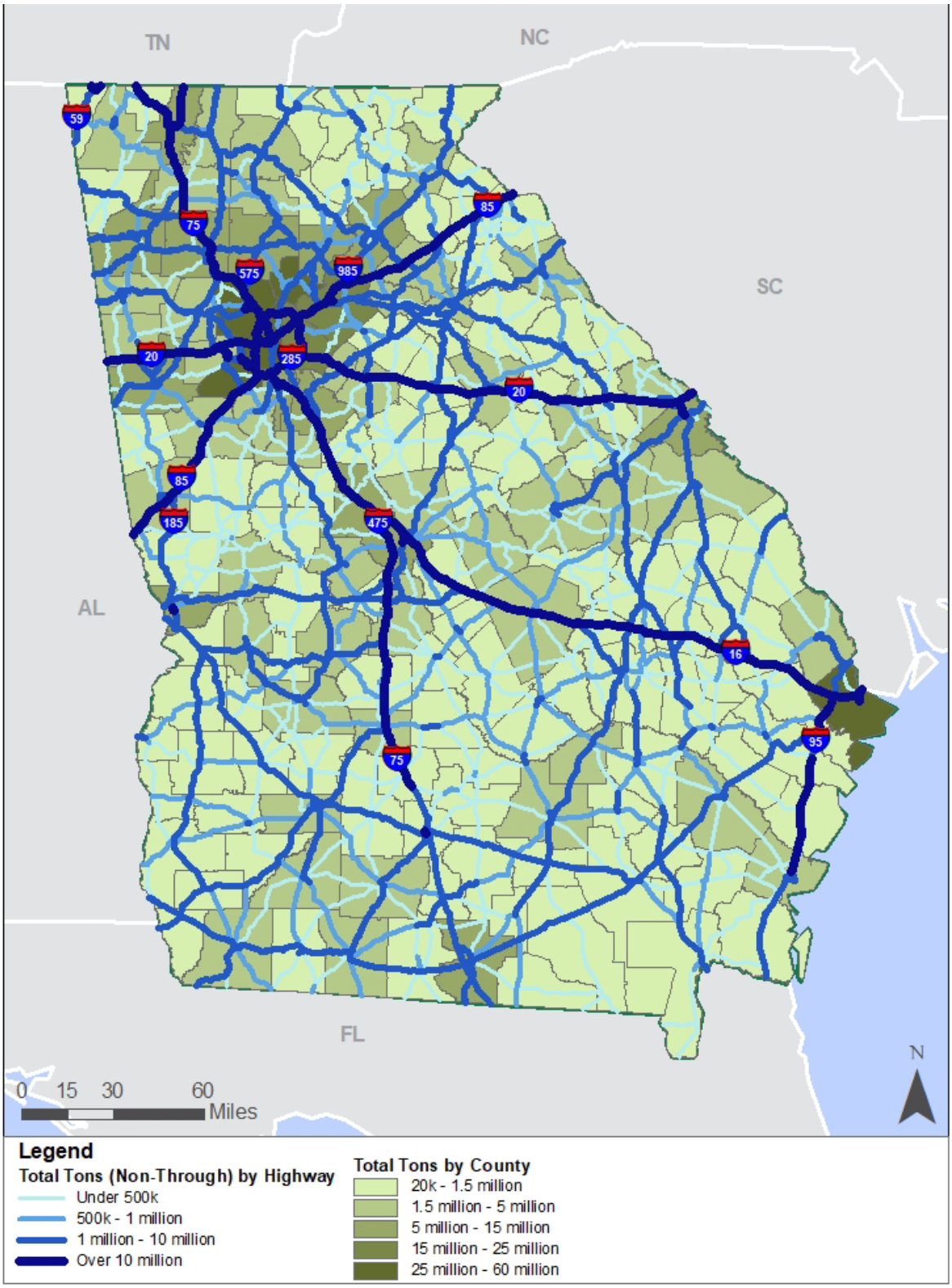


Source: Analysis of Transearch and STB Waybill Data

Routed truck flows by tonnage (Figure 12) show that statewide activity is led by movements in Atlanta and Savannah, with Interstates such as I-20, I-75, I-85, and I-16 forming the backbone of the network. The I-75 corridor is particularly important for automotive traffic as the primary corridor from the southeast to Detroit. Prominent non-Interstate corridors across the southern part of the state include such routes as US-80, US-82, and US-84.

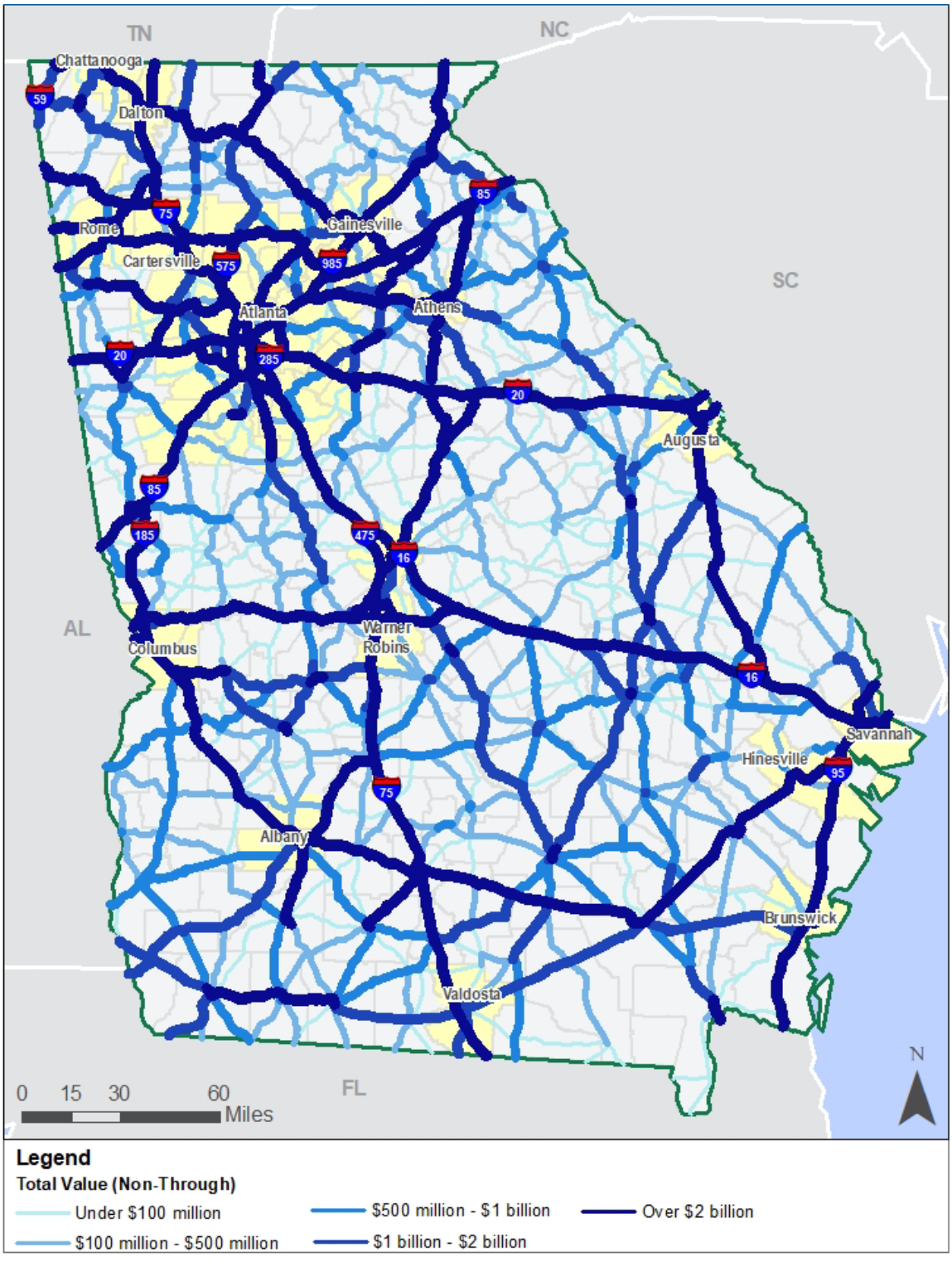
Routed truck flow by value (Figure 13) shows that higher value cargo moves not just on the Interstates but across the entire network, illustrating the interconnection of rural and urban economies in the state.

Figure 12. Total Routed Truck Tonnage Excluding Through Traffic (2019)



Source: Analysis of Transearch Data

Figure 13. Total Routed Truck Flow by Value $ Excluding Through Traffic (2019)



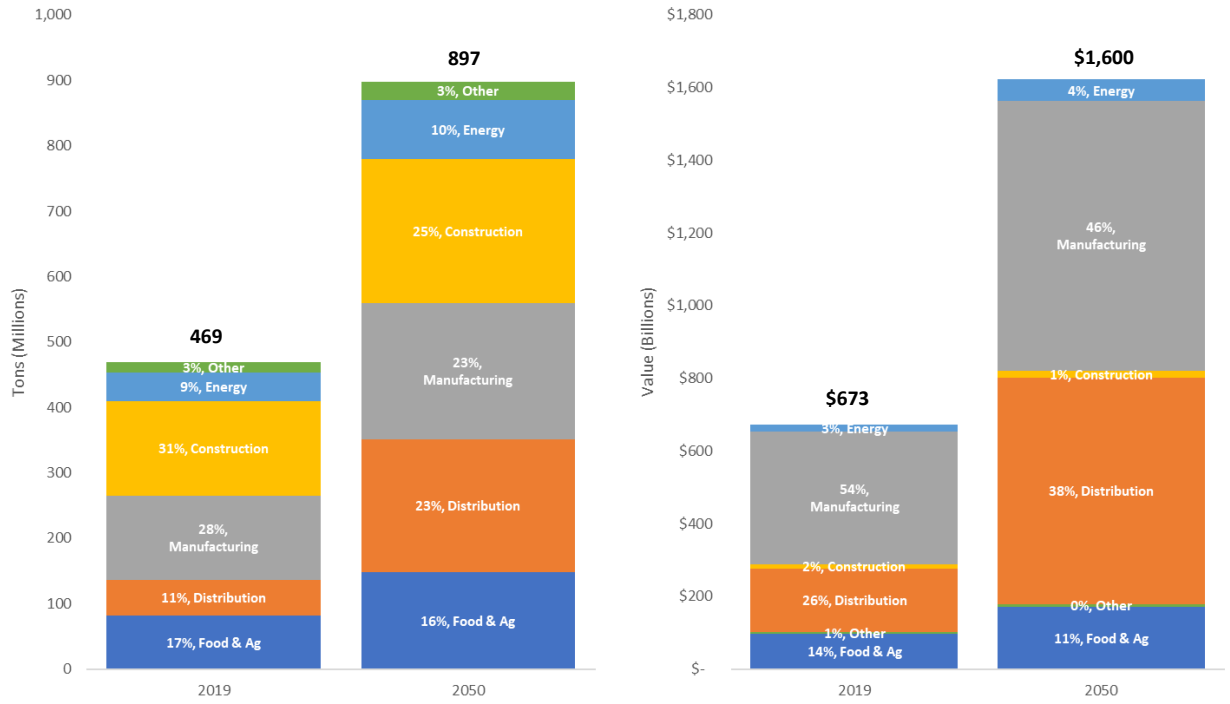
Source: Analysis of Transearch Data

2.3.1. Georgia Volume for Key Industry Groups

The following pages describe the commodity flow of Georgia-based freight and provide a forecast of cargo for the five key industry groups (Food and Agriculture, Distribution, Manufacturing, Construction, and Energy).

Construction, Manufacturing, Food and Agriculture, and Distribution by themselves contributed 87 percent of total tonnage in 2019 and are forecasted to comprise the same percentage of the total in 2050. The total tonnage is expected to nearly double from 469 million in 2019 to 897 million tons in 2050. Manufacturing, Distribution, and Food and Agriculture accounted for 94 percent of the total 2019 freight by value and are forecasted to account for 95 percent of the total in 2050. The total value of the freight flows will increase from 673 billion dollars in 2019 to over 1.6 trillion dollars in 2050.

Figure 14. Freight Flows by Industry Group (2019 and 2050)



Source: Analysis of Transearch and STB Waybill Data

Figure 15 presents the growth in tonnage and value for the five key industry groups. This chart shows the incremental tonnage and value, or the "delta" in both measures, from the historical activity in 2019 to the forecasted activity in 2050. Based on this analysis, three top industries account for 72 percent of the increase in tonnage (Distribution, Manufacturing and Construction), followed closely by Food and Agriculture as a fourth. Three of the same industries – Distribution, Manufacturing, and Food and Agriculture - account for 95 percent of the increase in value.

Distribution, Manufacturing and Food and Agriculture thus are the principal sources of Georgia's growth in freight, between them accounting for two-thirds of the delta in tonnage and almost all of the delta in value. The performance of the freight transportation system in service to these three growth industries consequently is crucial to the economy of Georgia and the livelihoods it provides to the people of the state. That performance is the focus of evaluation and programs presented in later chapters of this Plan.

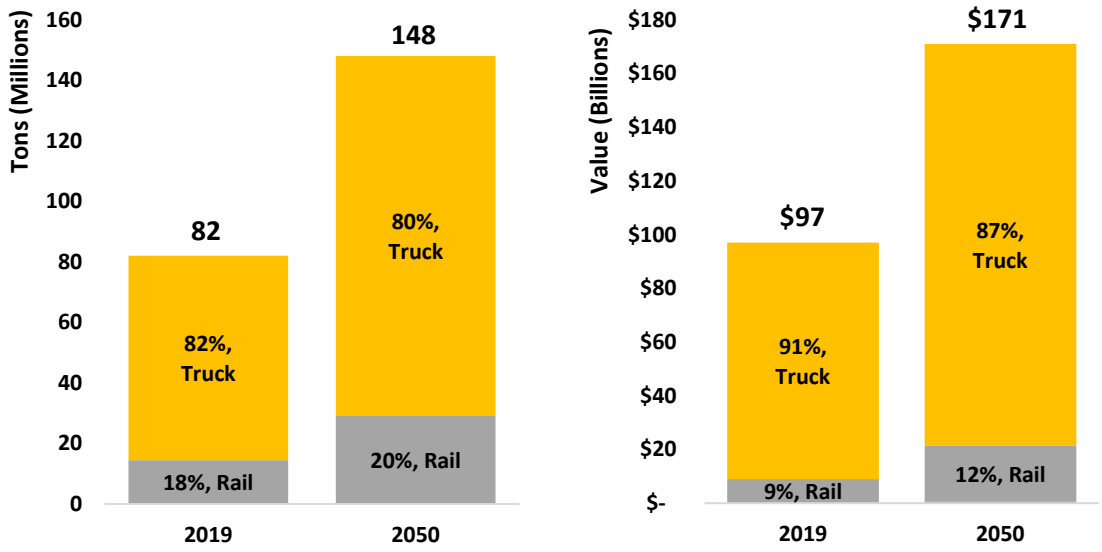
Figure 15. Growth in Tonnage and Value for Key Industry Groups (2019 to 2050)

Source: Analysis of Transearch and STB Waybill Data

Figure 16 presents tonnage and value by mode for the Food and Agriculture industry group for 2019 as well as the forecast for 2050. Approximately 82 million tons of food and agriculture cargo moved into, out of, and through the state of Georgia in 2019, of which 82 percent moved by truck and 18 percent by rail. The number is forecasted to grow to 148 million tons by 2050. While the forecast projects a slight decrease in the percentage of cargo moved by truck, the majority of food and agriculture cargo will continue to be moved by truck and this volume is projected to grow significantly in absolute terms.

In terms of value, Food and Agriculture accounted for $97 billion in 2019, a number that is forecasted to grow to $171 billion by 2050. Approximately 91 percent of the value was moved by truck and 9 percent by rail in 2019; the value of cargo moved by truck is expected to decline slightly by 2050 to 87 percent, to the benefit of rail, but the majority of value will continue to be moved by truck. Note that the tonnage and value of cargo moved by air or water was not significant enough to register on the chart.

Figure 16. Food and Agriculture Tonnage and Value, 2019 and 2050

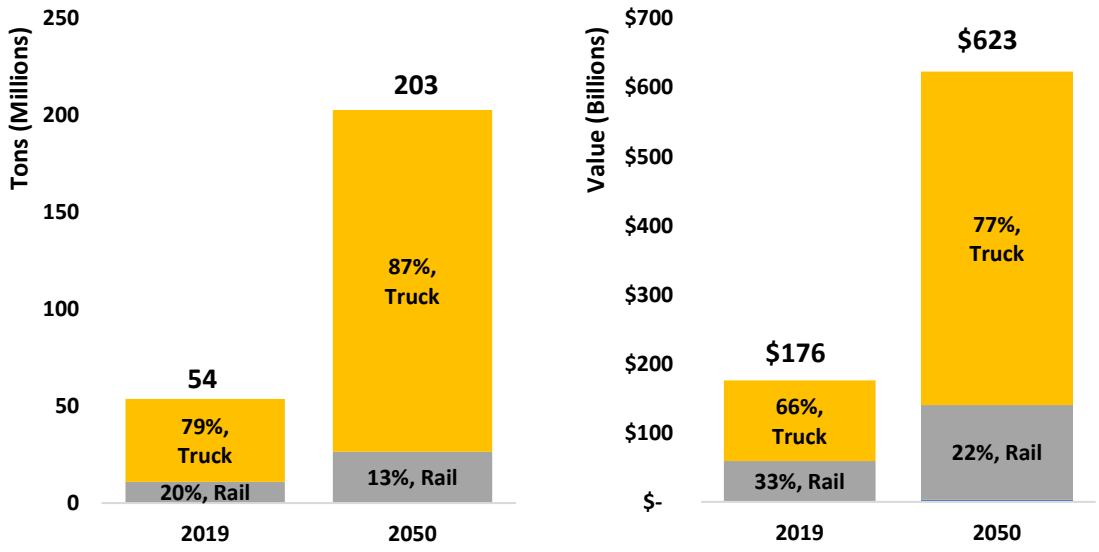


Source: Analysis of Transearch and STB Waybill Data

Figure 17 presents the tonnage and value by mode for the Distribution industry group in 2019 along with the forecast for 2050. In 2019, around 54 million tons of cargo moved into, out of, and through the state. The tonnage is forecasted to increase nearly fourfold by 2050 to 203 million tons. The majority of tonnage is moved by truck and the share of tonnage moved by truck is projected to increase from 79 percent in 2019 to 87 percent in 2050, while the share of tonnage moved by rail is projected to decrease from 20 percent in 2019 to 13 percent in 2050. However, in absolute terms, both truck and rail tonnage are expected to increase significantly.

In terms of value, around $176 billion of Distribution cargo was handled in Georgia in 2019, of which 66 percent was moved by truck and 33 percent by rail. This number is forecasted to increase to $623 billion by 2050, with the percentage moved by truck increasing to 77 percent at the expense of rail, which is projected to decrease to 22 percent. Still, in absolute terms, the forecast shows a significant increase in value of cargo moved by both truck and rail.

Figure 17. Warehousing and Distribution Tonnage and Value, 2019 and 2050

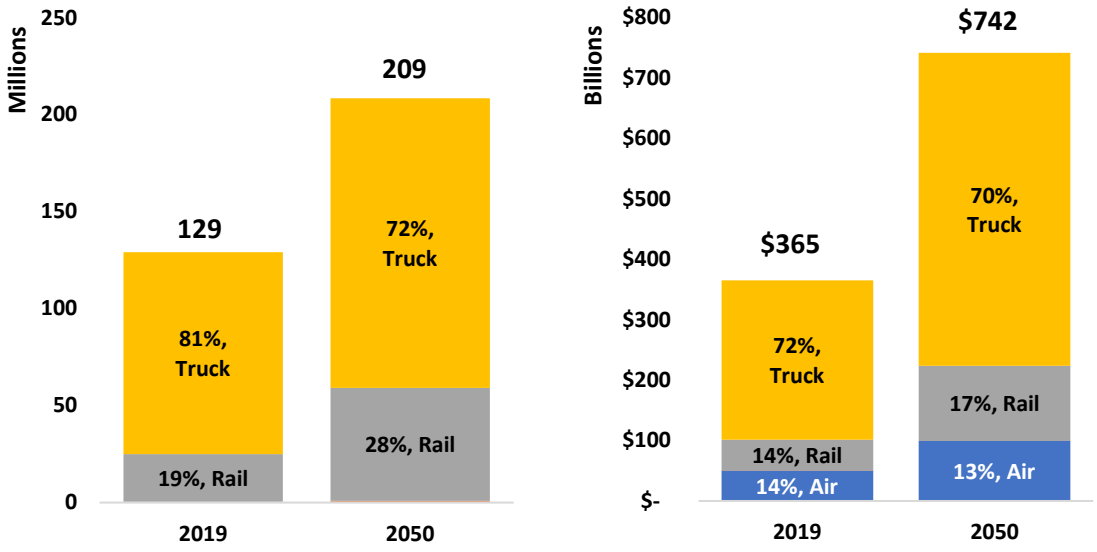


Source: Analysis of Transearch and STB Waybill Data

Figure 18 presents the tonnage and value by mode for the Manufacturing industry group in 2019 as well as the forecast for 2050. In 2019, approximately 129 million tons of cargo moved into, out of, and through the state. 81 percent of the cargo moved via truck and 19 percent by rail. The total tonnage is forecasted to increase to 209 million tons in 2050 with 72 percent by truck and 28 percent by rail. The tonnage of cargo moved by air and water were negligible in 2019 and this is not expected to change in 2050.

In terms of value, 2019 had a total of 365 billion dollars of Manufacturing cargo handled in Georgia with 72 percent via truck, 14 percent via rail, and 14 percent by air. The forecast for 2050 increases to 742 billion dollars with 70 percent by truck, 17 percent by rail and 13 percent by air. While the modal share of value by air decreases somewhat, the dollar value of air cargo is projected to double by 2050.

Figure 18. Manufacturing Tonnage and Value, 2019 and 2050

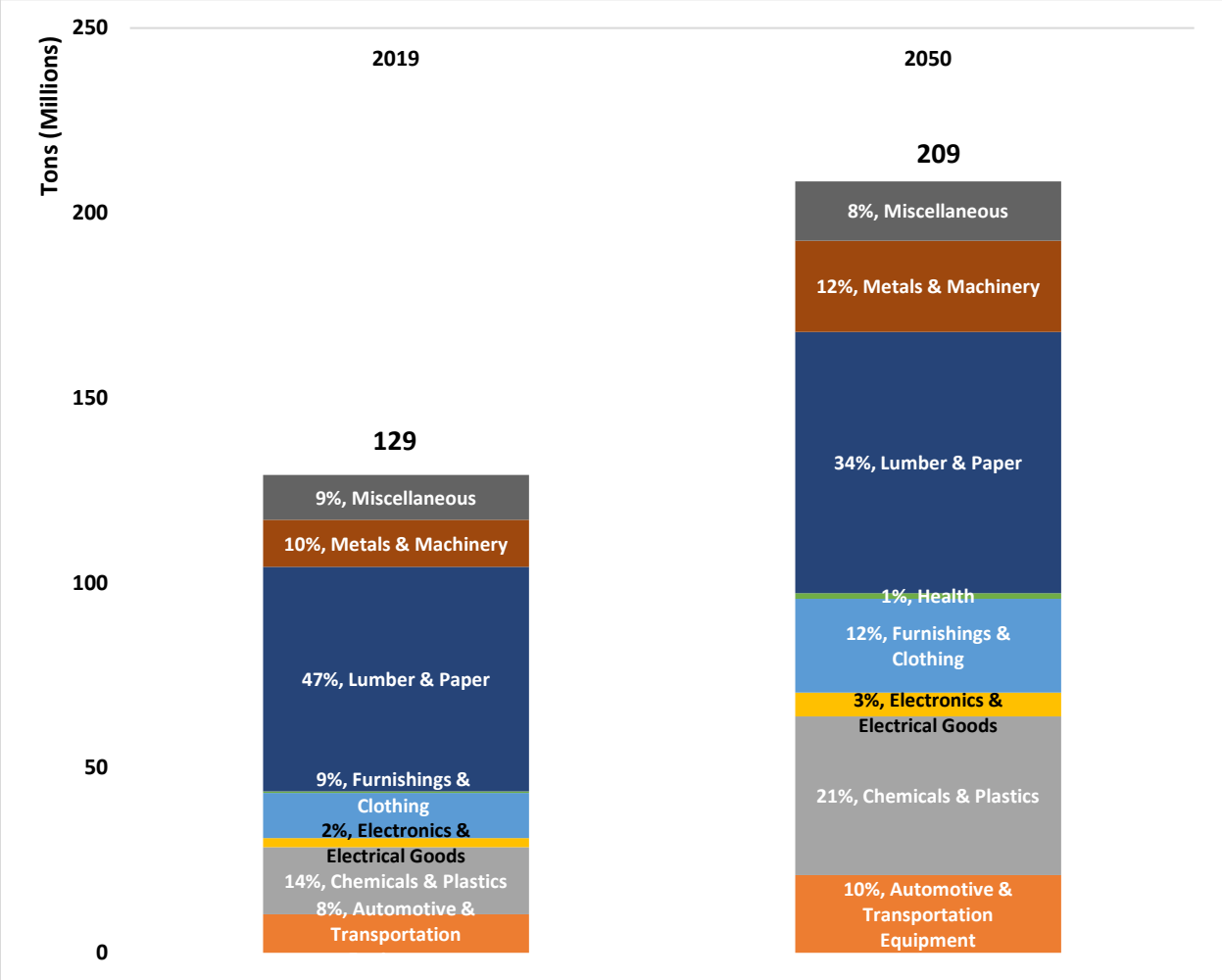


Source: Analysis of Transearch and STB Waybill Data

Figure 19 presents tonnage by manufacturing component for 2019 and a forecast for 2050. The data shows that in 2019 the largest component by tonnage was lumber and paper in 2019 with nearly half of all manufacturing tonnage. The second largest component by tonnage was chemicals and plastics at 14 percent of the total.

The forecast shows a significant decline in the share of lumber and paper tonnage to 34 percent by 2050, although the amount of lumber and paper is expected to increase slightly from 60 million tons in 2019 to 70 million tons in 2050. In absolute terms, the largest increase is projected for chemicals and plastics, with a forecast of 43 million tons in 2050 compared to 18 million tons in 2019. In percentage terms, the largest increase is for the electronics and electrical goods component, which is projected nearly to triple from 2.4 million tons in 2019 to 6.4 million tons in 2050.

Figure 19. Manufacturing Component Tonnage, 2019 and 2050



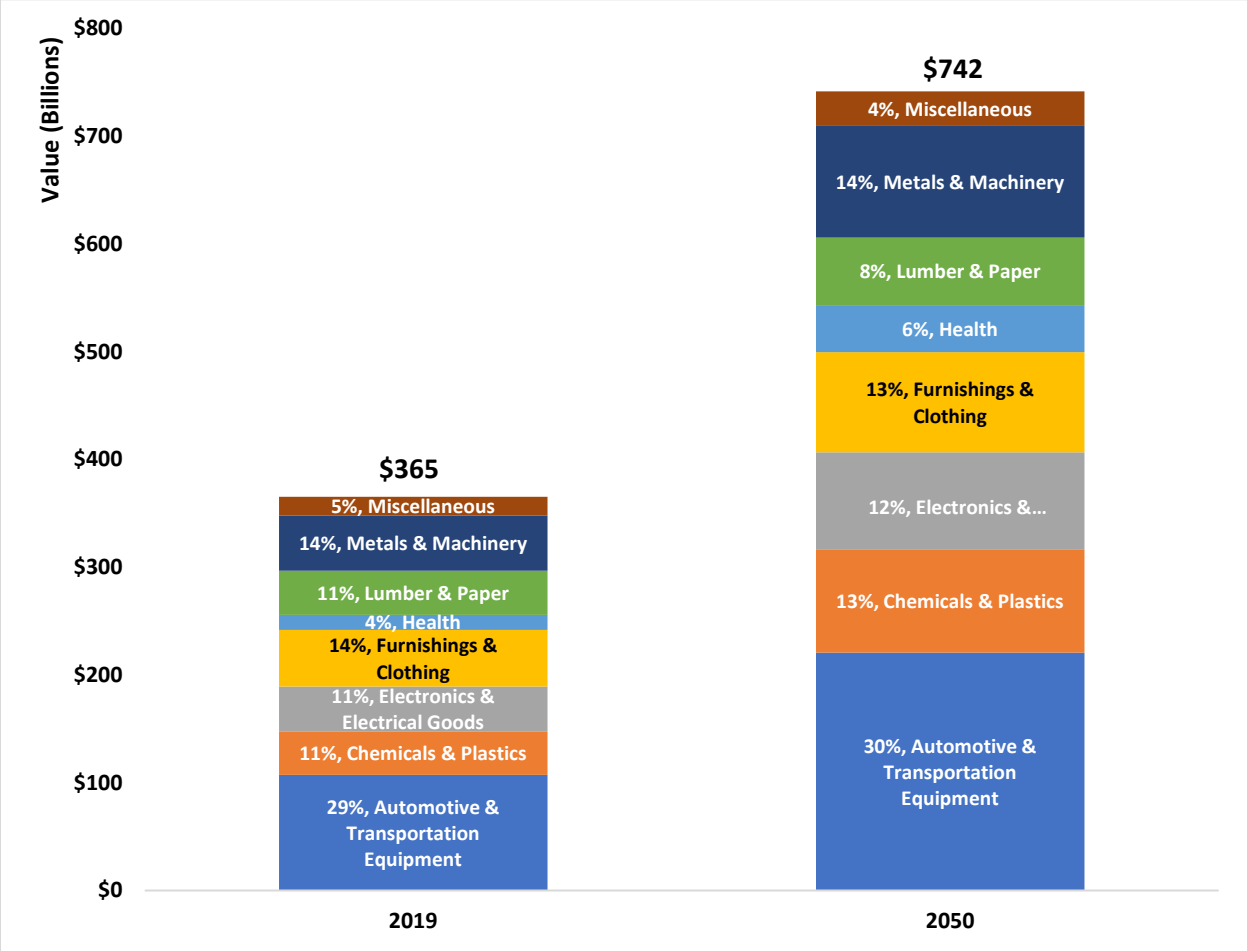
Source: Analysis of Transearch and STB Waybill Data

Note: health component tonnage is represented in green color; as the tonnage is too low to register in the 2019 chart, the label has been removed for visual purposes.

Figure 20 shows value by manufacturing components for 2019 as well as a forecast for 2050. In 2019, the highest value component was automotive and transportation equipment at 107 billion dollars (29 percent of total value in the manufacturing industry group). The second highest value component was home furnishings and clothing (including Georgia's carpet and floor covering industry) at $53 billion, followed by metals and machinery at 51 billion dollars.

The forecast projects automotive and transportation to retain roughly the same share of value in 2050, yet the total value of this component more than doubles to 221 billion dollars by 2050. The component with the highest rate of growth is projected to be health, which is forecasted to grow from 14 billion dollars in 2019 to 44 billion dollars in 2050 (an 200 percent increase to 30 billion dollars).

Figure 20. Manufacturing Component Value, 2019 and 2050

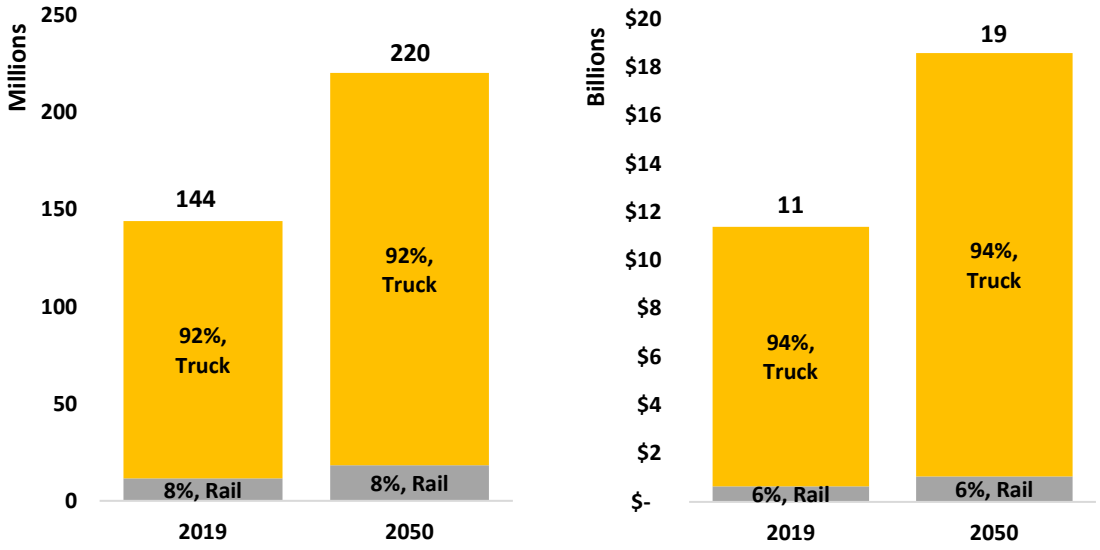


Source: Analysis of Transearch and STB Waybill Data

Figure 21 presents the tonnage and value by mode for the construction industry group in 2019 as well as a forecast for 2050. In 2019, approximately 144 million tons of cargo moved into, out of, and through the state of Georgia. 92 percent of the cargo moved via truck and 8 percent by rail. The total tonnage is forecasted to increase by 52 percent to 220 million tons in 2050 with the same share of transport modes with 92 percent by truck and 8 percent by rail. Weight of cargo moved by air and water were negligible in 2019 and remains insignificant in 2050.

In terms of value, 2019 had a total of 11 billion dollars of construction cargo handled in Georgia with 94 percent via truck and 6 percent via rail. The forecast for 2050 increases by 72 percent to 19 billion dollars, again with the same modal shares of 94 percent by truck, 6 percent by rail.

Figure 21. Construction Tonnage and Value, 2019 and 2050

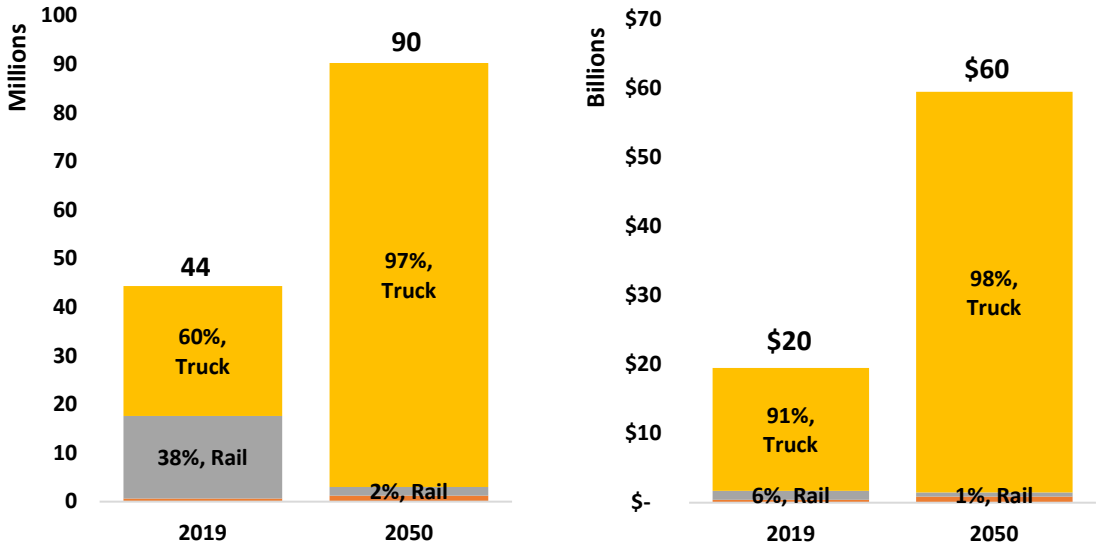


Source: Analysis of Transearch and STB Waybill Data

Figure 22 presents the tonnage and value by mode for the energy industry group in 2019 as well as a forecast for 2050. In 2019, approximately 44 million tons of cargo moved into, out of, and through the state. 60 percent of the cargo moved via truck and 38 percent by rail. The total tonnage is forecasted to approximately double to 90 million tons in 2050 with a drastic modal shift to truck, making up 97 percent of all transport modes and leaving 2 percent by rail. Much of this change can be attributed to the decline in coal as a fuel source.

In terms of value, 2019 had a total of 20 billion dollars of energy cargo handled in Georgia with 91 percent via truck and 6 percent via rail. The forecast for 2050 increases by 300 percent to 60 billion dollars with 98 percent transported by truck and 1 percent by rail. Not labeled in the charts in Figure 22 is a sliver of tonnage and value transported by water.

Figure 22. Energy Tonnage and Value, 2019 and 2050



Source: Analysis of Transearch and STB Waybill Data

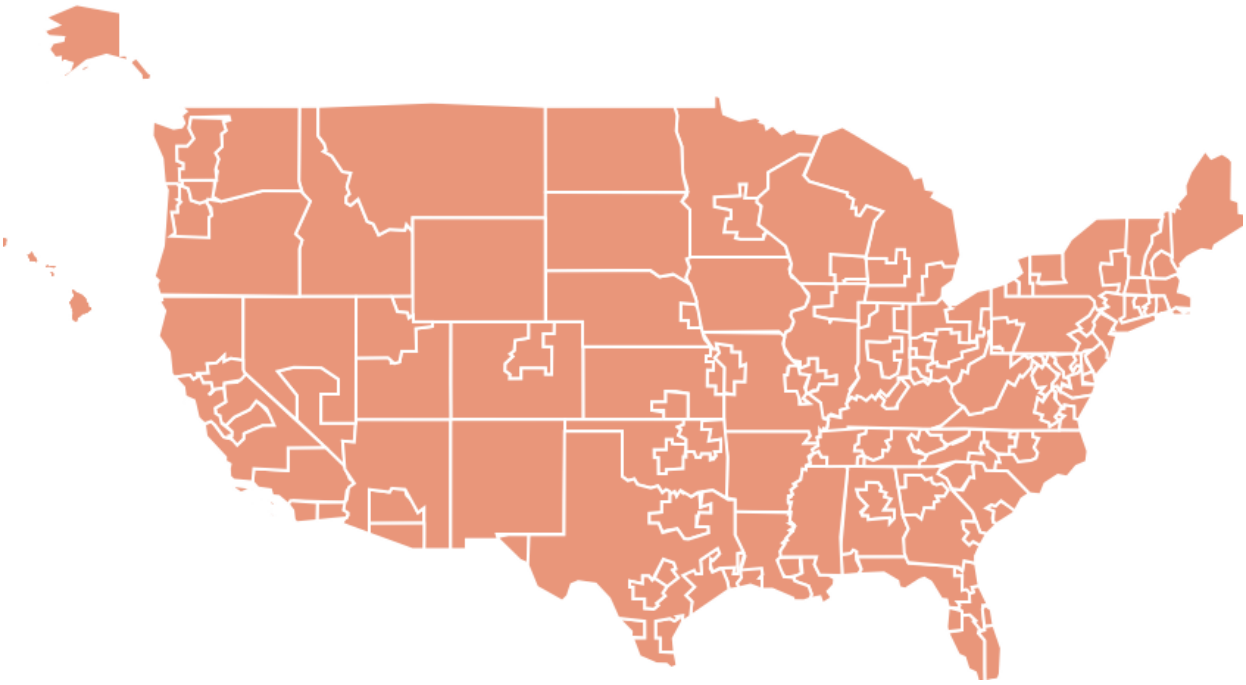
2.3.2. Georgia International Trade Flows

As a home to significant U.S. ports and the Hartsfield-Jackson Atlanta International Airport, Georgia is a major gateway for international trade. However, the impacts of trade flows extend beyond the imports and exports through those gateways. Georgia is also a large destination for imports moving through other U.S ports, and a significant origin of U.S. exports.

This section examines 2019 annual imports and exports into and out of Georgia using data from the US DOT Freight Analysis Framework (FAF). Data includes historical commodity flow data derived from the Commodity Flow Survey, U.S. Census Bureau international trade statistics, and other sources. FAF provides detail for 42 commodity groups defined by the Standard Classification of Transported Goods (SCTG). International trade flows include U.S. exports and imports for eight world regions for tons and value by mode of transport. 132 U.S. regions are defined by FAF as shown in the Figure 23 below. The State of Georgia is broken down into three regions:

- 131 Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area GA
- 132 Savannah-Hinesville-Statesboro, GA CFS Area GA
- 139 Remainder of Georgia GA (includes the Port of Brunswick)

Figure 23. FAF Defined U.S. Regions



For further information see: https://faf.ornl.gov/faf5/data/FAF5%20User%20Guide.pdf

2.3.3. Imports

Waterborne Imports

Waterborne imports from all foreign countries entering through ports in Georgia and moving to Georgia destinations represent the largest share of U.S. import tons going to Georgia regions, totaling 20.9 million tons in 2019. Georgia import value totaled $56.9 billion in 2019.

In addition, waterborne imports through ports in other regions of the country also represent significant traffic destined to Georgia regions. In 2019 these volumes totaled 4.3 million tons, about half from East Coast ports and 0.9 million tons through both Florida ports and West Coast ports.

Table 12. Waterborne Imports

		Tons 2019 (000)				Value 2019 ($Millions)		
Domestic Origin	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Georgia	20,949	13,134	6,694	1,120	56,932	35,720	18,198	3,015
Savannah GA	19,788	12,418	6,309	1,061	45,784	28,745	14,603	2,436
Rest of GA	1,161	716	385	59	11,148	6,974	3,595	579
Other Origins	4,295	2,700	1,371	224	11,570	7,272	3,694	604

Savannah Waterborne Imports – Top Commodities and Origin Regions

The table below displays commodity detail for waterborne imports through Savannah, the principal origin for volumes destined for Georgia regions. Top import commodities by volume in 2019 were other foodstuffs, machinery, nonmetallic minerals, and plastics/rubber. Top import commodities by value in 2019 were machinery and textiles/leather.

Table 13. Top Commodities in Savannah Waterborne Imports

		Tons 2019 (000)				Value 2019 ($Millions)			
	Commodity	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
	Total	19,788	12,418	6,309	1,061	45,784	28,745	14,603	2,436
07	Other foodstuffs	5,792	3,640	1,849	302	4,381	2,754	1,399	228
34	Machinery	1,613	1,014	515	84	8,265	5,195	2,639	431
13	Nonmetallic minerals	1,244	782	397	65	40	25	13	2
24	Plastics/rubber	1,000	629	319	52	3,611	2,270	1,153	188
22	Fertilizers	978	615	312	51	85	53	27	4
39	Furniture	871	547	278	45	2,432	1,529	777	127
30	Textiles/leather	837	526	267	44	6,179	3,884	1,973	322
32	Base metals	718	451	229	37	821	516	262	43
33	Articles-base metal	632	397	202	33	1,746	1,098	558	91
18	Fuel oils	615	387	197	32	167	105	53	9
20	Basic chemicals	578	364	185	30	1,141	717	364	59
21	Pharmaceuticals	530	333	169	28	1,694	1,064	541	88
19	Coal-n.e.c.	454	285	145	24	46	29	15	2
12	Gravel	402	253	128	21	1	0	0	0
40	Misc. mfg. prods.	396	249	127	21	2,205	1,386	704	115
17	Gasoline	377	237	120	20	174	109	56	9
36	Motorized vehicles	312	196	99	16	4,108	2,582	1,312	214
	Other	2,438	1,513	769	157	8,689	5,429	2,758	502

The top origin region for waterborne imports is Eastern Asia, accounting for 30 percent of tonnage and 46 percent of the value of goods.

Table 14. Origins for Waterborne Imports

Foreign Origin	Tons 2019 (000)				Value 2019 ($Millions)			
	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	20,949	13,134	6,694	1,120	56,932	35,720	18,198	3,015
Eastern Asia	6,190	3,880	1,971	338	26,079	16,373	8,318	1,388
Europe	4,026	2,511	1,297	218	14,249	8,915	4,580	754
SE Asia & Oceania	5,989	3,763	1,912	314	8,630	5,422	2,754	453
SW & Central Asia	1,466	921	468	78	4,785	3,006	1,527	252
Rest of Americas	2,046	1,284	653	109	1,370	860	437	73
Mexico	446	280	142	23	1,316	827	420	69
Africa	107	68	34	6	436	274	139	23
Canada	679	427	217	36	68	42	22	4

Marine Gateway Imports

Georgia is a marine gateway for imports to other states, most of them in the Southeast. About two-thirds of waterborne imports through Georgia ports are destined to Georgia, while the top 10 states account for over 90 percent. Seven of the top 10 destinations are Southeastern states.

Table 15. Top 10 Destination States for Georgia Imports by Water

Destination State	Tons 2019 (000)	% Total	Value 2019 ($Millions)	% Total
Total	31,072	100%	91,421	100%
GA	20,949	67%	56,932	62%
AL	1,777	6%	7,086	8%
TN	1,676	5%	6,406	7%
NC	1,622	5%	3,887	4%
FL	947	3%	2,332	3%
SC	726	2%	2,508	3%
CA	374	1%	1,837	2%
NY	330	1%	978	1%
IL	321	1%	554	1%
MS	292	1%	1,306	1%
Top 10	29,013	93%	83,825	92%

USMCA Truck Volumes

Imports from USMCA partners Mexico and Canada represent significant flows of inbound truck volumes, with 2.6 million tons in 2019 and $8.3 billion in value. The largest of these volumes destined to Georgia moved through Laredo in 2019, followed by San Diego and Detroit.

Table 16. USMCA Truck Volumes in Georgia

	Tons 2019 (000)				Value 2019 ($Millions)			
Domestic Origin	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	2,594	1,631	828	135	8,266	5,195	2,639	431
Laredo TX	1,115	701	356	58	3,280	2,062	1,047	171
Detroit MI	527	331	168	27	1,250	786	399	65
San Diego CA	352	221	112	18	1,651	1,038	527	86
Other	601	378	192	31	2,084	1,310	666	109

Top commodities imported by truck through Laredo to Georgia destinations in 2019 include other foodstuffs, machinery, electronics, motorized vehicles, and furniture.

Table 17. Top Commodities through Laredo Imported by Truck to Georgia

	Tons 2019 (000)				Value 2019 ($Millions)			
SCTG Desc	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	1,114.7	700.7	356.0	58.1	3,280.1	2,061.7	1,047.4	171.0
Other foodstuffs	449.2	282.4	143.4	23.4	274.7	172.7	87.7	14.3
Machinery	148.0	93.0	47.3	7.7	663.1	416.8	211.7	34.6
Electronics	117.1	73.6	37.4	6.1	652.0	409.8	208.2	34.0
Nonmetal min. prods.	77.7	48.9	24.8	4.1	46.1	29.0	14.7	2.4
Motorized vehicles	70.5	44.3	22.5	3.7	612.4	384.9	195.6	31.9
Furniture	54.2	34.1	17.3	2.8	414.0	260.2	132.2	21.6
Other	197.9	124.4	63.2	10.3	617.9	388.4	197.3	32.2

Top commodities imported by truck through San Diego in 2019 tons include other foodstuffs and electronics. In terms of 2019 value electronics is the principal import into Georgia.

Table 18. Top Commodities Imported by Truck through San Diego to Georgia

	Tons 2019 (000)				Value 2019 ($Millions)			
SCTG Desc	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	351.5	220.9	112.2	18.3	1,651.4	1,038.0	527.3	86.1
Other foodstuffs	146.9	92.3	46.9	7.7	69.0	43.4	22.0	3.6
Electronics	96.1	60.4	30.7	5.0	1,111.8	698.8	355.0	58.0
Other	108.5	68.2	34.6	5.7	470.6	295.8	150.3	24.5

USMCA Rail Volumes

Like truck imports, rail volumes imported into the U.S. enter through border crossings, with most volumes coming through the Canadian border, principally through North Dakota and Detroit. Smaller volumes enter the U.S. through border crossings in New York.

Table 19. USMCA Rail Volumes in Georgia

	Tons 2019 (000)				Value 2019 ($Millions)			
Domestic Origins	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	1,440.5	905.4	460.0	75.1	1,034.0	649.9	330.2	53.9
North Dakota	653.8	411.0	208.8	34.1	345.7	217.3	110.4	18.0
Detroit MI	505.4	317.6	161.4	26.3	349.0	219.3	111.4	18.2
Rest of NY	111.3	70.0	35.5	5.8	68.5	43.1	21.9	3.6
Laredo TX	76.5	48.1	24.4	4.0	215.9	135.7	69.0	11.3
Buffalo NY	47.6	29.9	15.2	2.5	26.3	16.5	8.4	1.4
Other	46.0	28.9	14.7	2.4	28.5	17.9	9.1	1.5

Top commodities imported through North Dakota by rail to Georgia include wood products, other food stuffs and plastics/rubber.

Table 20. USMCA Top Commodities through North Dakota

SCTG Desc	Tons 2019 (000)				Value 2019 ($Millions)			
	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	653.8	411.0	208.8	34.1	345.7	217.3	110.4	18.0
Wood prods.	186.6	117.3	59.6	9.7	67.8	42.6	21.6	3.5
Other foodstuffs	130.4	82.0	41.6	6.8	105.3	66.2	33.6	5.5
Plastics/rubber	95.4	60.0	30.5	5.0	81.9	51.5	26.1	4.3
Fertilizers	82.0	51.5	26.2	4.3	16.8	10.6	5.4	0.9
Newsprint/paper	64.8	40.7	20.7	3.4	36.5	23.0	11.7	1.9
Animal feed	43.2	27.1	13.8	2.3	9.4	5.9	3.0	0.5
Other	51.4	32.3	16.4	2.7	27.9	17.6	8.9	1.5

Top tonnage commodities imported by rail through Detroit also include wood products and plastics/rubber. Base metals were a top import commodity in 2019 value.

Table 21. USMCA Top Commodities through Michigan

	SCTG Desc	Tons 2019 (000)				Value 2019 ($Millions)			
		Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
	Total	505.4	317.6	161.4	26.3	349.0	219.3	111.4	18.2
26	Wood prods.	121.4	76.3	38.8	6.3	40.3	25.4	12.9	2.1
24	Plastics/rubber	104.2	65.5	33.3	5.4	96.4	60.6	30.8	5.0
27	Newsprint/paper	69.4	43.6	22.2	3.6	50.0	31.4	16.0	2.6
32	Base metals	69.0	43.3	22.0	3.6	108.8	68.4	34.7	5.7
20	Basic chemicals	57.3	36.0	18.3	3.0	26.8	16.8	8.5	1.4
31	Nonmetal min. prods.	43.5	27.3	13.9	2.3	3.9	2.5	1.3	0.2
13	Nonmetallic minerals	18.9	11.9	6.0	1.0	1.7	1.1	0.6	0.1
	Other	21.7	13.6	6.9	1.1	21.0	13.2	6.7	1.1

Air Cargo Imports

Air volumes with destinations in Georgia totaled 1.5 million tons in 2019. Almost all volumes came through Atlanta, with a majority of 1.0 million tons destined to the Atlanta region and 0.4 million tons to the Rest of Georgia region.

Table 22. Air Cargo Volumes

	Tons 2019 (000)				Value 2019 ($Millions)			
Domestic Origin	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Georgia Total	1,490	974	444	72	12,332	7,865	3,840	627
Atlanta GA	1,481	969	441	72	12,285	7,835	3,825	625
Savannah GA	8	5	3	0	45	28	14	2
Rest of GA	0	0	0	0	2	1	1	0

The top commodities by value imported by air to Georgia destinations are motorized vehicles, electronics, and machinery.

Table 23. Air Cargo Top Commodities

		Tons 2019 (000)				Value 2019 ($Millions)			
	SCTG Desc	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
	Total	1,481	969	441	72	12,285	7,835	3,825	625
36	Motorized vehicles	305	192	97	16	3,643	2,290	1,163	190
43	Mixed freight	110	106	3	0	335	324	9	2
31	Nonmetal min. prods.	167	105	53	9	135	85	43	7
34	Machinery	136	86	44	7	1,360	855	434	71
24	Plastics/rubber	123	77	39	6	552	347	176	29
32	Base metals	109	69	35	6	132	83	42	7
33	Articles-base metal	81	51	26	4	286	180	91	15
35	Electronics	80	50	25	4	2,436	1,531	778	127
	Other	370	233	118	19	3,407	2,141	1,088	178

Europe is the top origin region for Georgia air import value, equaling the total of Eastern Asia and Southeast Asia/Oceania.

Table 24. Top Air Cargo Import Origins

Foreign Origin	Tons 2019 (000)				Value 2019 ($Millions)			
	Georgia Total	Atlanta GA	Rest of GA	Savannah GA	Georgia Total	Atlanta GA	Rest of GA	Savannah GA
Total	1,490	974	444	72	12,332	7,865	3,840	627
Europe	760	493	230	38	5,573	3,555	1,735	283
Eastern Asia	421	283	119	19	3,440	2,211	1,056	172
SE Asia & Oceania	196	126	60	10	2,249	1,425	709	116
Canada	7	5	2	0	649	409	207	34
SW & Central Asia	65	41	20	3	313	198	99	16
Rest of Americas	23	15	7	1	55	35	17	3
Africa	14	9	5	1	39	25	12	2
Mexico	3	2	1	0	14	9	4	1

2.3.4. Exports

Exports originating from Georgia regions totaled 24.2 million tons in 2019, with a value of $39.8 billion. Waterborne exports of 20.2 million tons comprised by far the largest share of total export tons, with exports by truck and rail also representing significant volumes. Viewed by value, total exports by air at $15.0 billion in 2019 were close to the $16.5 billion of exports by water. The smaller volumes by land modes were $7.2 billion for truck value and $1.2 billion for rail.

In terms of Georgia's regional shares, the Atlanta region comprised a large majority of the state total across all modes for both tons and value.

Table 25. Waterborne Export Volumes from Georgia

Domestic Origin	Tons 2019 (000)						Value 2019 ($Millions)				
	Georgia Total	Water	Air	Truck	Rail		Georgia Total	Water	Air	Truck	Rail
Georgia	24,189	20,174	247	2,202	1,566		39,810	16,522	14,953	7,180	1,156
Atlanta GA	16,159	13,472	179	1,474	1,034		26,705	11,022	10,113	4,801	768
Rest of GA	6,499	5,422	55	590	434		10,599	4,445	3,912	1,927	315
Savannah GA	1,531	1,281	13	139	99		2,507	1,054	928	452	73

As shown in the table below, for waterborne exports from Georgia the large majority of volumes are shipped out of the Savannah region (through the Port of Savannah). A small percentage of exports goes to other U.S. domestic ports, with Charleston the top alternative destination.

Table 26. Gateways for Waterborne Exports from Georgia

Domestic Origin	Domestic Destination	Tons 2019 (000) Water	Value 2019 ($Millions) Water
Atlanta GA	Savannah GA	11,561	8,486
	Other	1,910	2,537
	Charleston SC	659	628
Rest of GA	Savannah GA	4,653	3,424
	Other	769	1,021
	Charleston SC	265	253
Savannah GA	Savannah GA	1,101	816
	Other	62	59
	Charleston SC	62	59

Marine Gateway Exports

Georgia serves as a marine gateway for exports from other states, with greater diversity than for imports. Half the waterborne export tonnage out of Georgia ports originates from Georgia, and two-fifths of the export value. Around 90 percent of the export volume originates in the top 10 states, but these states extend beyond the Southeast to others along the Gulf Coast, reaching as far as Texas.

Table 27. Top 10 Origin States for Georgia Exports by Water

Origin State	Tons 2019 (000)	% Total	Value 2019 ($Millions)	% Total
Total	34,040	100%	33,903	100%
GA	17,508	51%	12,968	38%
TN	3,803	11%	3,674	11%
AL	1,827	5%	5,924	17%
SC	1,608	5%	2,096	6%
TX	1,364	4%	492	1%
FL	1,279	4%	1,311	4%
AR	1,168	3%	431	1%
NC	1,008	3%	882	3%
MS	880	3%	1,113	3%
LA	592	2%	223	1%
Top 10	31,037	91%	29,113	86%

Air Cargo and USMCA Exports

Similar to the pattern for waterborne export volumes, for exports by air from Georgia the Atlanta region is the top export gateway. Other competitive regions/airports include Miami, Louisville, and Memphis (the latter two respectively are global hubs for UPS and FedEx).

International exports by truck and rail from Georgia regions are destined to Canada and Mexico, and the border crossing regions for these exports reflect these destinations (as shown in the table below). Laredo and Detroit are the top two export border crossings for value, while the Rest of Texas region is also a top gateway for rail tons.

Table 28. USMCA Export Gateway Destinations

	Tons 2019 (000)		Value 2019 ($Millions)	
Domestic Destination	Truck	Rail	Truck	Rail
Laredo TX	721	388	2,118	306
Detroit MI	649	276	2,090	515
Rest of NY	216	71	626	36
Buffalo NY Area	182	194	603	64
North Dakota	125	159	652	143
San Diego CA	70	1	325	0
Rest of WA	64	10	220	6
Tucson AZ	46	30	93	19
Rest of TX	44	382	163	51
El Paso TX-NM (TX Part)	30	44	88	12
Other	54	11	202	3

Exports by Foreign Destination

As described earlier, exports by truck and rail are largely destined to Canada and Mexico. The table below displays volumes exported by water to all world regions. The leading regions for tons include Eastern Asia, SW and Central Asia and Rest of Americas, while Europe is the top region measured by value, accounting for 26 percent of marine exports.

Table 29. Waterborne Export Destinations

Foreign Destination	Tons 2019 (000)	Value 2019 ($Millions)
Eastern Asia	4,590	2,837
SW & Central Asia	4,086	2,880
Rest of Americas	4,020	3,236
Europe	3,077	4,337
SE Asia & Oceania	2,953	2,201
Africa	1,301	952
Mexico	125	59
Canada	23	19

Destinations by air show that Europe is the leading export destination by tonnage and by value, the latter representing 38 percent of Georgia's total.

Table 30. Export Destinations by Air

Foreign Destination	Tons 2019 (000) Air	Value 2019 ($Millions) Air
Europe	64	5,700
Eastern Asia	46	2,941
SE Asia & Oceania	28	2,460
SW & Central Asia	31	1,578
Rest of Americas	26	1,160
Canada	28	616
Africa	22	332
Mexico	2	166

Top Commodity Exports by Mode

Water: The top 5 commodities by tons exported by water in 2019 were waste/scrap, animal feed, nonmetallic minerals, newsprint/paper, and other foodstuffs. The total of all agricultural and food products, also including meat/seafood, other agricultural products, milled grain products, live animals, and cereal grains, represented 28 percent of total export weight in 2019, and 16 percent of total value. Top export products by value in 2019 also included chemical products and transportation.

Table 31. Top Waterborne Export Commodities

	Commodity	Tons 2019 (000) Water	Value 2019 ($Millions) Water
	Total	20,174	16,522
41	Waste/scrap	4,012	402
04	Animal feed	3,345	369
13	Nonmetallic minerals	3,184	483
27	Newsprint/paper	2,850	2,603
07	Other foodstuffs	985	456
20	Basic chemicals	940	279
26	Wood prods.	936	404
05	Meat/seafood	849	904
30	Textiles/leather	496	659
24	Plastics/rubber	495	651
25	Logs	458	98
03	Other ag prods.	290	785
18	Fuel oils	141	27
23	Chemical prods.	129	1,113
34	Machinery	128	406
	Other	936	6,884

Air: The top ten commodities exported by air are much more concentrated than those exported by water, accounting for almost all value. Machinery is by far the top export commodity. Given the high value of these products the tonnage volumes are much smaller than the weight for waterborne exports.

Table 32. Top Airborne Export Commodities

Sctg2	SCTG Desc	Tons 2019 (000) Air	Value 2019 ($Millions) Air
	Total	247	14,953
34	Machinery	42	5,143
37	Transport equip.	10	2,840
35	Electronics	7	1,285
33	Articles-base metal	34	1,235
38	Precision instruments	6	1,036
31	Nonmetal min. prods.	32	980
32	Base metals	15	504

Sctg2	SCTG Desc	Tons 2019 (000) Air	Value 2019 ($Millions) Air
36	Motorized vehicles	10	441
43	Mixed freight	45	382
23	Chemical prods.	8	291
	Other	38	816

USMCA Truck and Rail: As noted earlier, exports by truck and rail are destined to Canada and Mexico. Top valued exports by truck include machinery and electronics while newsprint/paper is the leading export commodity by weight.

Table 33. Top Truck Export Commodities

Sctg2	SCTG Desc	Tons 2019 (000) Truck	Value 2019 ($Millions) Truck
	Total	2,202	7,180
34	Machinery	104	1,191
35	Electronics	63	1,078
36	Motorized vehicles	113	792
24	Plastics/rubber	180	715
30	Textiles/leather	82	600
23	Chemical prods.	115	368
27	Newsprint/paper	306	290
05	Meat/seafood	88	250
03	Other ag prods.	154	235
32	Base metals	110	218
	Other	887	1,444

The top export commodity transported by rail is motorized vehicles, which is also a leading export commodity shipped by truck, as shown above. The top export commodity by weight is non- metallic minerals.

Table 34. Top Rail Export Commodities

		Tons 2019 (000)	Value 2019 ($Millions)
	Total	1,566.5	1,155.7
36	Motorized vehicles	42.9	549.0
27	Newsprint/paper	284.3	184.5
24	Plastics/rubber	139.0	144.9

07	Other foodstuffs	182.9	50.9
20	Basic chemicals	83.3	49.4
13	Nonmetallic minerals	403.4	32.3
32	Base metals	35.6	28.2
35	Electronics	3.0	19.4
04	Animal feed	152.9	19.0
06	Milled grain prods.	40.3	16.8
	Other	198.8	61.2

2.4. Profile of Key Industries

2.4.1. Food and Agriculture

Approximately one in seven Georgians works in agriculture, forestry, or a related field. According to the most recent Census of Agriculture, Georgia's agricultural producers sold more than 9.57 billion dollars of agricultural products in 2020. Agriculture contributes approximately 69.4 billion dollars annually to Georgia's economy, according to the UGA Center for Agribusiness & Economic Development.[6]

According to the University of Georgia Center for Agribusiness & Economic Development, the state's forest industry accounts for a total economic contribution to Georgia's economy of 12.7 billion dollars and supports more than 70,200 jobs in Georgia. Additional information regarding the products of forestry is included in the manufacturing section below.

In 2020, there were 42,439 farms in Georgia encompassing 9,953,730 acres of land. The average farm size was 235 acres and the total Farm Gate Value for the state was 12.2 billion dollars in 2020. Farm Gate Value is the value of the farm products directly from the farm, not including the costs of transportation, further production and marketing. The farms can be sub-categorized as follows:

- More than 17,000 of those farms raised cattle, either beef cows or dairy cows.
- More than 13,000 farms grew cotton during 2020, planting 810,000 acres.
- Peanut farmers across the southern and eastern areas of Georgia produced 3.3 billion pounds of peanuts.
- Farmers across the state planted over 420,000 acres of corn and produced 70.2 million bushels.

Georgia ranks as the top poultry production state in the nation, based on head produced. The industry employs more than 88,000 in the state and generates more than 4.3 billion dollars in farm gate value and an overall annual economic impact to the state of more than 28 billion

[6] Georgia Farm Bureau, "About Georgia Agriculture", published by gfb.org, accessed October 28, 2022 at https://www.gfb.org/education-and-outreach/about-ga-agriculture.cms

dollars. Three out of four Georgia counties are involved in poultry and egg production.[7] The poultry industry has a high daily demand for feed and for food in colder weather. These trucks operate 24 hours, nearly 365 days per year moving on rural roads doing direct farm delivery. This places significant demand on that infrastructure.

Georgia is one of the top states in the nation in the production of peanuts, pecans, blueberries and spring onions. It is also at or near the top when it comes to cotton, watermelon, peaches, eggs, cucumbers, sweet corn, bell peppers, tomatoes, cantaloupes, rye and cabbage.

Food Processing is Georgia's leading manufacturing sector in terms of labor and gross state product. Georgia Power's Community and Economic Development (C & ED) group reports 7,260 new jobs created within the food processing sector between 2018 and 2022. These jobs have come from businesses either expanding or moving to operations to Georgia during that time period. Lightcast 2022.3 shows the value of the Food and Beverage industry to the Georgia State Product (GSP) to be 10.3 billion dollars. Animal Processing is the dominant segment within Georgia's food processing industry. Georgia is the poultry capital of the world with more than 1 billion dollars in annual exports to markets around the U.S. and world.[8]

The Food Processing sector is derived from Georgia's agricultural industry including varied manufacturing concerns that combine the vast source of raw materials with a diverse network of distributors, using the expansive transportation infrastructure throughout the state.

The map below includes food processing operations and food distribution locations with 50 or more employees. This map shows the presence of the industry across much of the state, with animal processing particularly prominent.

[7] Georgia Extension Supporting County Governments and Poultry Industry | National Institute of Food and Agriculture (usda.gov)

[8] Select Georgia, "Food Processing", Accessed November 8, 2022 at selectgeorgia.com/discover-georgia/industries/food-process-georgia

Figure 24. Food and Agricultural Industry Prominence in Georgia

Source: https://www.selectgeorgia.com/discover-georgia/industries/food-process-georgia

Table 35 shows that nearly 82 million tons of food and agriculture commodities moved into, out of, and within the state of Georgia in 2019. The largest direction of commodity flow was inbound at approximately 42 million tons, followed by outbound at nearly 28 million tons. Slightly more than 12 million tons moved within the state. Most of the cargo was moved by truck (67.6 million tons), followed by rail (14.4 million tons). A small amount of cargo moved by water (91,000 tons) and air (14,000 tons).

Table 35. Food and Agriculture Tonnage by Mode and Direction of Flow (2019) (Thousands of Tons)

Mode	Inbound	Outbound	Within	Total
Truck	30,055	25,346	12,168	67,569
Rail	11,838	2,550		14,388
Water	90	<1	<1	91
Air	7	7	<1	14
Other		23		23
Total	**41,990**	**27,926**	**12,169**	**82,085**

Source: Transearch 2019 data prepared by WSP USA Inc.

The total value of food and agriculture commodities in the state in 2019 was nearly 97 billion dollars. As opposed to the tonnage, the outbound cargo was more valuable (43.7 billion dollars) than the inbound cargo (37.3 billion dollars). Cargo moved by truck comprised the highest value at 88.1 billion dollars, with rail a distant second at 8.7 billion dollars.

Table 36. Food and Agriculture Value by Mode and Direction of Flow (2019) (Millions of Dollars)

Mode	Inbound	Outbound	Within	Total
Truck	31,801	40,193	16,115	88,109
Rail	5,339	3,375		8,714
Water	33	<1	7	40
Air	86	83	1	170
Other		22		22
Total	**37,259**	**43,673**	**16,123**	**97,055**

Source: Transearch 2019 data prepared by WSP USA Inc.

2.4.2. Manufacturing

Georgia's manufacturing industry employs more than 480,000 people. Georgia is a national leader in advanced manufacturing, outpacing the U.S in 10-year GDP growth in the manufacture of products including machinery, electrical equipment and components, and fabricated metals.[9]

With its extensive workforce training and technical college programs, Georgia is well positioned to be a competitive player in the manufacturing space. Nearly 5,000 engineers graduate from Georgia universities each year and the state's university engineering programs rank in the Top 5 nationwide. It is no surprise that major corporations like Mitsubishi, Hyundai, Kobayashi, Kia Motors, Gulfstream Aerospace, and Caterpillar chose to locate manufacturing facilities in the state.[10]

The size and scale of these industries is evident in the outbound shipment statistics for these industry groups which are discussed in Section Supply Chain Geography of Key Industries. Some of the other major manufacturing sectors and initiatives in the state are summarized as follows:[11]

- **R&D:** Georgia is home to corporate innovation centers, research universities, investors, and start-up companies. Tech Square is the 8-block area in Midtown Atlanta, home to hundreds of startups plus dozens of innovation labs operated by international brands including Panasonic, Delta Air Lines, and Home Depot. The state's research universities generate more than 2 billion dollars a year in public and private R&D funding, with 1,600 scientists and engineers working across 8 labs and 15 field offices. There is also a

[9] Select Georgia, "Georgia's Manufacturing Industry", published by Georgia Power Community & Economic Development, accessed October 30, 2022 at https://www.selectgeorgia.com/documents/578/Georgia_Manufacturing_Industry.pdf
[10] Georgia Department of Economic Development, "Advanced Manufacturing", published 2022 by Georgia.org, accessed October 30, 2022 at https://www.georgia.org/industries/advanced-manufacturing
[11] Ibid.

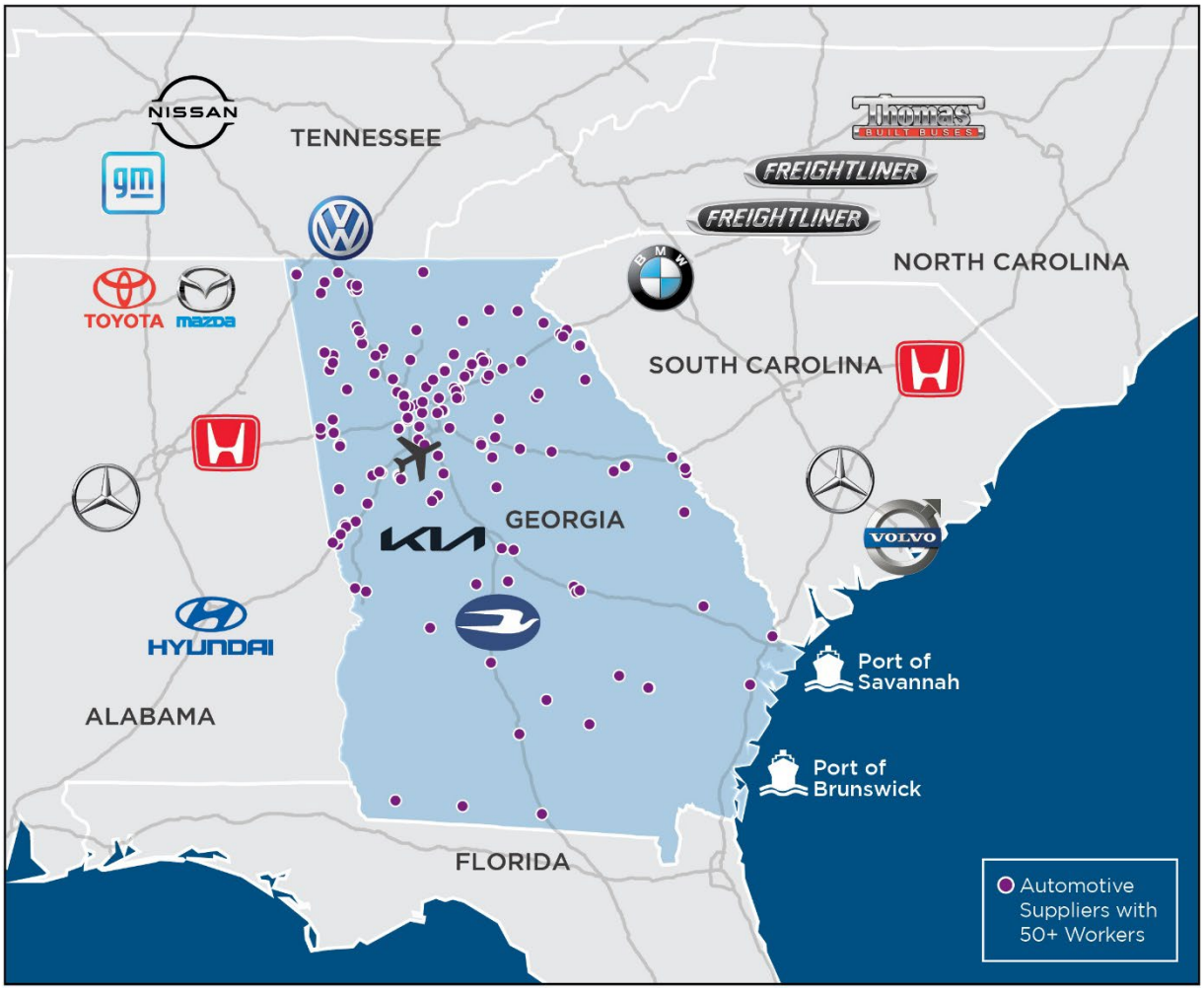
growing portfolio of public and private cybersecurity resources in Augusta, including NSA-Georgia, Unisys and in 2020 the U.S. Army Cyber Command.

- **Defense:** Georgia is ranked 7th in Department of Defense spending nationwide, with the majority of spending allocated to scientific research, engineering, and construction. There are statewide programs designed to assist Georgia aerospace and defense companies who perform Department of Defense related work. Top defense contractors located in the state include Lockheed Martin, Northrop Grumman, General Dynamics, and S&K Aerospace.
- **Automotive:** Georgia has been an established automotive manufacturing center since 1909, when the first automobile was assembled in the state. Leading automotive companies that have chosen Georgia as their home for manufacturing, assembly, headquarters, and innovation centers include Kia, Hyundai, Honda, Kumho Tire, Toyo Tire, and SK Innovations. Bluebird, a manufacturer of busses also has a presence in the state. In December 2021, electric adventure vehicle manufacturer Rivian Inc. announced that it would build its second U.S. plant, a 5 billion dollar carbon-conscious campus, in Georgia.

The following map shows the location of automotive suppliers with more than 50 employees.[12]

[12] Georgia Department of Economic Development, "Advanced Manufacturing", published 2022 by Georgia.org, accessed October 30, 2022 at https://www.georgia.org/industries/advanced-manufacturing

Figure 25. Automotive Suppliers in Georgia with More Than 50 Employees



Source: Georgia Power Community & Economic Development, accessed October 30, 2022 at https://www.georgia.org/industries/automotive

Georgia's major industries include lumber, paper, and home furnishings (including floor coverings). Georgia's forest industry contributed 39.1 billion dollars in revenue output to the state economy. The state has 24.1 million acres of forestland, which is 67 percent of the state's total land area.[13] In 2020, Georgia's forest industry provided 54,185 jobs. Across all producing industries, forestry products ranked second in employment to food processing, providing an estimated 148,000 jobs with compensation of nearly 9 billion dollars. Georgia is home to nearly

Georgia State and Private Forestry Fact Sheet 2022
https://apps.fs.usda.gov/nicportal/temppdf/sfs/naweb/GA_std.pdf

1,400 forest products manufacturers and is consistently ranked near the top in pulp and paper production and in the top ten lumber-producing states.[14]

In 2019, wood pulp, kraft paper and paperboard were 2 of the top 10 export products from Georgia. Among US states Georgia was #2 in the export of fuel wood and wood pellets. The top export markets include the UK, China and Vietnam.

Forest bioenergy, the use of renewable forestry biomass to produce energy products, is an area of growth within the forest industry and shows promise for future development using the renewable resources of the State's forestland.

Maintaining the forest industry's status as one of the top economic drivers in the state is critical, particularly for rural communities. The Atlanta Regional Commission, Southern Georgia, and Heart of Georgia Altamaha are the top three regions in terms of employment, accounting for 44 percent of the forestry related jobs in Georgia. However, in terms of regional dependence on forestry compared to all other industries, Heart of Georgia Altamaha, Southern Georgia, and Southwest Georgia have the three highest employment percentages at 5.6 percent, 4.2 percent, and 3.7 percent, respectively.[15]

Over 129 million tons of manufacturing tonnage moved within, into and out of the state in 2019. Nearly half of the tonnage was outbound (63 million tons) while a significant amount also moved inbound (45 million tons). Approximately 21 million tons moved within the state. Most of the tonnage was moved by truck (104.2 million tons), followed by rail (24.5 million tons). Very little manufacturing tonnage moved by water or air.

Table 37. Manufacturing Tonnage by Mode and Direction of Flow (2019) (Thousands of Tons)

Mode	Inbound	Outbound	Within	Total
Truck	31,104	52,410	20,672	104,186
Rail	13,887	10,652		24,539
Water	252	2	10	264
Air	111	96	<1	207
Other	<1	2		2
Total	**45,354**	**63,162**	**20,682**	**129,198**

Source: Transearch 2019 data prepared by WSP USA Inc.

Manufacturing cargo in Georgia accounted for more than 365 billion dollars in value in 2019. The highest share of value was attributed to outbound cargo (180 billion dollars), followed by inbound cargo (145.6 billion dollars) and intra-state cargo (39.4 billion dollars). Trucking comprised the largest share of value by mode at 263.8 billion dollars, followed by rail at 51

[14] University of Georgia, "Forestry," published in 2022 by the University of Georgia, Accessed November 7, 2022 at https://extension.uga.edu/topic-areas/environment-natural-resources/forestry.html

billion dollars. Although very little tonnage moved by air, the air cargo accounted for nearly as much value as the rail cargo.

Table 38. Manufacturing Value by Mode and Direction of Flow (2019) (Millions of Dollars)

Mode	Inbound	Outbound	Within	Total
Truck	87,727	136,848	39,240	263,815
Rail	32,451	18,609		51,060
Water	94	5	120	219
Air	25,369	24,945	39	50,353
Other	2	15		17
Total	**145,643**	**180,422**	**39,399**	**365,464**

Source: Transearch 2019 data prepared by WSP USA Inc.

2.4.3. Warehousing and Distribution

The state of Georgia is located within a two-day drive or two-hour flight of 77 percent of the nation's population. The state's favorable geography along with its extensive goods movement infrastructure, including ports, airports and rail hubs, has facilitated significant growth in its warehousing and distribution sector.

Georgia is home to nearly 650 million square feet of warehouse and manufacturing space. Approximately 204 million square feet is dedicated warehouse space; over 70 firms are involved, of which almost 50 have over 1 million square feet. This group includes five firms in Savannah; [16] after the Atlanta metropolitan market, Savannah is the top location for warehousing and logistics deriving from the port and the import-export activity supported therein.

A total of 346,000 people worked in the warehouse and distribution sector in 2021. Included in that number are 107,000 employees specifically in warehousing. Wage rates in warehousing and logistics overall averaged 16.37 dollars per hour. Wages in the warehousing sector were higher, approaching 25 dollars to 30 dollars per hour. Industry employment is forecasted to grow at an average annual rate of 9 percent from 2021 to 2031. There are 78,000 supply chain personnel and over 200 logistics-related technology companies in the state.[17]

Georgia's strengths in the warehousing and distribution sector include the following factors:

- Well-developed transportation infrastructure
- Business-friendly environment
- Low operating costs

[16] Select Georgia, "Warehousing & Logistics", published by Georgia Power Community & Economic Development, accessed October 28, 2022, at https://www.selectgeorgia.com/discover-georgia/industries/warehouse-dist-georgia
TKG
[17] Ibid.

- Highly-skilled workers
- Established workforce training program
- Excellent accessibility to market

Over the last five years, warehouse distribution operations have added more than 300 million square feet of space in the Atlanta market. An additional 30 million square feet of space has been added in Savannah. **Table 39** presents a list of recently developed and newly announced warehousing facilities in the state with over 1 million square feet according to Georgia Power.

Table 39. Recently Announced Warehouse Distribution Locations in Georgia (2022)

Company	Announced Square Feet	Location	Year
Amazon	2,800,000	Appling	2020
Shaw Industries	1,900,000	Effingham County	2019
Kellogg's	1,400,000	Newnan	2021
OA Logistics/JLA Home Furnishings	1,300,000	Savannah	2018
Wayfair	1,164,800	Savannah	2018
Ace Hardware	1,100,000	Watkinsville	2021
Drive Medical	1,100,000	Palmetto	2018
Safavieh	1,100,000	Savannah	2017
GE Appliances	1,099,880	Commerce	2018
Amazon	1,000,000	Newnan	2020
PVH	1,000,000	Palmetto	2019
A&R Logistics	1,000,000	Effingham County	2019
Amazon.com Inc.	1,000,000	Macon	2017
ASOS	1,000,000	Union City	2017
Ghirardelli	1,000,000	McDonough	2017

Source: Georgia Power Community & Economic Development, accessed October 28, 2022, at https://www.selectgeorgia.com/discover-georgia/industries/warehouse-dist-georgia

The growth of Georgia's warehousing sector has been enabled by and benefited from the state's excellent goods movement infrastructure, including ports, airports and rail hubs. Not only are the state's primary cargo handling facilities capable of moving an ever-increasing amount of cargo, they have been working together to facilitate the efficient intermodal transport of this cargo. One example is the Mason Mega Rail Terminal currently under construction across from the Port of Savannah, a collaborative effort between the Port and major rail operators.

A brief description of the key modes involved with warehousing and distribution is provided below:[18]

- **Rail:** Rail carriers in Georgia serve more than 500 communities across the state and maintain 5,000 miles of rail. Major rail carriers in the state include CSX, whose network includes 70 ports and 166 bulk intermodal terminals in more than 23 states, D.C. and Canada, and Norfolk Southern (NS), which operates 20,000 route miles of track in 22 states, including every major container port in the eastern U.S. The Burlington Northern and Santa Fe also has operations in Georgia and the state is home to multiple short line railroads. Daily trains on CSX and NS connect the Port of Savannah to Atlanta and other points in Georgia and beyond.

- **Ports:** Georgia's ports moved 5.6 million TEUs in 2021, which was an increase of nearly 20 percent from 2020. Georgia's deep-water ports have added the capabilities necessary to remain competitive in international markets. The deepening and widening of the Savannah Harbor allows the passage of much larger cargo vessels traveling from Asia through the expanded Panama Canal. Simultaneous efforts have gone into increasing the ports handling capacity by 1.6 million TEUs.

  The Port of Savannah handled 1.5 million TEUs in the first quarter of 2022 indicating rapid growth over 2021. The Port of Brunswick's 3 terminals provide roll on roll off (RORO) service for the automotive industry and manage a variety of bulk cargo. Brunswick also handles oversize and overweight cargo including off-highway equipment from companies such as Caterpillar and John Deere.

  Northeast Asia was the largest trade lane for imports via Savannah during Calendar Year 2021 (CY21) and had the most growth between CY17 and CY21, increasing by 403,620 TEUs. Other trade lanes with rapid growth between CY17 and CY21 were Southeast Asia (+248,826 TEUs), the Mediterranean (+93,432 TEUs), Southern Asia/Indian Subcontinent (+90,122 TEUs), and Eastern Europe.

- **Airports:** Hartsfield-Jackson is home to 4 charter air cargo carriers and 28 mainline carriers that shipped nearly 600,000 metric tons in 2020. Delta Cargo, UPS, FedEx and DHL move cargo through the airport, which has more than 29 acres of air cargo warehouse space on site. The airport provides USDA inspection, distribution and transportation services. Adjoining the airport is Georgia Foreign Trade Zone #26 which enables companies to reduce their operating costs associated with international trade.

Approximately 54 million tons of warehousing and distribution cargo moved into, out of, and within the state in 2019. More tonnage moved within the state (25 million tons) than either inbound (15.9 million tons) or outbound (12.7 million tons). The majority of cargo was moved by truck (42.7 million tons), followed by intermodal rail (10.9 million tons). A small amount moved by air (103,000 tons).

[18] Ibid.

Table 40. Warehousing & Distribution Tonnage by Mode and Direction of Flow (2019) (Thousands of Tons)

Mode	Inbound	Outbound	Within	Total
Truck	10,539	7,100	25,068	42,707
Rail	5,365	5,571		10,936
Water				0
Air	49	54	<1	103
Other				0
Total	**15,953**	**12,725**	**25,068**	**53,746**

Source: Transearch 2019 data prepared by WSP USA Inc.

The total value associated with warehousing and distribution cargo was nearly 176 billion dollars in 2019. As with tonnage, the highest share of the cargo by value was within the state (86.9 billion dollars) compared to inbound (47.1 billion dollars) or outbound ($41.8 billion) flows. Trucking comprised nearly $117 billion in warehousing and distribution commodity value, which was nearly double the value of cargo moved by rail ($57.7 billion). Air cargo accounted for $1.3 billion or 0.7 percent of total value.

Table 41. Warehousing & Distribution Value by Mode and Direction of Flow (2019) (Millions of Dollars)

Mode	Inbound	Outbound	Within	Total
Truck	17,524	12,436	86,867	116,827
Rail	29,072	28,617		57,689
Water				0
Air	533	721	<1	1,254
Other				0
Total	**47,129**	**41,774**	**86,867**	**175,770**

Source: Transearch 2019 data prepared by WSP USA Inc.

2.4.4. Construction

Construction contributed $29.5 billion (4.7 percent) of the state's GDP of $622.6 billion in 2020. There were 19,413 construction firms in Georgia in 2020. On average, each firm contributes approximately $1.5 million in economic output. Private nonresidential spending in Georgia totaled $10.4 billion in 2020. State and local spending totaled $7.8 billion.[19]

Construction employment in Georgia in January 2022 totaled 210,700, an increase of 3.8 percent from January 2021, and 6.1 percent less than the state's peak in March 2007. In

[19] Ken Simonson, "The Economic Impact of Construction in the United States and Georgia", published 2022 by AGC based on data from the Bureau of Economic Analysis (GDP); Census Bureau (spending); Bureau of Labor Statistics (national and state employment, median wages); and AGC (workforce survey). Accessed October 28, 2022 at https://www.agc.org/sites/default/files/Files/Advocacy/GA.pdf

Georgia, four out of the five construction occupations with the highest employment had higher median pay than the median for all employees in the state in 2020. [20]

Within the construction industry group, the major commodity types are nonmetallic minerals (such as sand and gravel); asphalt; clay, concrete, glass or stone; fabricated metal products; and electrical equipment. The first two types comprise the vast majority of construction materials moving into, out of, and within the state.

Table 42 shows that in 2019, nearly 145 million tons of construction cargo moved in the state, accounting for almost one-third of the total Georgia-based freight tonnage and considerably more than any other industry group. Of this, the vast majority was moved by truck (133.2 million tons), with the remaining tonnage moved by rail (11,535 tons). By direction, the largest share of the tonnage was within the state (62.3 million tons), followed by inbound (52.2 million tons) and outbound (30.2 million tons) cargo. Very little construction cargo was moved by water or air.

Since construction materials tend to be heavy bulk shipments moving short distances, the tonnage of cargo moving within the state exceeds either the inbound or outbound flows.

Table 42. Construction Tonnage by Mode and Direction of Flow (2019) (Thousands of Tons)

Mode	Inbound	Outbound	Within	Total
Truck	48,763	22,113	62,294	133,170
Rail	3,433	8,102		11,535
Water	34	4	7	45
Air	<1	<1		<1
Other		<1		<1
Total	**52,230**	**30,219**	**62,301**	**144,750**

Source: Transearch 2019 data prepared by WSP USA Inc.

Table 43 shows the comparable data by value. In 2019, construction cargo moving in the state was valued at $15.6 billon, accounting for slightly more than 2 percent of the total value of Georgia's freight and indicating the marked disparity between value and weight in the construction industry's role in the state freight system. The majority of value was attributed to truck ($14.9 billion). By direction, the largest share of value was for outbound cargo ($7.4 billion) followed by inbound ($5.1 billion) and then cargo moved within the state ($3 billion).

[20] Ibid.

Table 43. Construction Value by Mode and Direction of Flow (2019) (Millions of Dollars)

Mode	Inbound	Outbound	Within	Total
Truck	4,765	7,101	3,057	14,923
Rail	364	270		634
Water	4	0.45	5	9
Air	9	5		14
Other		<1		<1
Total	**5,142**	**7,376**	**3,062**	**15,580**

Source: Transearch 2019 data prepared by WSP USA Inc.

2.4.5. Energy

Georgia does not have any significant fossil fuel reserves. Natural gas supplies slightly more than half (53 percent) of the net electricity generation in Georgia. This is slightly higher than the U.S. average of 46 percent. Nuclear energy supplies slightly less than one quarter of net electricity generation and coal accounts for 12 percent, with the remaining 12 percent mostly coming from renewables.[21]

Georgia has extensive solar power potential, and the Atlantic Ocean off Georgia's coast presents an opportunity for wind energy generation. Solar and wind energy facilities (also called "farms") require specialized equipment, some of which must be transported using dedicated infrastructure. For example, a wind turbine tower can range from 200-feet in height to more than 400-feet in height and may have a diameter ranging from 130 feet to 300 feet; for its road transportation, it must be conveyed using a modified flatbed carrier over a route that is carefully mapped to avoid overpasses or bridges with height or weight restrictions.

The transportation sector accounts for the largest share of Georgia's end-use energy consumption. Georgia's transportation sector ranked sixth in the nation in energy consumption in 2019. The industrial sector accounts for the second-largest share, largely due to the state's energy-intensive industries including the manufacture of food, beverages, chemicals, and paper. The residential sector's per capita energy consumption is above the national average.[22]

In terms of electricity consumption, Georgia uses more power than it generates. Consequently, about one-seventh of the electricity it has consumed over the past decade was imported from other states. In 2020, Georgia's residential sector accounted for 44 percent of electricity retail sales while the commercial sector accounted for 33 percent of sales and the industrial sector accounted for 23 percent. In 2020, Georgia ranked 10th in the nation in number of registered electric vehicles, and the transportation sector accounted for a small amount of electricity retail sales.

Georgia had 194,908 energy workers statewide in 2021, representing 2.5 percent of all U.S. energy jobs. Of these energy jobs, 17,129 were in electric power generation; 8,007 in fuels;

21 U.S. EIA, "Georgia: State Profile and Energy Estimates", Published December 16, 2021, accessed October 29, 2022 at https://www.eia.gov/state/analysis.php?sid=GA#2
22 Ibid.

35,262 in transmission, distribution, and storage; 53,294 in energy efficiency; and 81,216 in motor vehicles. From 2020 to 2021, energy jobs in the state increased by 6,282 jobs, or 3.3 percent. The energy sector in Georgia represented 4.4 percent of total state employment[23].

Over 44 million tons of energy cargo was moved into, out of, and within the state in 2019. Nearly half of the tonnage was inbound (21.2 million tons) followed by intra-state (17.8 million), most of which was coal as discussed in Section 2.5. The amount of outbound tonnage was much lower at 5.4 million tons. Truck had the largest share of tonnage (26.7 million tons) followed by rail (17 million tons). There was a small amount of energy tonnage moved by water (614,000 tons).

Note that the Transearch data employed in this section for industry analysis does not include pipelines, which are used primarily for the transport of natural gas and inbound fuel. Pipelines are discussed in Section 3.5.

Table 44. Energy Tonnage by Mode and Direction of Flow (2019) (Thousands of Tons)

Mode	Inbound	Outbound	Within	Total
Truck	3,819	5,228	17,671	26,718
Rail	16,925	120		17,045
Water	449	49	116	614
Air	<1	<1		<1
Other				
Total	**21,193**	**5,397**	**17,787**	**44,377**

Source: Transearch 2019 data prepared by WSP USA Inc.

In terms of value, approximately 20 billion dollars in energy cargo was moved into, out of and within the state in 2019. The highest value directional flow was within the state (11.8 billion dollars), which includes truck delivery of products brought into the state by pipelines. Inbound energy cargo was valued at 4 billion dollars while inbound energy cargo was valued at 3.6 billion dollars.

Table 45. Energy Value by Mode and Direction of Flow (2019) (Millions of Dollars)

Mode	Inbound	Outbound	Within	Total
Truck	2,599	3,489	11,743	17,831
Rail	1,181	87		1,268
Water	303	35	92	430
Air	<1	<1		<1
Other				
Total	**4,083**	**3,611**	**11,835**	**19,529**

Source: Transearch 2019 data prepared by WSP USA Inc.

[23] Energy.gov, "USEER State Report: Georgia Energy and Employment – 2022", published in June 2022 by Energy.gov, accessed October 29, 2022 at https://www.energy.gov/sites/default/files/2022-06/USEER percent202022 percent20-percent20Georgia.pdf

2.5. Supply Chain Geography of Key Industries

The preceding section profiled Georgia's five key industry groups in detail. This section provides a discussion of the flow of materials and production goods in their supply chains, described by geography and weight. The analysis is chiefly concerned with tonnage, since that reflects physical demand on Georgia's infrastructure.

2.5.1. Food and Agriculture

The largest amount of food and agricultural products moves inbound to Georgia, supplying the diverse needs of industry and the population. Table 46 shows the inbound tonnage by origin state and mode. In 2019, approximately 42 million tons of these products were transported to the state of Georgia. Out of this total tonnage, approximately 30 million tons moved by truck while 11.8 million tons moved by rail. A negligible amount moved by water and air. The largest inbound commodity flows included the following:

- **Truck:** approximately 15.8 million tons of food products and 12.7 million tons of farm products
- **Rail:** approximately 6.5 million tons of farm products and 4.9 million tons of food products

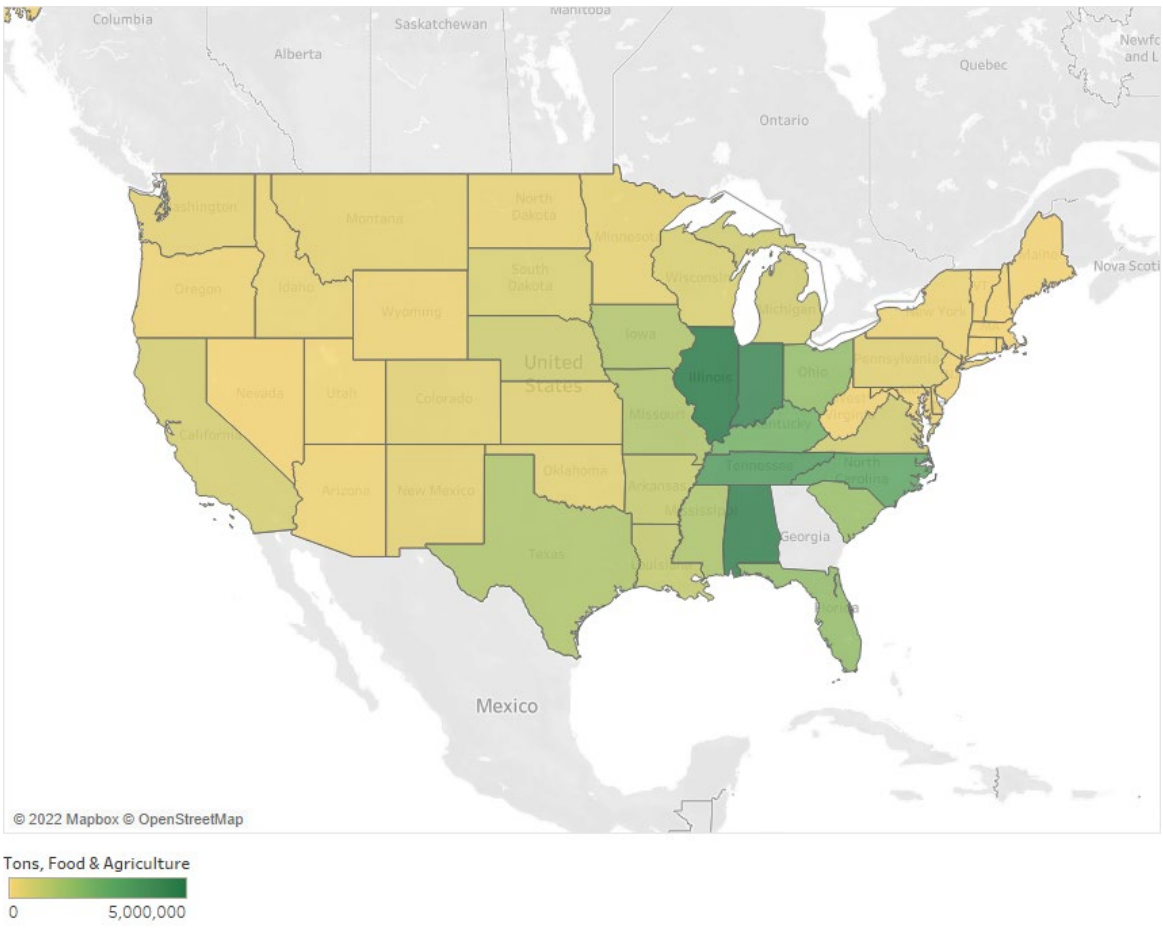
The state with the highest tonnage of inbound food and agriculture products for Georgia was Illinois with approximately 5 million tons. Alabama followed at 4.6 million tons and Indiana at 4.4 million tons. Illinois traffic included grain moving by rail (approx. 2.2 million tons). Live poultry by truck (approx. 920,000 tons) represented the largest volume from Alabama. The inbound cargo from Indiana was bulk grain moving by rail (approx.1.5 million tons). Approximately 27 thousand tons of food and kindred products came via water from Florida. The map in **Figure 26** highlights the product tonnage that is coming into Georgia originating in the Southeast and Midwest regions.

Table 46. Food and Agriculture Inbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

Origin State	Truck	Rail	Water	Air	Total
IL	729	4,223		<1	4,923
AL	4,174	395		<1	4,569
IN	1,010	3,341		<1	4,351
TN	2,997	372		<1	3,369
NC	2,684	175		<1	2,859
KY	2,030	332		<1	2,363
FL	1,687	63	27	<1	1,778
OH	747	1,006		<1	1,753
SC	1,507	86	<1	<1	1,594
MS	1,253	4		<1	1,257
All Others	11,237	1,841	63	5	13,144
Total	**30,055**	**11,838**	**90**	**7**	**41,990**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 26. Food and Agriculture Inbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

As shown in Table 47, approximately 28 million tons of food and agricultural products were transported from the state of Georgia in 2019. Some of this outbound tonnage includes the transformation of raw materials from other states through Georgia's significant food manufacturing segment. Out of this total tonnage, approximately 25.3 million tons moved by truck while 2.55 million tons moved by rail. A negligible amount moved by water and air. The largest outbound cargo commodity flows included the following:

- **Truck:** approx. 15.9 million tons of food products, 7.7 million tons of farm products and 1.4 million tons of chemicals
- **Rail:** approx. 1.5 million tons of food products

The state receiving the highest tonnage of outbound food and agricultural products from Georgia was North Carolina at approximately 3.76 million tons, followed by Florida and Alabama. The largest tonnage headed to North Carolina was live poultry by truck (535,917 tons). Live poultry moves across state lines reflecting proximity of farms and processing facilities reflecting the importance of this industry to the entire region. The second highest volume was prepared or canned food by truck (520,071 tons). The highest amount of tonnage moving to Florida was grain by truck (406,924 tons) followed by miscellaneous food preparations (267,493 tons). Alabama received significant tonnage of live poultry transported by truck (965,129 tons) followed by prepared or canned food (720,720 tons). Georgia is both an origin and a destination for live poultry moving to and from Alabama. This trade is affected by the length of the states' borders and highlights the importance of connectivity of rural markets across state lines.

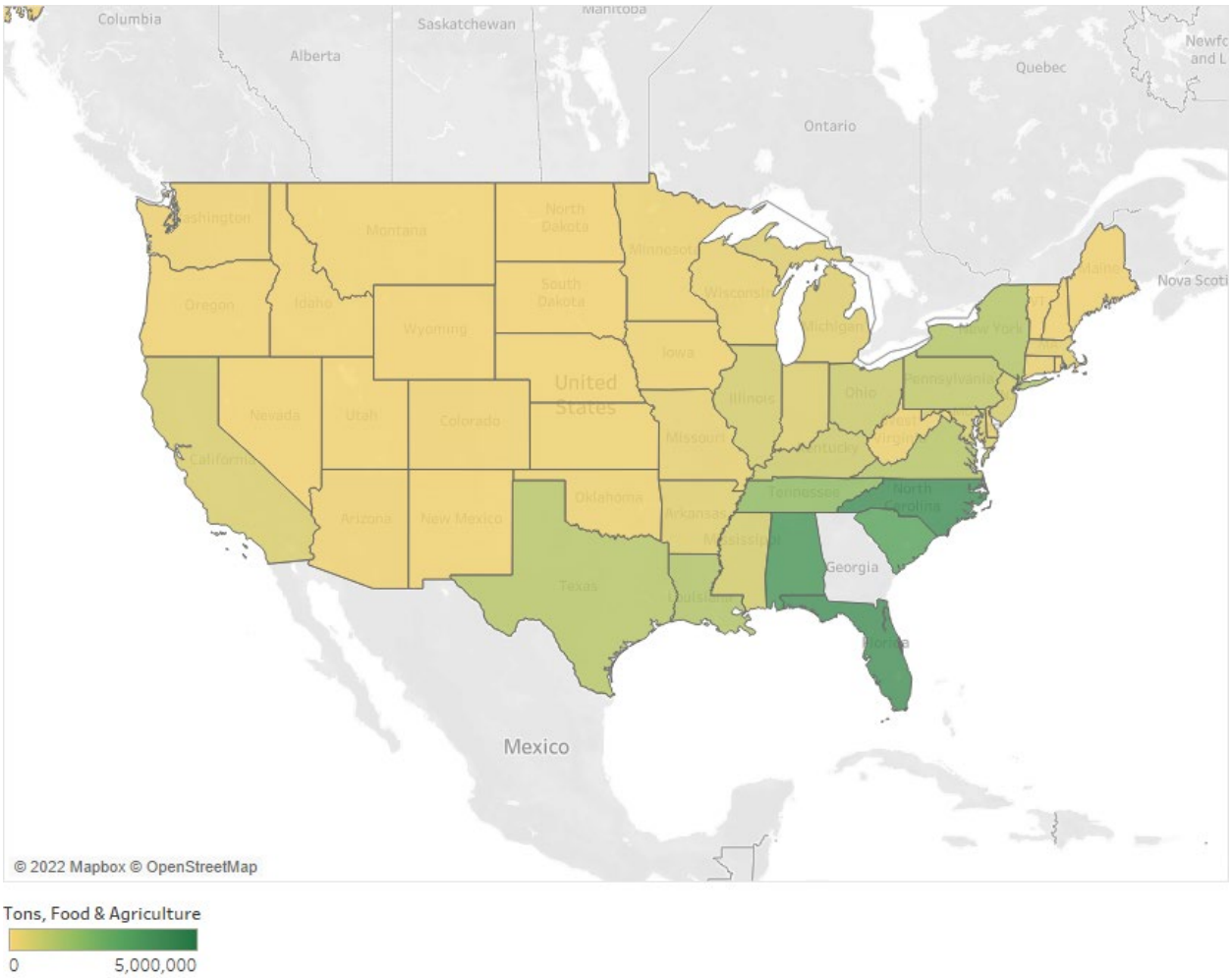
A small but not negligible amount of food and agricultural cargo was exported to Canada and Mexico, totaling 512 thousand tons, moved primarily by truck. This represented less than 2 percent of the total outbound volume. Figure 27 again shows the importance of Georgia's neighbors as consumers of Georgia products.

Table 47. Food and Agriculture Outbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
NC	3,496	265		<1	3,761
FL	3,577	111	<1	<1	3,689
AL	3,289	98		<1	3,388
SC	2,833	12		<1	2,846
TN	1,405	324		<1	1,729
LA	1,005	141		<1	1,146
NY	898	139		<1	1,038
TX	985	37		<1	1,022
VA	865	141		<1	1,006
PA	747	103		<1	850
All Others	6,246	1,179	<1	6	7,431
Total	**25,346**	**2,550**	**<1**	**7**	**27,903**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 27. Food and Agriculture Outbound Tonnage by Destination State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

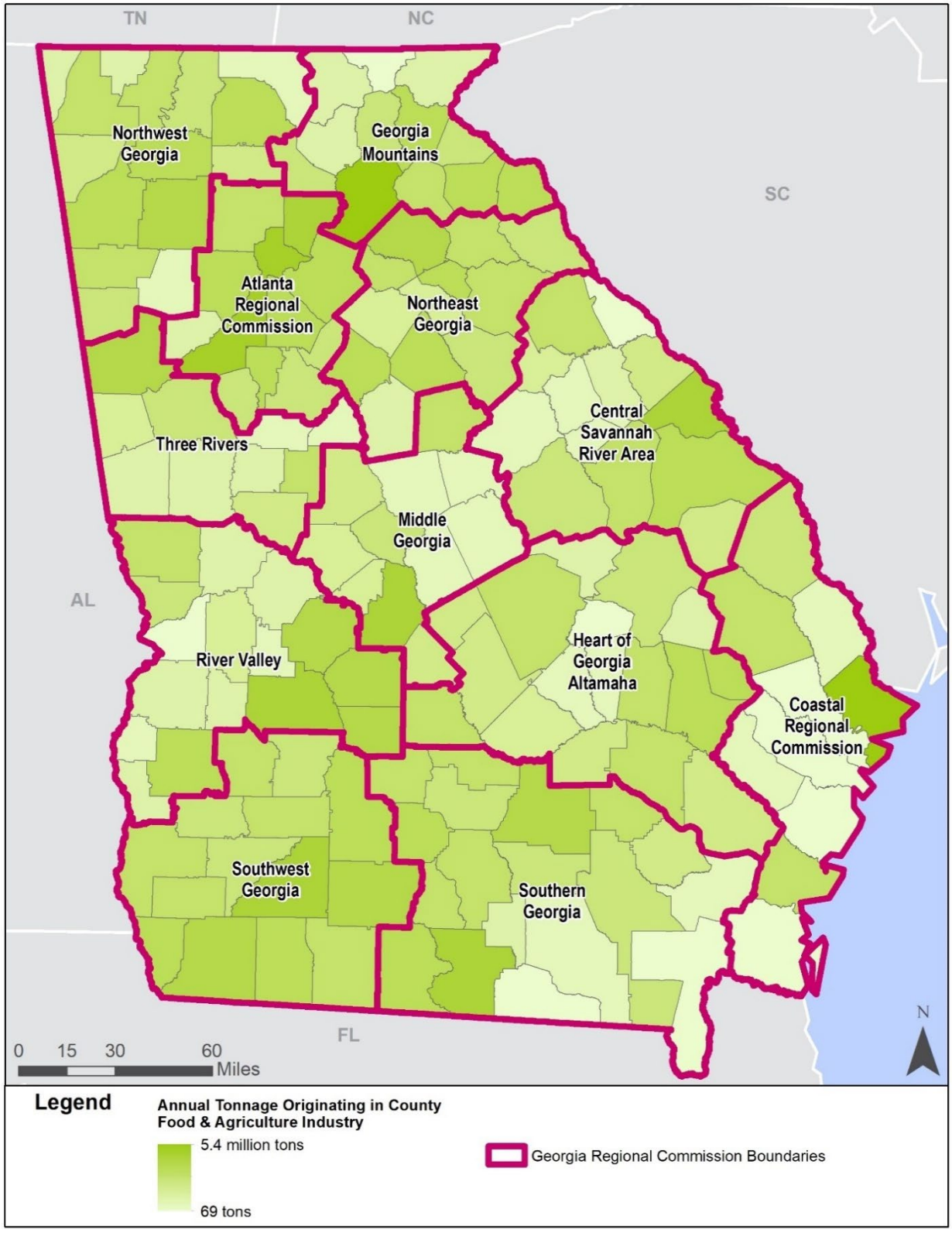
Network volumes defined by the Georgia Regional Commissions reflecting market share for both inbound and outbound traffic are shown in Table 48 and Table 49. The associated maps in Figure 28 and Figure 29 show the importance of the defined regions and the importance of their connectivity to external markets. The Origin-Destination (O-D) pair with the highest tonnage at 834 thousand was Nashville, TN to Northwest Georgia at 2 percent of the total 42 million tons, followed by 768 thousand tons between Indianapolis, IN and Southern Georgia. The bulk of the tonnage coming from Nashville and Indianapolis was farm products with low value bulk materials moving by rail. There was also a significant amount of food products, approximately 581 thousand tons coming from Chicago to the Atlanta Regional Commission.

Table 48. Food and Agriculture Top O-D Pairs – Inbound (2019)

Share	External O	Georgia D	Tons (k)	% Truck
2%	Nashville, TN	Northwest Georgia	834	79%
2%	Indianapolis, IL	Southern Georgia	768	1%
1%	Chicago, IL	Atlanta Regional Commission	601	14%
1%	Champaign, IL	Georgia Mountains	566	2%
1%	Indianapolis, IL	Georgia Mountains	550	8%
1%	Nashville, TN	Atlanta Regional Commission	502	97%
1%	Indianapolis, IN	Georgia Mountains	494	16%
1%	Huntsville, AL	Atlanta Regional Commission	456	87%
1%	Birmingham, AL	Atlanta Regional Commission	364	64%
1%	Fort Wayne, IN	Southern Georgia	302	2%
1%	Evansville, IN	Northwest Georgia	301	47%
1%	Nashville, TN	Georgia Mountains	292	82%
1%	Huntsville, AL	Georgia Mountains	292	83%
85%	All Others	All Others	35,668	
Total			**41,990**	

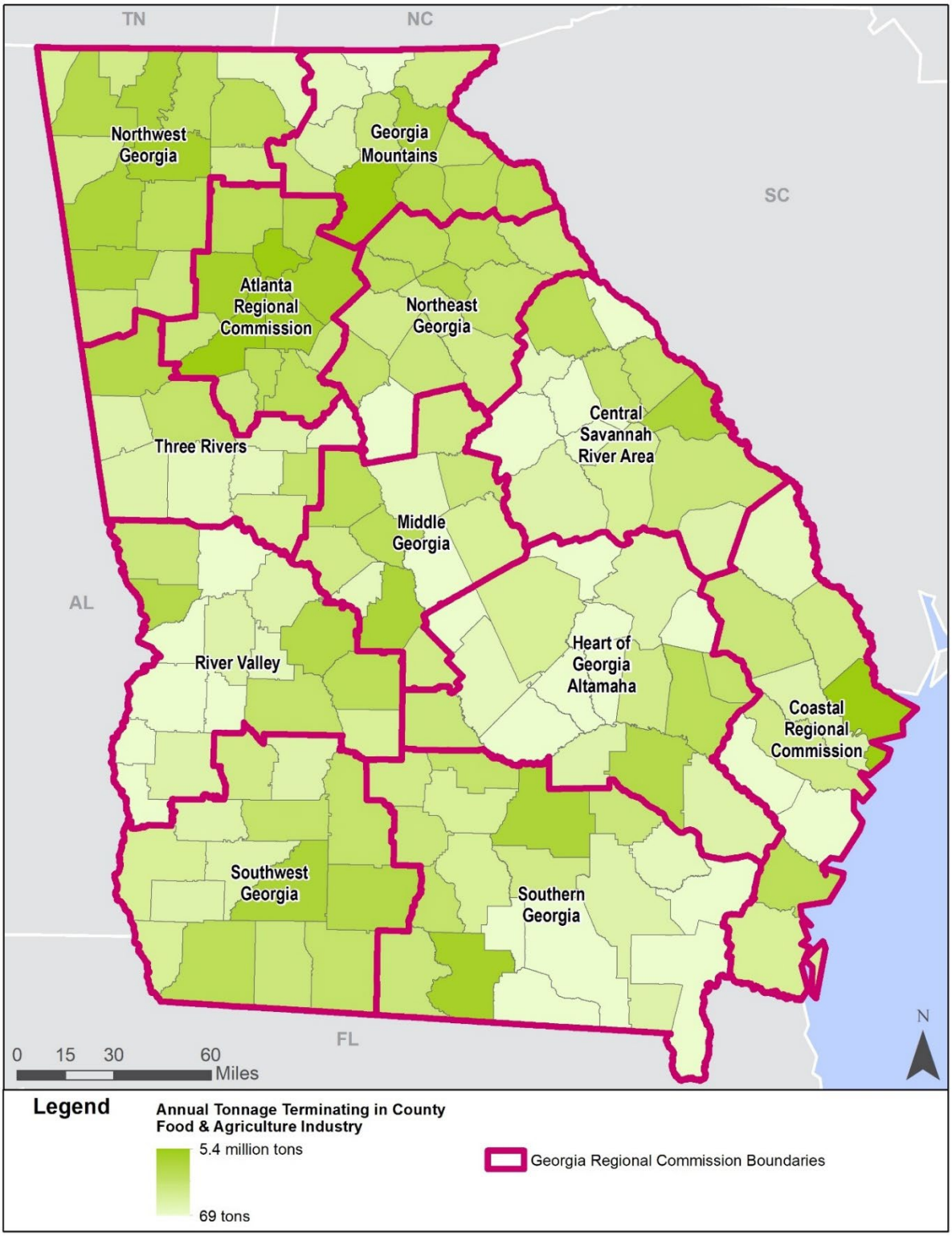
Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 28. Food and Agriculture Top Origin Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 29. Food and Agriculture Top Destination Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 49 shows traffic originating in the Georgia Regional Commission areas in 2019. Out of a total of 27.9 million tons, the Coastal Regional Commission to Charlotte, NC ranked at the top with 272 thousand tons, of which 45 percent moved by truck. 86 percent of this was comprised of food products. This is followed by 269 thousand tons from the Georgia Mountains to Huntsville, AL; this tonnage was split evenly between food products and farm products. The shorter distances in these lanes mean they are heavily dependent on trucking and therefore the highway network encompassing more rural areas and infrastructure.

Table 49. Food and Agriculture Top O-D Pairs – Outbound (2019)

Share	Georgia O	External D	Tons (k)	% Truck
1%	Coastal Regional Commission	Charlotte, NC	272	45%
1%	Georgia Mountains	Huntsville, AL	269	100%
1%	Atlanta Regional Commission	New York, NY	258	97%
1%	Coastal Regional Commission	New York, NY	252	100%
1%	Coastal Regional Commission	Orlando, FL	223	100%
1%	Georgia Mountains	Charlotte, NC	220	97%
1%	Southwest Georgia	Jacksonville, FL	210	100%
1%	Coastal Regional Commission	Miami, FL	207	100%
1%	River Valley	New Orleans, LA	204	100%
1%	Northwest Georgia	Huntsville, AL	199	100%
1%	Georgia Mountains	Columbia, SC	194	100%
1%	Southwest Georgia	Orlando, FL	185	100%
1%	Georgia Mountains	Greensboro, NC	180	100%
90%	All Others	All Others	25,053	
Total			**27,926**	

Source: Transearch 2019 data prepared by WSP USA Inc.

The strength of the food industry in Georgia coupled with its significant agricultural production mean that intra-Georgia traffic is a major component in this industry group. Table 50 shows the top O-D Georgia internal pairs in 2019. Out of a total of 12.1 million tons, cargo transported within the Atlanta Regional Commission area ranked at the top with 1.14 million tons. This represented a 9 percent share of the total. This was followed by 454 thousand tons, internally within Southwest Georgia, making up 4 percent of the total share. The top three were followed by 371 thousand tons between Southwest Georgia to Coastal Regional Commission area, at 3 percent of total share. Traffic moving into the Coastal region is largely export traffic including agricultural products and processed food moving over Georgia ports.

Table 50. Food and Agriculture Top O-D Pairs – Internal (2019)

Share	Georgia O	Georgia D	Tons (k)
9%	Atlanta Regional Commission	Atlanta Regional Commission	1,139
4%	Southwest Georgia	Southwest Georgia	454
3%	Southwest Georgia	Coastal Regional Commission	371
3%	Georgia Mountains	Georgia Mountains	314
2%	Coastal Regional Commission	Coastal Regional Commission	301
2%	Georgia Mountains	Atlanta Regional Commission	266
2%	Southern Georgia	Coastal Regional Commission	219
2%	Southwest Georgia	Atlanta Regional Commission	213
2%	Northeast Georgia	Atlanta Regional Commission	204
2%	Northwest Georgia	Atlanta Regional Commission	200
2%	Southwest Georgia	Southern Georgia	198
1%	River Valley	Southwest Georgia	184
1%	Southern Georgia	Southern Georgia	182
65%	All Others	All Others	7,924
Total			**12,169**

Source: Transearch 2019 data prepared by WSP USA Inc.

Among the counties in Georgia, Chatham County (home to the Port of Savannah) had the highest amount of inbound, outbound and within food and agriculture tonnage at 7.9 million tons, or 10 percent of all tonnage. Chatham was followed by Fulton County (6.5 million tons, or 8 percent) and Hall County (6.5 million tons, or 8 percent). The top five counties accounted for only 32 percent of total food and agriculture tonnage in the state, suggesting that the commodity flows are widely distributed across the state.

The majority of Chatham County's tonnage was food and kindred products (6.2 million tons). The same was true for Fulton County (5.7 million tons of food and kindred products) and Hall County (4 million tons of food and kindred products). However, Hall County also had a significant tonnage of farm products (2.4 million tons).

2.5.2. Manufacturing

The manufacturing sector in Georgia is home to a diverse range of industries, including lumber, automotive, home furnishings, scrap materials, chemicals, and many more.

Table 51 shows the inbound manufacturing tonnage by origin state and mode in 2019. Out of the total of 45 million tons of manufacturing traffic in 2019, 31 million tons were transported by truck and 14 million tons by rail. A minimal amount was transported by water and air. The more notable inbound cargo included the following:

- **Truck:** Approximately 10 million tons of lumber, 4 million tons of scrap materials, and 3 million tons of chemicals.

- **Rail:** Approximately 5 million tons of miscellaneous mixed shipments, 4 million tons of chemicals, and 3 million tons of pulp, paper, and related products.

The carpet and flooring industries are a significant share of Georgia's manufacturing sector. This industry group is dependent on component chemicals. Similar to the agricultural industry, the lumber, paper and related products involve traffic moving back and forth across state lines throughout the region.

Alabama ranked at the top of supplier states with 7 million tons, followed by South Carolina with nearly 5 million tons, and North Carolina with 4 million tons, rounding out the top three. The largest cargo flow from Alabama was lumber and wood products by truck (2 million tons), followed by pulp and paper (nearly 800,000 tons) and waste or scrap materials (584,927 tons).

Similarly, the largest cargo flow from South Carolina was lumber and wood products by truck (1.7 million tons), followed by chemicals (1 million tons) and waste or scrap materials (786,986 tons). The largest cargo flow from North Carolina was lumber or wood products by truck (close to 2 million tons).

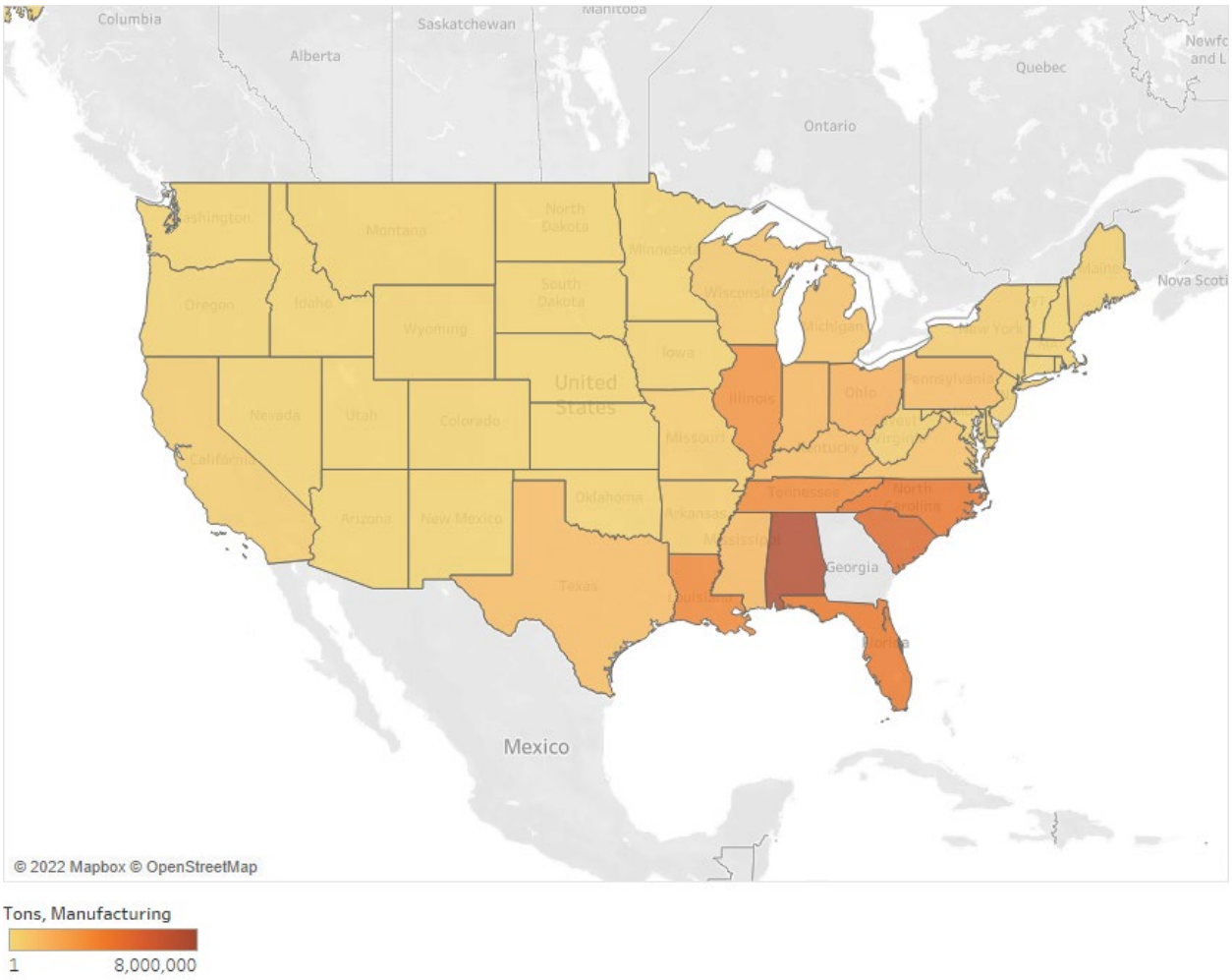
Figure 30 presents a map of the manufacturing inbound tonnage by origin state in 2019. This map clearly reflects the regional nature of the inbound traffic to Georgia. The lumber and related industries are based on the forestry in rural areas of all these states and similar to agriculture it indicates heavy reliance on rural infrastructure in less populated areas of the region.

Table 51. Manufacturing Inbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
AL	5,394	1,848		<1	7,243
SC	4,148	776	1	<1	4,916
NC	3,542	692		3	4,237
FL	3,202	925		9	4,136
LA	659	2,754	60	<1	3,473
TN	2,661	679		5	3,346
IL	458	2,496		5	2,959
OH	1,021	527		2	1,550
IN	895	420		1	1,316
MS	976	259		<1	1,235
All Others	8,148	2,521		86	10,755
Total	**31,104**	**13,887**	**252**	**111**	**45,354**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 30. Manufacturing Inbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Georgia is a primary source of manufactured products to the nation and the world. The outbound traffic utilizes all components of Georgia's robust transportation system. Truck, intermodal rail and water born products moving over Georgia ports. Regional distribution is important in the manufacturing sector and results in the significance of truck transportation as a primary mode.

Table 52 shows manufacturing outbound tonnage flow by destination state and mode in 2019. In total, manufacturing outbound tonnage by truck had the highest tonnage compared to other modes at 52 million tons. There was significantly more outbound manufacturing cargo than inbound manufacturing cargo in 2019, which is a positive sign for the state economy as it shows that the state is producing more than it consumes. This results in higher job generation, increased wages, and higher revenues for state and local governments.

Some of the more notable manufacturing outbound tonnage flows include:

- **Truck:** Lumber led all commodity groups with 14 million tons in 2019, followed by waste or scrap materials (7 million tons). The chemicals and transportation equipment commodity groups had similar outbound cargo tonnage at slightly less than 4 million tons.
- **Rail:** Miscellaneous mixed shipments led all commodity groups with 6 million tons in 2019, followed by pulp and paper (3 million tons) and chemicals (just more than 1 million tons).

Figure 31 depicts the map for state destinations for manufacturing outbound tonnage. The top three destination states were Florida at 8 million tons, Alabama at 7 million tons, and North Carolina at 6 million tons. The largest commodity flow to these states was lumber by truck; Florida had 3 million tons, Alabama also had 3 million tons and North Carolina had 1.8 million tons of lumber by truck. Just as the inbound traffic discussed above the largest markets for Georgia's manufacturing output are regional. This emphasizes the need for regional connectivity, not only on the major highways but on state and rural roads as well.

The data also shows significant automotive[24] outbound flows to Florida (660 thousand tons), Alabama (424 thousand tons), North Carolina (352 thousand tons), and South Carolina (261 thousand tons) as well as inbound flows to Alabama (655 thousand tons), South Carolina (369 thousand tons), Michigan (281 thousand tons) and Tennessee (273 thousand tons).

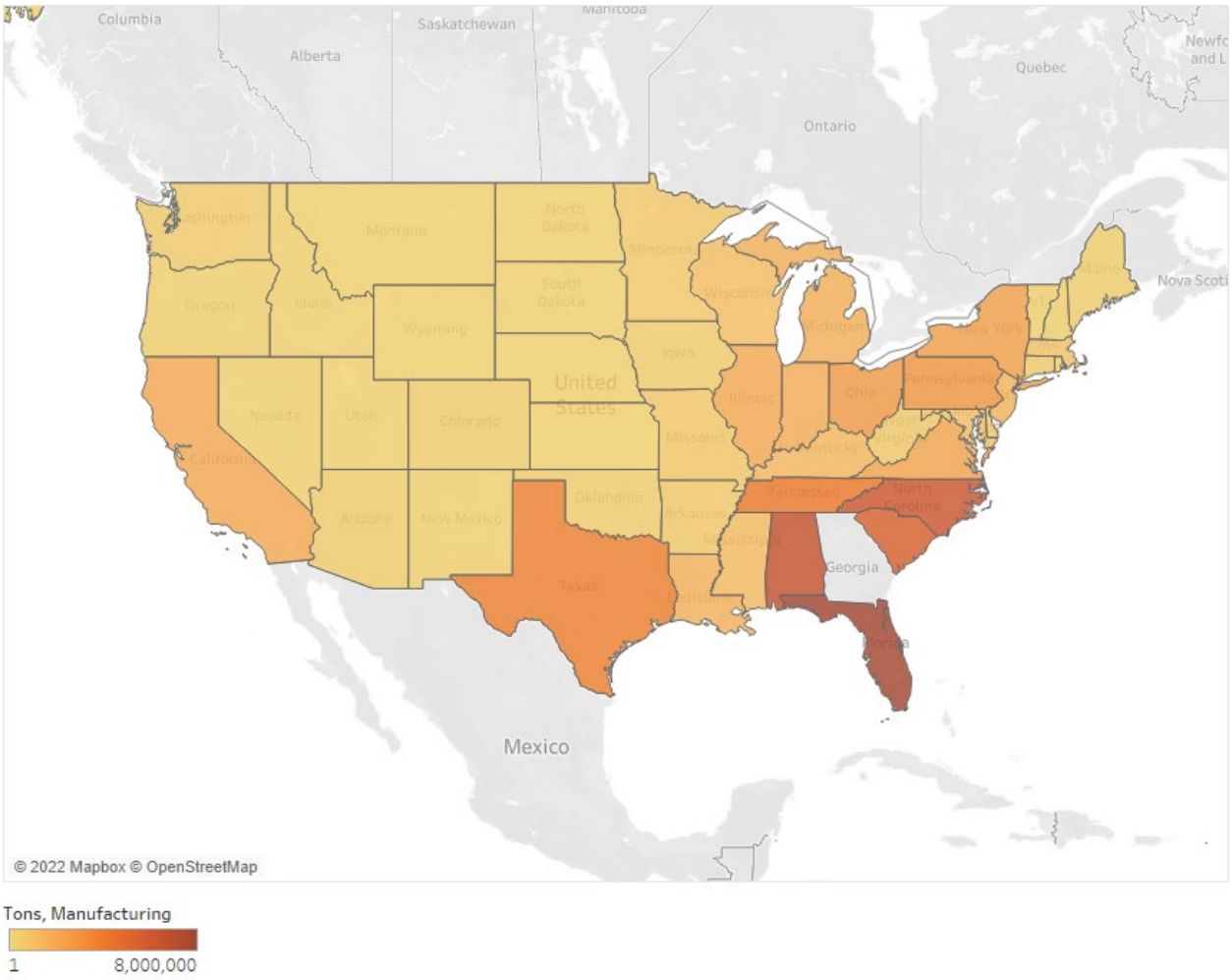
Table 52. Manufacturing Outbound Tonnage by Destination State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
FL	7,302	560	2	6	7,869
AL	4,823	1,639		<1	6,461
NC	5,548	481		2	6,031
SC	4,647	700		<1	5,348
TN	3,433	499		3	3,935
TX	3,081	565		10	3,656
PA	2,125	539		3	2,667
OH	1,922	518		2	2,442
NY	2,041	166		3	2,210
VA	1,547	443		1	1,991
All Others	15,941	4,542		66	2,210
Total	**52,410**	**10,652**	**2**	**96**	**63,160**

Source: Transearch 2019 data prepared by WSP USA Inc.

[24] The analysis used STCCs 3711, 3712, 3713, 3714 and 2441 for the automotive

Figure 31. Manufacturing Outbound Tonnage by Destination State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 53 shows the top inbound lanes for the manufacturing sector in 2019 with a total of 45 million tons. The lane from Chicago to the Atlanta region had the highest tonnage. The second highest tonnage pair was from New Orleans, LA, to Atlanta region with 821 thousand tons representing 2 percent share, and 10 percent transported by truck; around 618 thousand tons was chemicals while another 150 thousand tons was comprised of transport equipment. These materials were destined to Atlanta to support other distribution and manufacturing. The chemicals are particularly important to the carpet and flooring industries.

Lumber and related goods from Alabama to the Atlanta region was third highest in share. The remainder inbound lanes represented 1 percent or less of the total tonnage share.

A share of the products inbound to Georgia include goods moving to Georgia ports from other parts of the country shown in the tables as inbound to the Coastal region,

Overall, the Atlanta market dominates as the destination for inbound manufactured products.

Table 53. Manufacturing Top O-D Pairs – Inbound (2019)

Share	External O	Georgia D	Tons (k)	% Truck
3%	Chicago, IL	Atlanta Regional Commission	1,428	13%
2%	New Orleans, LA	Atlanta Regional Commission	821	10%
2%	Birmingham, AL	Atlanta Regional Commission	690	72%
1%	Jacksonville, FL	Coastal Regional Commission	575	85%
1%	Tallahassee, FL	Coastal Regional Commission	524	32%
1%	Nashville, TN	Atlanta Regional Commission	524	99%
1%	Birmingham, AL	Coastal Regional Commission	502	33%
1%	Charlotte, NC	Atlanta Regional Commission	426	72%
1%	New Orleans, LA	Northwest Georgia	422	4%
1%	Wilmington, NC	Coastal Regional Commission	419	36%
1%	Greensboro, NC	Coastal Regional Commission	405	100%
1%	Chicago, IL	Central Savannah River Area	392	3%
1%	Mobile, AL	Atlanta Regional Commission	391	72%
83%	All Others	All Others	37,835	
Total			**45,354**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Table 54 shows the top outbound lanes for the manufacturing sector in 2019. The highest tonnage lane was from the Atlanta Regional Commission to Birmingham, AL. Much of this tonnage was waste or scrap materials (416 thousand tons) moving by truck.

The Coastal Regional Commission to New York, NY, ranked number two with 877 thousand tons. The biggest component of this trade was pulp, paper, and related products (263 thousand tons). Cargo originating from the Coastal Regional Commission includes imports from foreign trade. The Coastal Regional Commission generated 1.4 million tons of automotive outbound cargo in 2019, with Florida being the top destination at 327 thousand tons.

Ranked third was Atlanta Regional Commission to Chicago, IL, with 831 thousand tons, of which 44 percent was transported by truck. A large part of this trade was either waste and scrap materials (264 thousand tons) or pulp, paper, and related products (193 thousand tons).

Georgia ports play a significant role in international trade particularly as many companies are choosing to use east coast ports as a replacement or in addition to the ports in the west. Diverting cargo is seen as a safeguard against disruption, providing shippers some redundancy in their network from abroad. The outbound traffic from the Coastal Regional Commission is reflective of this trend.

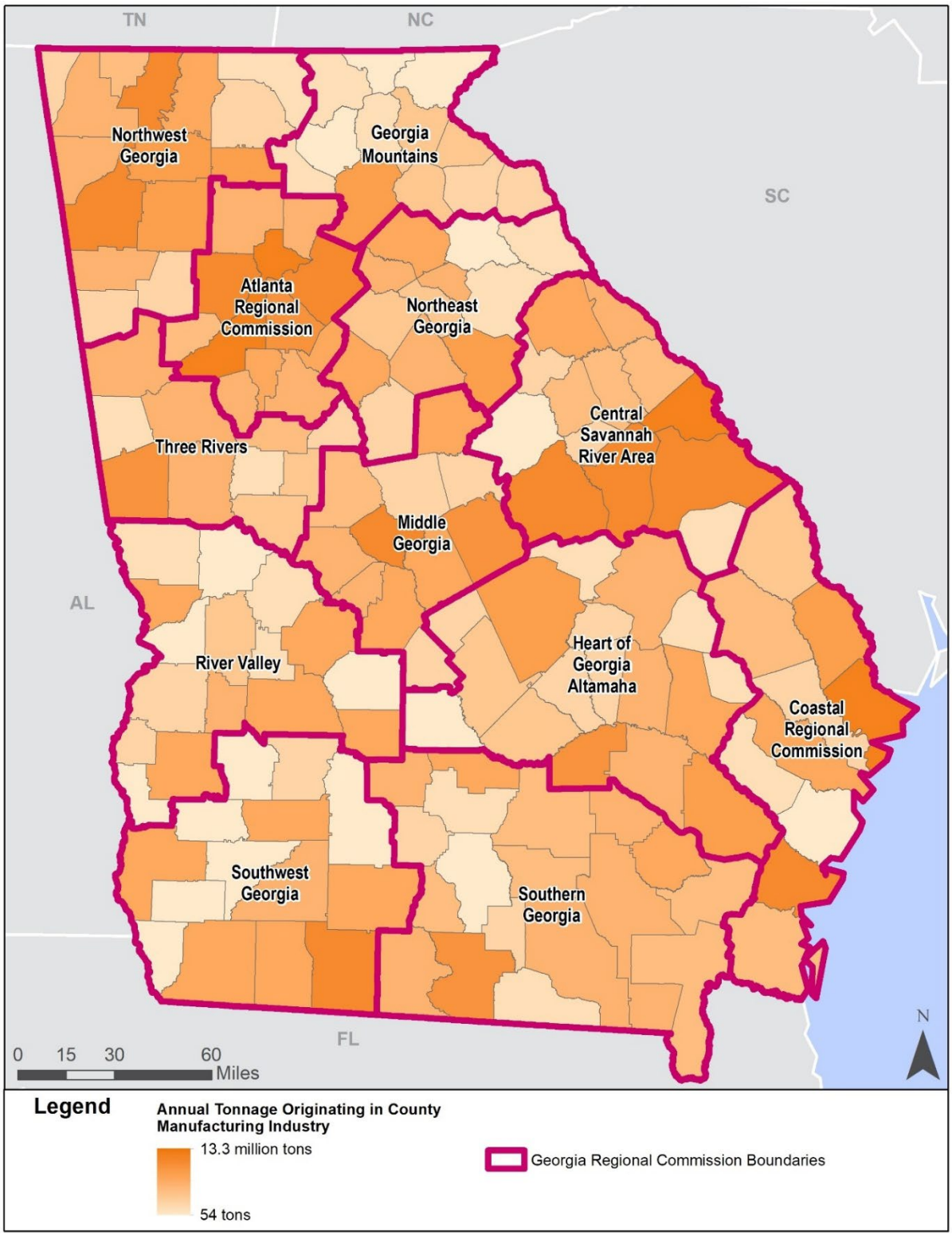
Table 54. Manufacturing Top O-D Pairs – Outbound (2019)

Share	Georgia O	External D	Tons (k)	% Truck
2%	Atlanta Regional Commission	Birmingham, AL	1,253	49%
1%	Coastal Regional Commission	New York, NY	877	97%
1%	Atlanta Regional Commission	Chicago, IL	831	44%
1%	Coastal Regional Commission	Orlando, FL	643	99%
1%	Coastal Regional Commission	Miami, FL	580	98%
1%	Atlanta Regional Commission	New York, NY	573	77%
1%	Central Savannah River Area	Charlotte, NC	498	72%
1%	Coastal Regional Commission	Charlotte, NC	473	86%
1%	Coastal Regional Commission	Columbia, SC	447	84%
1%	Atlanta Regional Commission	Dallas, TX	435	72%
1%	Central Savannah River Area	Greensboro, NC	433	83%
1%	Atlanta Regional Commission	Los Angeles, CA	432	35%
1%	Coastal Regional Commission	Jacksonville, FL	428	91%
87%	All Others	All Others	55,259	
Total			**63,162**	

Source: Transearch 2019 data prepared by WSP USA Inc.

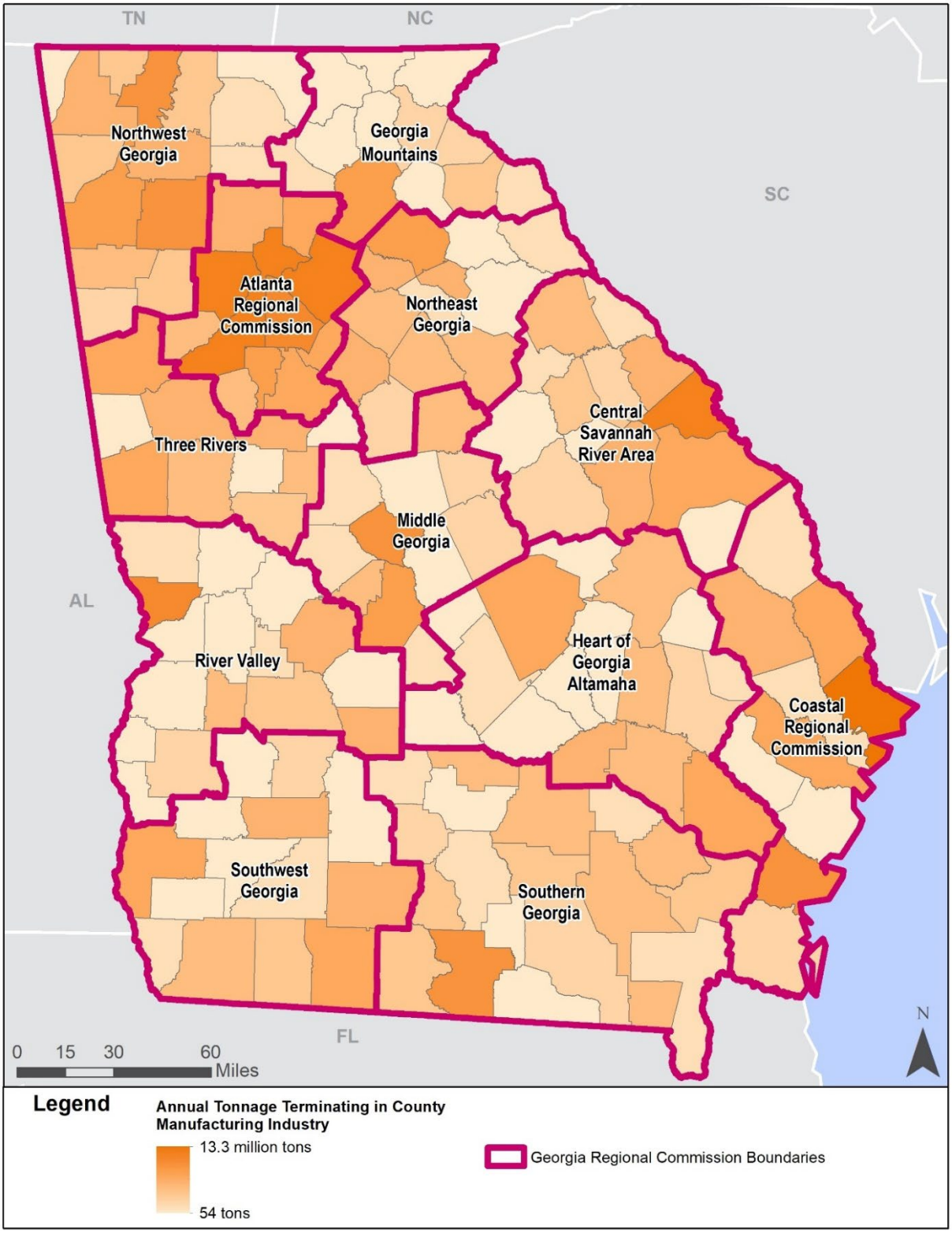
Figure 32 shows the geographic distribution of manufacturing-based product outbound from Georgia. This map shows a wider distribution of originating traffic across the state than the inbound map in Figure 33. These locations are making heavier use of secondary roads as well as the Interstate highways.

Figure 32. Manufacturing Top Origin Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 33. Manufacturing Top Destination Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

In addition to the goods inbound and outbound from Georgia, a considerable amount of traffic occurs within the state moving to and from the various Regional Commission areas. Most of this traffic moves by truck although there are rail connections to and from the Georgia ports. Intraregional movements reflect shipments supporting regional production. It would also include the movement of goods to and from intermodal terminals and port locations by truck to regional warehouse and production facilities.

Table 55 presents the top manufacturing lanes within Georgia in 2019 with a total tonnage of 21 million tons. Traffic within the Atlanta Regional Commission, consisting of 4 million tons and 19 percent of the total tonnage, was the highest tonnage. This concentration of freight in the state's largest population center highlights the potential interaction of freight and personal vehicles and the impact of traffic congestion on industrial transit. Traffic within the Coastal Regional Commission ranked number two. Central Savannah River Area to Coastal Regional Commission was number 3. Coastal traffic includes goods moving to and from manufacturers to the ports.

Table 55. Manufacturing Top O-D Pairs – Internal (2019)

Share	Georgia O	Georgia D	Tons (k)	% Truck
19%	Atlanta Regional Commission	Atlanta Regional Commission	3,852	100%
6%	Coastal Regional Commission	Coastal Regional Commission	1,321	100%
5%	Central Savannah River Area	Coastal Regional Commission	1,111	100%
4%	Middle Georgia	Coastal Regional Commission	816	100%
3%	Atlanta Regional Commission	Northwest Georgia	694	100%
3%	Atlanta Regional Commission	Northeast Georgia	601	100%
3%	Northwest Georgia	Northwest Georgia	598	100%
3%	Central Savannah River Area	Central Savannah River Area	579	100%
3%	Northwest Georgia	Atlanta Regional Commission	553	100%
2%	Coastal Regional Commission	Atlanta Regional Commission	456	100%
2%	Heart of Georgia Altamaha	Coastal Regional Commission	451	100%
2%	Northeast Georgia	Atlanta Regional Commission	431	100%
2%	Atlanta Regional Commission	Georgia Mountains	367	100%
43%	All Others	All Others	8,852	
Total			**20,682**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Among the counties in Georgia, Chatham County had the highest tonnage of inbound, outbound and within manufacturing tonnage at 21 million tons, or 16 percent of all tonnage. Chatham was followed by Fulton County (11 million tons, or 9 percent) and Richmond County (6.6 million tons, or 5 percent). The top five counties accounted for 36 percent of total manufacturing tonnage in the state; while this represents significant concentration of activity, the majority of traffic nevertheless is elsewhere, with relatively wide distribution across the state.

The largest share of Chatham County's tonnage was pulp, paper or allied products (5.5 million tons) followed by chemicals (2.7 million tons) and lumber or wood products (2.3 million tons). For Fulton County, the highest transported manufacturing commodity by tonnage was chemicals

or allied products (1.9 million tons) followed by lumber or wood products (1.4 million tons). For Richmond County, the most heavily transported commodity by tonnage was chemicals or allied products (2.2 million tons) followed by clay, concrete, glass or stone (1.9 million tons).

2.5.3. Warehousing and Distribution

Georgia, particularly the areas around the cities of Atlanta and Savannah, is one of the most significant distribution centers in the United States. This situation has developed from Georgia's proximity to other major markets and depends on its effective multimodal network. Warehousing and distribution logistics is a primary industry on its own, employs a large workforce and contributes significantly to the economy. This industry group is the necessary middleman between the producers and consumers of goods in the state, regionally and beyond.

Table 56 depicts warehouse and distribution tonnage inbound to Georgia by origin state and transportation mode in 2019. This industry group includes the movement of goods related to e-commerce business.

Inbound flow of warehouse and distribution traffic moved primarily by truck and intermodal rail, with negligible air and water transport. Tennessee was the state with the highest tonnage of cargo headed for Georgia, followed by Alabama and Illinois. Of the highest tonnage in each state by mode, some of the more notable inbound commodity flows include "secondary traffic" (10 million tons) and miscellaneous mixed shipments (6 million tons). The former is defined as movement of goods between distribution centers and/or retail locations, while the latter includes e-commerce shipments of products by parcel carriers.

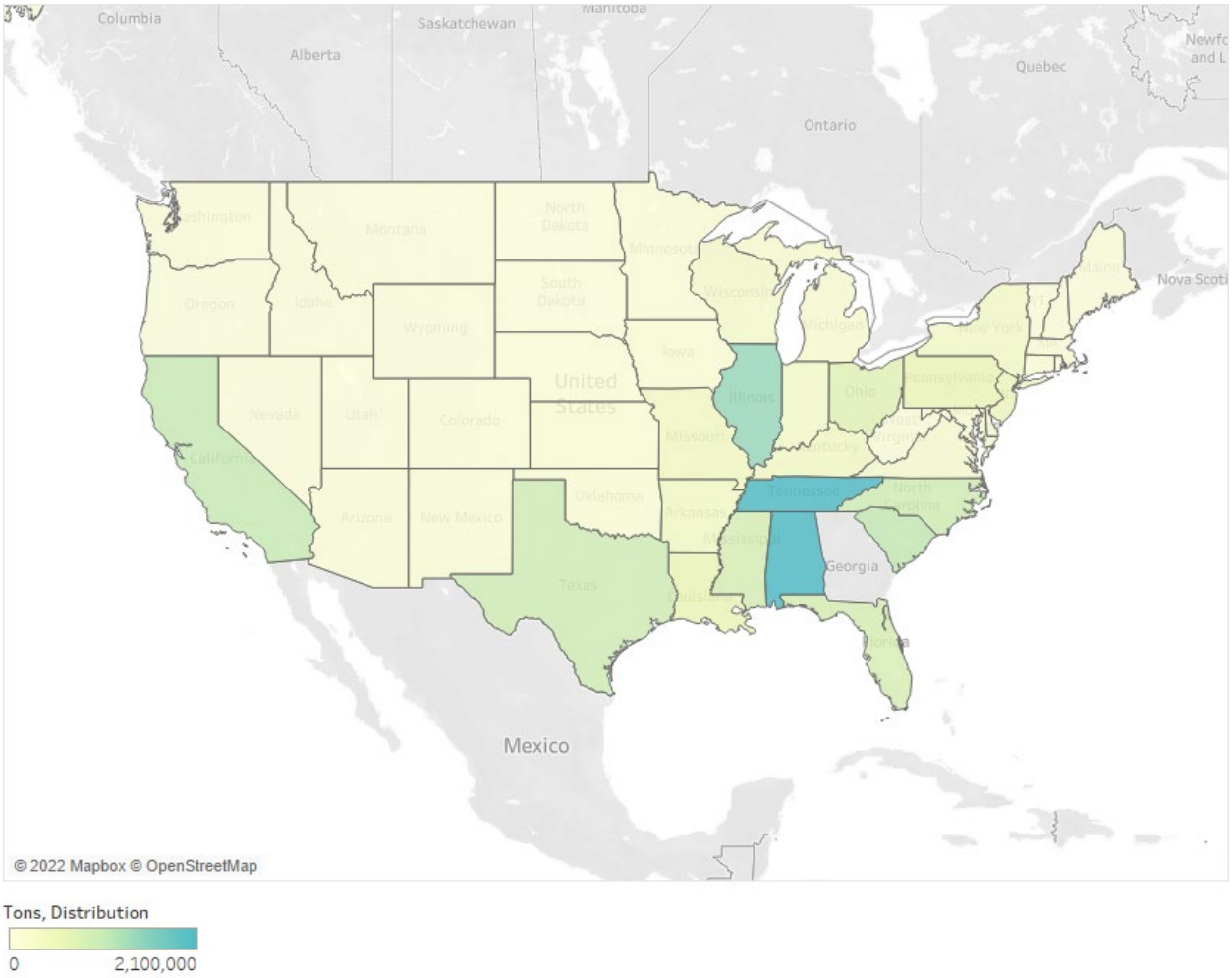
Table 56. Warehousing and Distribution Inbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
TN	890	1,190		4	2,084
AL	1,251	830		<1	2,0881
IL	418	988		2	1,408
SC	928	138		<1	1,066
CA	92	904		8	1,004
TX	738	169		3	910
NC	799	86		2	887
MS	811			<1	811
FL	705	82		4	791
OH	549	105		<1	654
All Others	3,358	873		26	4,257
Total	**10,539**	**5,365**	**0**	**49**	**15,953**

Source: Transearch 2019 data prepared by WSP USA Inc.

The map in **Figure 34** shows the primary origin states for distribution tonnage inbound to Georgia. The states of California, Illinois, Texas, and Tennessee contain the largest rail intermodal locations in the country, all with connectivity to Georgia either by continuing rail transportation to terminals in Georgia, or by truck from terminals in those states.

Figure 34. Warehousing and Distribution Inbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 57 shows warehouse and distribution traffic outbound from Georgia by destination state and mode in 2019. The outbound warehouse and distribution traffic moved by truck and intermodal rail. The highest tonnage commodity group is warehousing and distribution secondary traffic at 6 million tons, and by miscellaneous mixed shipments also at 6 million tons. The former may include direct container shipments from the ports to receiving locations in other states while the latter may include shipments from e-commerce companies to consumers and businesses outside the state. Rail intermodal drayage traffic by itself accounted for 844 thousand tons.

Florida had the highest tonnage of warehousing and distribution tonnage inbound from Georgia, followed by Tennessee, Alabama and North Carolina. The network patterns suggest that

distribution cargo is principally regional, with imports from Savannah and other Georgia locations being redistributed to warehouses and businesses in Florida and North Carolina. There are shipments going further outside the region which may be e-commerce, processed food or other products being sent from distribution centers in Georgia to customers in those states. The rail facilities in the state allow for extensive intermodal traffic over longer distances and these rail volumes include containerized traffic.

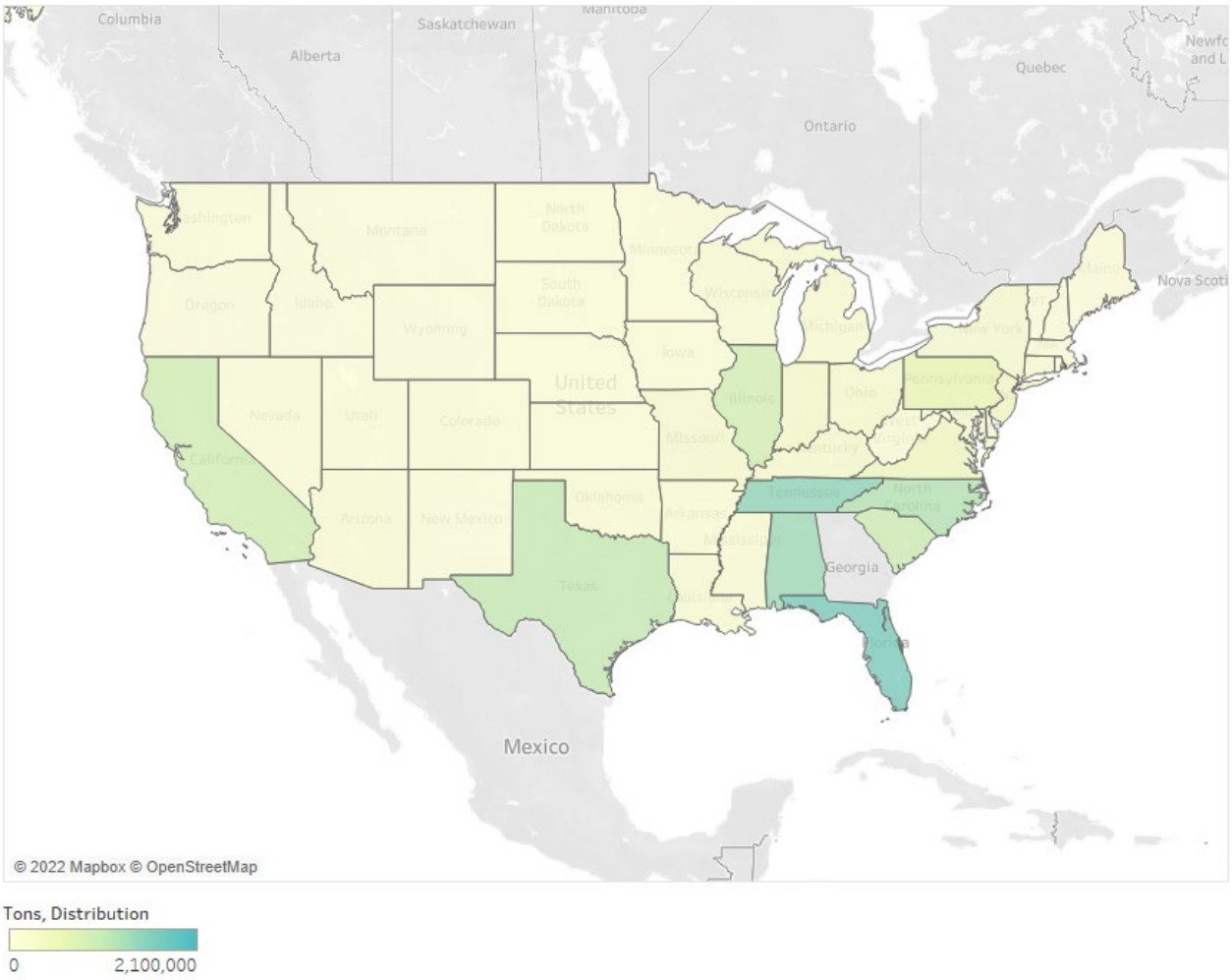
Table 57. Warehousing and Distribution Outbound Tonnage by Destination State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
FL	1,114	491		8	1,613
TN	465	981		2	1,448
AL	445	880		<1	1,325
NC	955	207		2	1,164
TX	641	386		7	1,034
SC	648	253		<1	901
CA	36	820		5	861
IL	112	726		2	840
PA	195	347		2	544
VA	345			<1	345
All Others	2,144	480		26	2,650
Total	**7,100**	**5,571**	**0**	**54**	**12,725**

Source: Transearch 2019 data prepared by WSP USA Inc.

The map in **Figure 35** shows the outbound tonnage by destination state in 2019. Again, this includes Tennessee, Illinois, Texas, and California, major intermodal connection points across the country. The other significant destinations, including Tennessee, are regional with truck as the primary mode.

Figure 35. Warehousing and Distribution Outbound Tonnage by Destination State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 58 shows the warehousing and distribution traffic lanes using the regional commission definitions in the state. The largest tonnage lane was Chicago, IL to Atlanta Regional Commission. Most of this tonnage (922 thousand tons) was miscellaneous mixed shipments. For some of this cargo, Atlanta serves as a distribution hub for further transportation to other destinations.

The second ranked O-D pair was Birmingham, AL, to the Atlanta Regional Commission with 942 thousand tons, of which 739 thousand tons was miscellaneous mixed shipments. Rounding out the top three was Los Angeles, CA, to Atlanta Regional Commission with 783 thousand tons, of which 723 thousand tons was miscellaneous mixed shipments. The Coastal Regional Commission includes the Port of Savannah; thus, it is likely that a portion of the cargo represented exports.

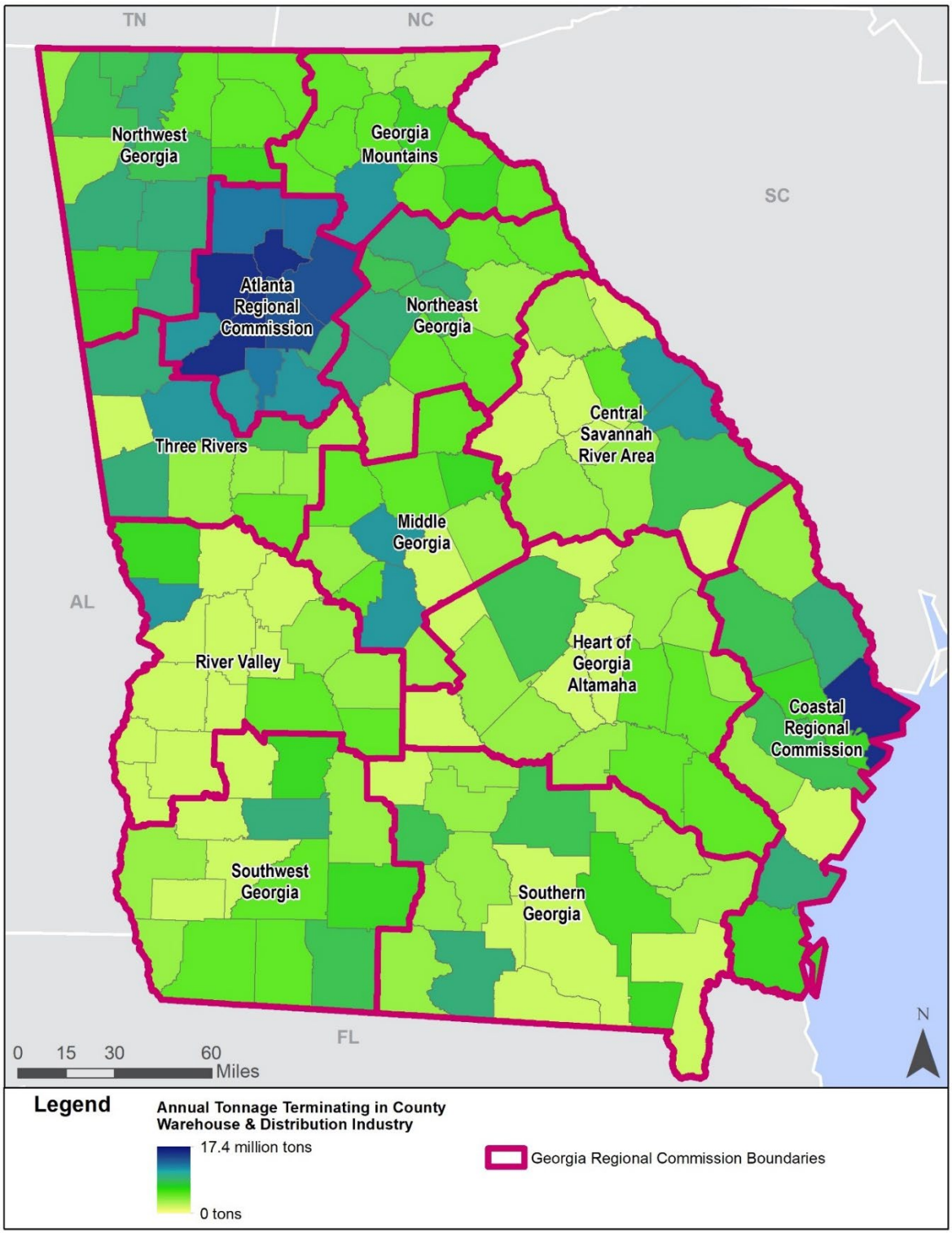
Table 58. Warehousing and Distribution Top O-D Pairs – Inbound (2019)

Share	External O	Georgia D	Tons (k)	% Truck
7%	Chicago, IL	Atlanta Regional Commission	1,107	17%
6%	Birmingham, AL	Atlanta Regional Commission	942	21%
5%	Los Angeles, CA	Atlanta Regional Commission	783	4%
4%	Memphis, TN	Coastal Regional Commission	703	3%
3%	Memphis, TN	Atlanta Regional Commission	474	40%
3%	New York, NY	Atlanta Regional Commission	415	53%
2%	Charlotte, NC	Atlanta Regional Commission	305	94%
2%	Dallas, TX	Atlanta Regional Commission	277	46%
2%	Jackson, MS	Atlanta Regional Commission	267	100%
2%	Nashville, TN	Coastal Regional Commission	246	7%
1%	Shreveport, LA	Atlanta Regional Commission	235	2%
1%	Charleston, SC	Atlanta Regional Commission	228	41%
1%	Mobile, AL	Atlanta Regional Commission	222	100%
61%	All Others	All Others	9,749	
Total			**15,953**	

Source: Transearch 2019 data prepared by WSP USA Inc.

The map in Figure 36 showing the top destination areas of Georgia by regional commission clearly shows the importance of Atlanta and Savannah in this market segment.

Figure 36. Warehousing and Distribution Top Destination Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 59 shows the warehousing and distribution's top outbound lanes in 2019 along with the percent transported via truck, totaling 13 million tons. The top ranked lane was from the Atlanta Regional Commission to Birmingham, AL, the second ranked lane was from Atlanta Regional Commission to Chicago, IL. Rounding out the top three was traffic from Atlanta Regional Commission to Los Angeles, CA with 691 thousand tons. Atlanta serves as the distribution point for many goods in the state and the outbound tonnages reflect that. The outbound traffic from the Coastal Regional Commission includes import traffic coming from the ports.

Table 59. Warehousing and Distribution Top Origin Destination Pairs – Outbound (2019)

Share	Georgia O	External D	Tons (k)	% Truck
7%	Atlanta Regional Commission	Birmingham, AL	832	13%
6%	Atlanta Regional Commission	Chicago, IL	717	6%
5%	Atlanta Regional Commission	Los Angeles, CA	691	1%
5%	Atlanta Regional Commission	Dallas, TX	590	37%
4%	Coastal Regional Commission	Nashville, TN	481	3%
3%	Coastal Regional Commission	Memphis, TN	410	1%
3%	Atlanta Regional Commission	New York, NY	374	42%
3%	Atlanta Regional Commission	Harrisburg, PA	344	6%
2%	Atlanta Regional Commission	Charleston, SC	289	17%
2%	Atlanta Regional Commission	Charlotte, NC	280	100%
2%	Atlanta Regional Commission	Jacksonville, FL	264	16%
2%	Atlanta Regional Commission	Orlando, FL	257	41%
2%	Atlanta Regional Commission	Miami, FL	241	78%
55%	All Others	All Others	6,955	
Total			**12,725**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Table 60 shows the warehousing and distribution's top internal O-D pairs totaling 25.1 million tons. With 59 percent share and 14.7 million tons, the top ranked internal O-D pair was within Atlanta Regional Commission, reflecting shipments from Atlanta's many distribution centers to local businesses and consumers. Internal Coastal Regional Commission ranked second with 3.38 million tons at 13 percent share. Rounding out the top three was between Northwest Georgia to Atlanta Regional Commission with 512 thousand tons and 2 percent share.

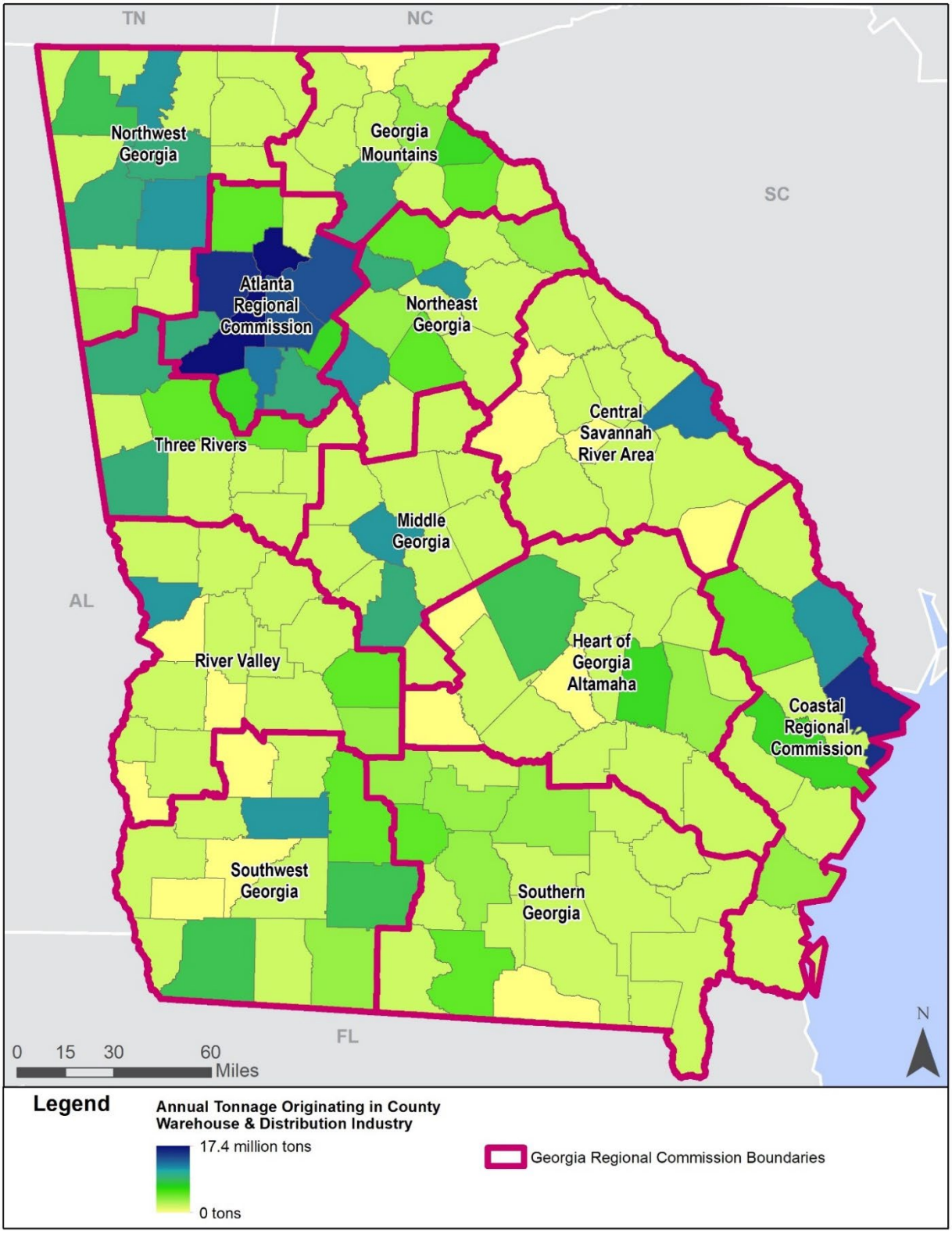
Figure 37 presents a physical representation of the data for internal tonnage in 2019.

Table 60. Warehousing and Distribution Top O-D Pairs – Internal (2019)

Share	Georgia O	Georgia D	Tons (k)
59%	Atlanta Regional Commission	Atlanta Regional Commission	14,735
13%	Coastal Regional Commission	Coastal Regional Commission	3,381
2%	Northwest Georgia	Atlanta Regional Commission	512
2%	Atlanta Regional Commission	Northwest Georgia	494
1%	Atlanta Regional Commission	Coastal Regional Commission	374
1%	Atlanta Regional Commission	Northeast Georgia	339
1%	Atlanta Regional Commission	Three Rivers	325
1%	Atlanta Regional Commission	Atlanta Regional Commission	323
1%	Atlanta Regional Commission	Middle Georgia	315
1%	Atlanta Regional Commission	Georgia Mountains	271
1%	Atlanta Regional Commission	Central Savannah River Area	266
1%	Central Savannah River Area	Atlanta Regional Commission	265
1%	Coastal Regional Commission	Atlanta Regional Commission	240
13%	All Others	All Others	3,228
Total			**25,068**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 37. Warehousing and Distribution Top Origin Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 61 shows the top 20 origin and destination warehouse and distribution cargo in tons by county in 2019 totaled 69.1 million. Fulton County ranked at the top with 32 million tons. Rounding out the top three were Chatham and Cobb Counties, with 11.0 million and 10 million tons, respectively. Fulton, Chatham, and Cobb Counties totaled 53.8 million tons representing 77.9 percent of the total tonnage in the top 20 warehousing and distribution O+D tonnage. The remainder of the top 20 counties had less than 3.5 million tons each.

Table 61. Warehousing and Distribution Top 20 O+D Tonnage Counties (2019)

County	Origin and Designation Tonnage (Tons)
Fulton	32,482,238
Chatham	11,015,130
Cobb	10,337,768
Gwinnett	3,372,490
DeKalb	2,808,968
Clayton	1,274,085
Richmond	1,077,858
Muscogee	683,110
Bibb	665,911
Hall	628,146
Dougherty	592,596
Henry	546,476
Forsyth	540,629
Cherokee	489,846
Clarke	468,464
Bartow	467,878
Newton	440,354
Whitfield	417,348
Houston	410,773
Effingham	407,042

Source: Transearch 2019 data prepared by WSP USA Inc.

Among the counties in Georgia, Fulton County had the highest amount of inbound, outbound and within warehousing and distribution tonnage at 22 million tons, or 42 percent of all tonnage. Fulton was followed by Chatham County (7.4 million tons, or 14 percent) and Cobb County (6.4 million tons, or 12 percent). The top five counties of warehousing and distribution tonnage (including Gwinnet and DeKalb Counties) accounted for 76 percent of all tonnage in this industry group, demonstrating a high degree of concentration in metropolitan Atlanta and Savannah.

For Fulton County, the largest share of tonnage was for secondary traffic (16 million tons) followed by miscellaneous mixed shipments (6 million tons). For Chatham, the largest share of tonnage was secondary traffic (4.6 million tons) followed by miscellaneous mixed shipments (2.8 million tons). For Cobb County, secondary traffic was also the most significant commodity of warehousing and distribution tonnage (4.3 million tons).

2.5.4. Construction

Construction materials are largely heavy, bulk products that are moved short distances between areas of production and usage. As such, much of the construction cargo is short haul, either transported within the state or to and from nearby states. Much of this industry group is comprised of raw materials and finished products used in the building trades. Finished products in this category include products such as lighting and tile.

Table 62 shows over 52 million tons of construction cargo moved into the state of Georgia in 2019. Most of this cargo moved by truck (49 million tons) while a smaller tonnage moved by rail (3 million tons). The more significant inbound construction cargo flows included the following:

- **Truck:** 40 million tons of nonmetallic minerals moved into Georgia. This industry group includes gravel, sand, and other materials that are used in construction of commercial and residential structures as well as transportation infrastructure. The second highest inbound tonnage was clay, concrete, glass and stone at 5 million tons.
- **Rail:** The largest rail move was clay, concrete, glass, or stone at 2 million tons. An additional 1 million tons of nonmetallic minerals moved by rail.

The largest inbound tonnage was nonmetallic minerals by truck from Alabama (16.9 million tons), Tennessee (9 million tons) and South Carolina (just under 9 million tons).

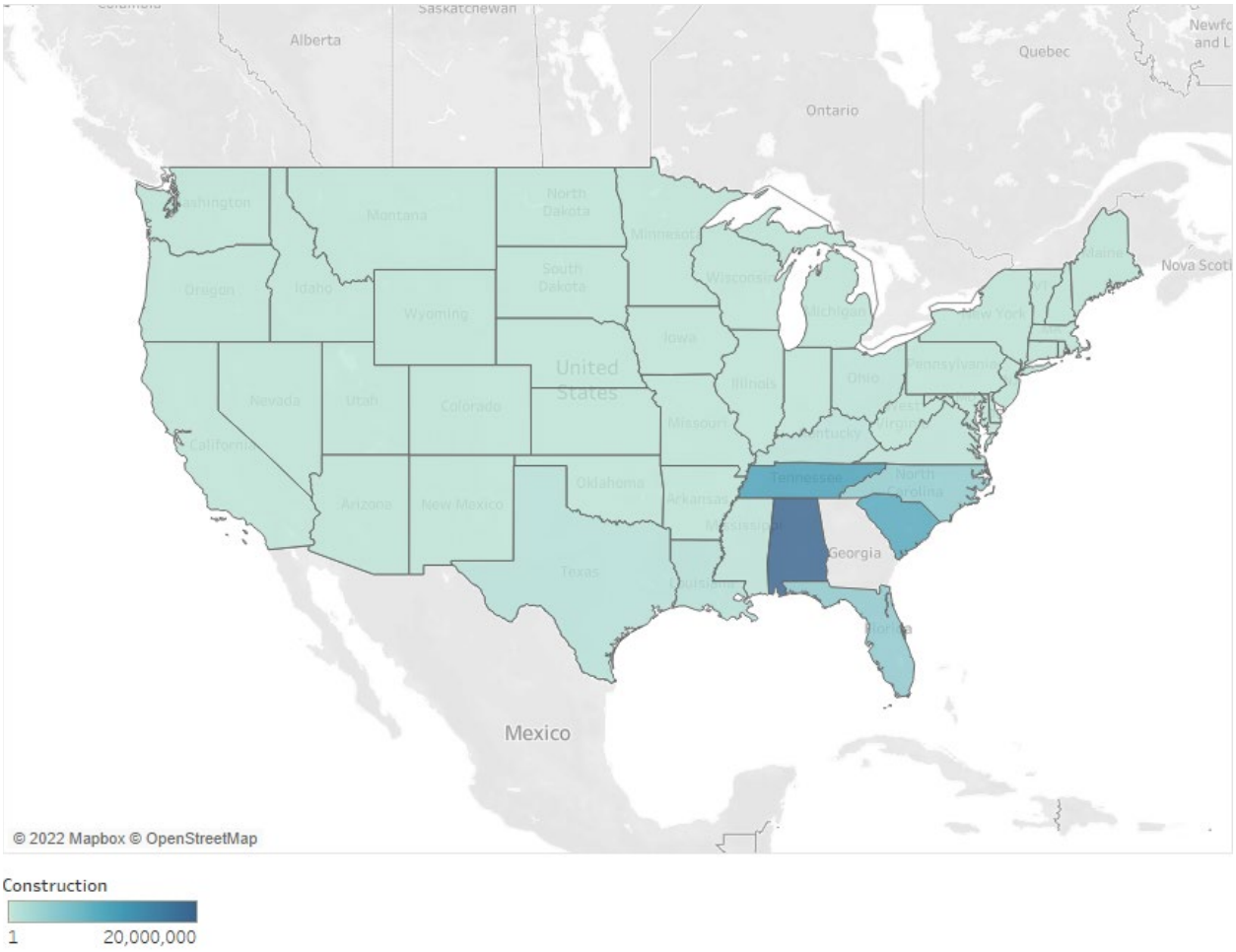
Table 62. Construction Inbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
AL	17,451	1,979	<1	<1	19,431
TN	10,492	390		<1	10,883
SC	9,441	157	<1		9,599
FL	3,968	378		<1	4,345
NC	3,861	26		<1	3,887
LA	732	46	23		801
TX	693	6	7	<1	706
KY	217	281		<1	498
OH	233	28		<1	261
MS	228				228
All Others	1,447	142		<1	1,589
Total	**48,763**	**3,433**	**34**	**<1**	**52,230**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 38 presents a map of the construction inbound tonnage for 2019 and highlights the regional nature of this freight.

Figure 38. Construction Inbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 63 shows over 30 million tons of construction cargo moved out of the state of Georgia in 2019. Most of this cargo moved by truck (22 million tons), although a sizeable amount also moved by rail (8 million tons). Some of the more significant outbound construction traffic included the following:

- **Truck:** Nonmetallic mineral shipments led all commodity groups at 14 million tons, followed by 5 million tons of clay, concrete, glass and stone.
- **Rail:** Nonmetallic minerals dwarfed all other outbound construction with 8 million tons moving by rail.

Florida was the primary destination state for the construction tonnage with 9 million tons, followed by South Carolina at 6 million tons and Alabama at 4 million tons. The largest single

modal movement were rail shipments of nonmetallic minerals to Florida. There were also significant shipments of nonmetallic minerals to South Carolina, Alabama, and North Carolina.

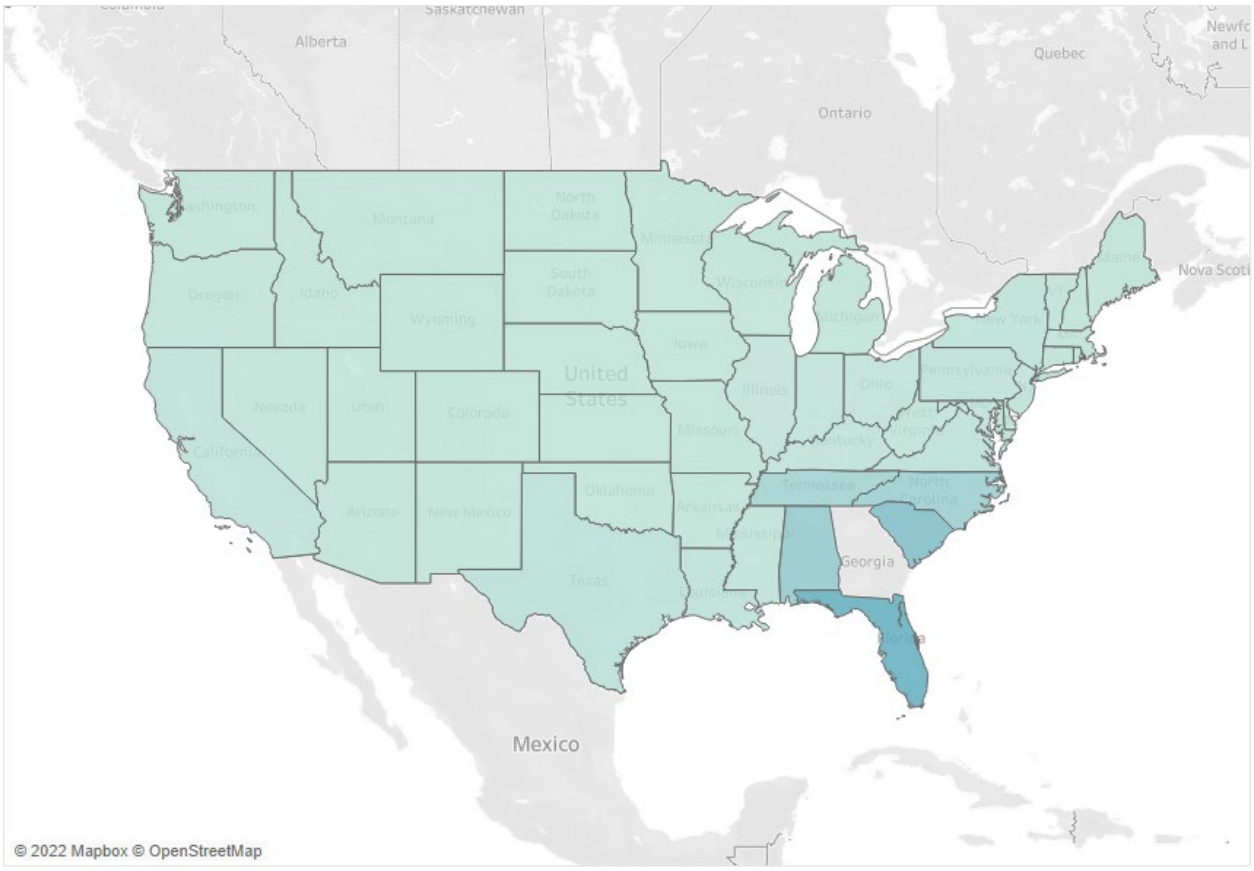
Table 63. Construction Outbound Tonnage by Destination State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
FL	2,660	6,104	<1	<1	8,764
SC	4,608	1,529			6,137
AL	4,277	56		<1	4,333
NC	3,405	15	2	<1	3,422
TN	2,909	16		<1	2,925
TX	580	8		<1	589
VA	408	8		<1	416
LA	296	34		<1	330
CA	255	60		<1	315
PA	249	50		<1	298
All Others	2,466	222		<1	2,210
Total	**22,113**	**8,102**	**4**	**<1**	**30,219**

Source: Transearch 2019 data prepared by WSP USA Inc.

The map in **Figure 39** shows the regional nature of the outbound construction traffic from Georgia.

Figure 39. Construction Outbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 64 shows top inbound lanes for construction in 2019 along with the percent transported via truck, totaling 52.2 million tons. The highest tonnage inbound lane was from was Birmingham, AL, to the Atlanta Regional Commission Most of this cargo was nonmetallic minerals with the remaining tonnage consisting mostly of clay, concrete, glass, or stone. Chattanooga, TN, to the Atlanta Regional Commission had the second highest tonnage with 3 million tons of nonmetallic minerals. The Atlanta Regional Commission was the destination for 10 of the top 13 lanes, which combined accounted for 52 percent share of all inbound construction tonnage. This is indicative of the strong development and growth in the Atlanta area, reflecting its large population.

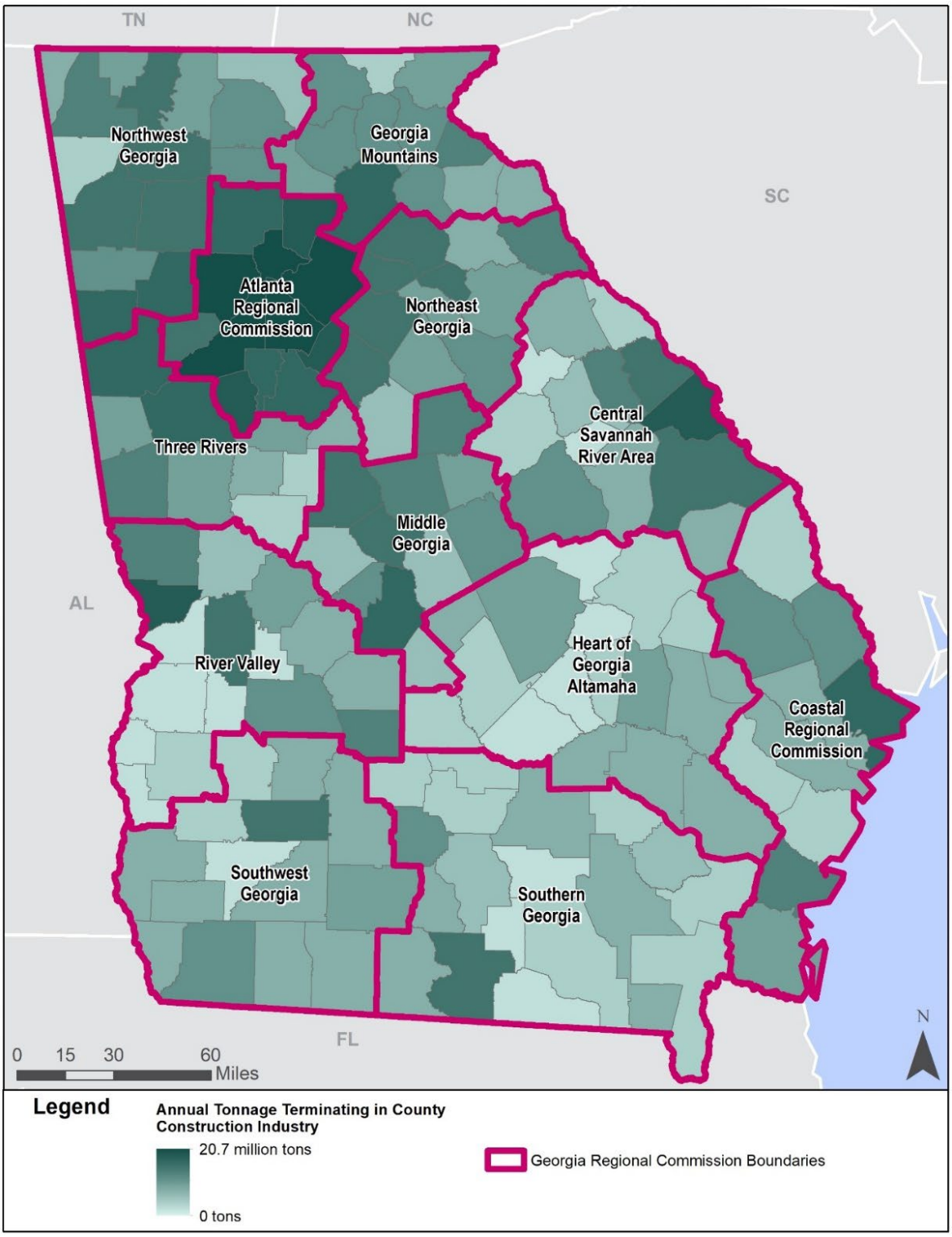
Table 64. Inbound Construction Lanes by Truck (2019)

Share	External O	Georgia D	Tons (k)	% Truck
13%	Birmingham, AL	Atlanta Regional Commission	6,681	89%
6%	Chattanooga, TN	Atlanta Regional Commission	3,134	99%
5%	Nashville, TN	Atlanta Regional Commission	2,739	100%
5%	Greenville, TN	Atlanta Regional Commission	2,620	100%
5%	Huntsville, AL	Atlanta Regional Commission	2,356	100%
3%	Columbus, GA (non-GA part)	Atlanta Regional Commission	1,496	82%
2%	Knoxville, TN	Atlanta Regional Commission	1,080	97%
2%	Atlanta, GA	Atlanta Regional Commission	998	100%
2%	Birmingham, AL	Northwest, GA	961	100%
2%	Asheville, NC	Atlanta Regional Commission	897	100%
2%	Chattanooga, TN	Northwest, GA	846	100%
1%	Birmingham, TN	Three Rivers	782	92%
1%	Columbia, SC	Atlanta Regional Commission	722	94%
52%	All Others	All Others	26,918	
Total			**52,230**	

Source: Transearch 2019 data prepared by WSP USA Inc.

The map in **Figure 40** shows the widespread geography for inbound construction materials. While the traffic is spread across the state, the highest tonnages are in the metropolitan areas led by Atlanta, with a significant amount of cargo also in the developing areas around the ports in the Coastal Regional Commission.

Figure 40. Construction Top Destination Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 65 contains the top outbound lanes for construction cargo moving by truck in 2019. The highest tonnage lane was from the River Valley Commission to Orlando, FL, nearly 2 million tons. The largest share of this was nonmetallic minerals. The second ranked lane was from the Central Savannah River Area to Orlando, FL. Nearly all of this tonnage was nonmetallic minerals. The Central Savannah River Area was the main origin for four of the top 13 lanes, accounting for 69 percent of all outbound construction volume. Approximately 4.8 million tons out of the 5.2 million tons of outbound construction cargo (or 92 percent) from the Central Savannah River Area was categorized as limestone, broken stone or riprap, which may be product coming from the Martin Marrieta quarries in the region.

Table 65. Construction Top O-D Pairs – Outbound (2019)

Share	Georgia O	External D	Tons (k)	% Truck
5%	River Valley	Orlando, FL	1,662	4%
4%	Central Savannah River Area	Orlando, FL	1,157	1%
3%	Central Savannah River Area	Charleston, SC	829	7%
3%	Middle Georgia	Jacksonville, FL	783	14%
2%	Central Savannah River Area	Savannah, GA (non-GA part)	736	2%
2%	Atlanta Regional Commission	Birmingham, AL	700	97%
2%	River Valley	Jacksonville, FL	564	17%
2%	Atlanta Regional Commission	Greenville, SC	558	100%
2%	Middle Georgia	Orlando, FL	547	4%
2%	Central Savannah River Area	Jacksonville, FL	539	5%
2%	Northeast Georgia	Greenville, SC	515	100%
2%	River Valley	Tallahassee, FL	476	36%
1%	Northeast Georgia	Charlotte, NC	451	100%
69%	All Others	All Others	20,702	
Total			**30,219**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Table 66 shows the intrastate lanes for construction commodities in 2019. As the largest population and industrial center, the highest tonnage traffic moves within the Atlanta Regional Commission region. The lane from Northwest Georgia to the Atlanta Regional Commission area was second. Third was from Northeast Georgia to the Atlanta Regional Commission area. These three lanes had a 50 percent share of all internal construction tonnage.

Table 66. Internal Construction Lanes (2019)

Share	Georgia O	Georgia D	Tons (k)
37%	Atlanta Regional Commission	Atlanta Regional Commission	23,139
7%	Northwest Georgia	Atlanta Regional Commission	4,514
5%	Northeast Georgia	Atlanta Regional Commission	3,238
5%	Georgia Mountains	Atlanta Regional Commission	2,890
3%	Three Rivers	Atlanta Regional Commission	2,094
3%	Middle Georgia	Atlanta Regional Commission	2,006
2%	River Valley	Atlanta Regional Commission	1,267
2%	Central Savannah River Area	Central Savannah River Area	1,148
2%	Atlanta Regional Commission	Northwest Georgia	1,047
2%	River Valley	River Valley	973
2%	Atlanta Regional Commission	Northeast Georgia	969
2%	Atlanta Regional Commission	Three Rivers	964
1%	Central Savannah River Area	Atlanta Regional Commission	928
27%	All Others	All Others	17,124
Total			**62,301**

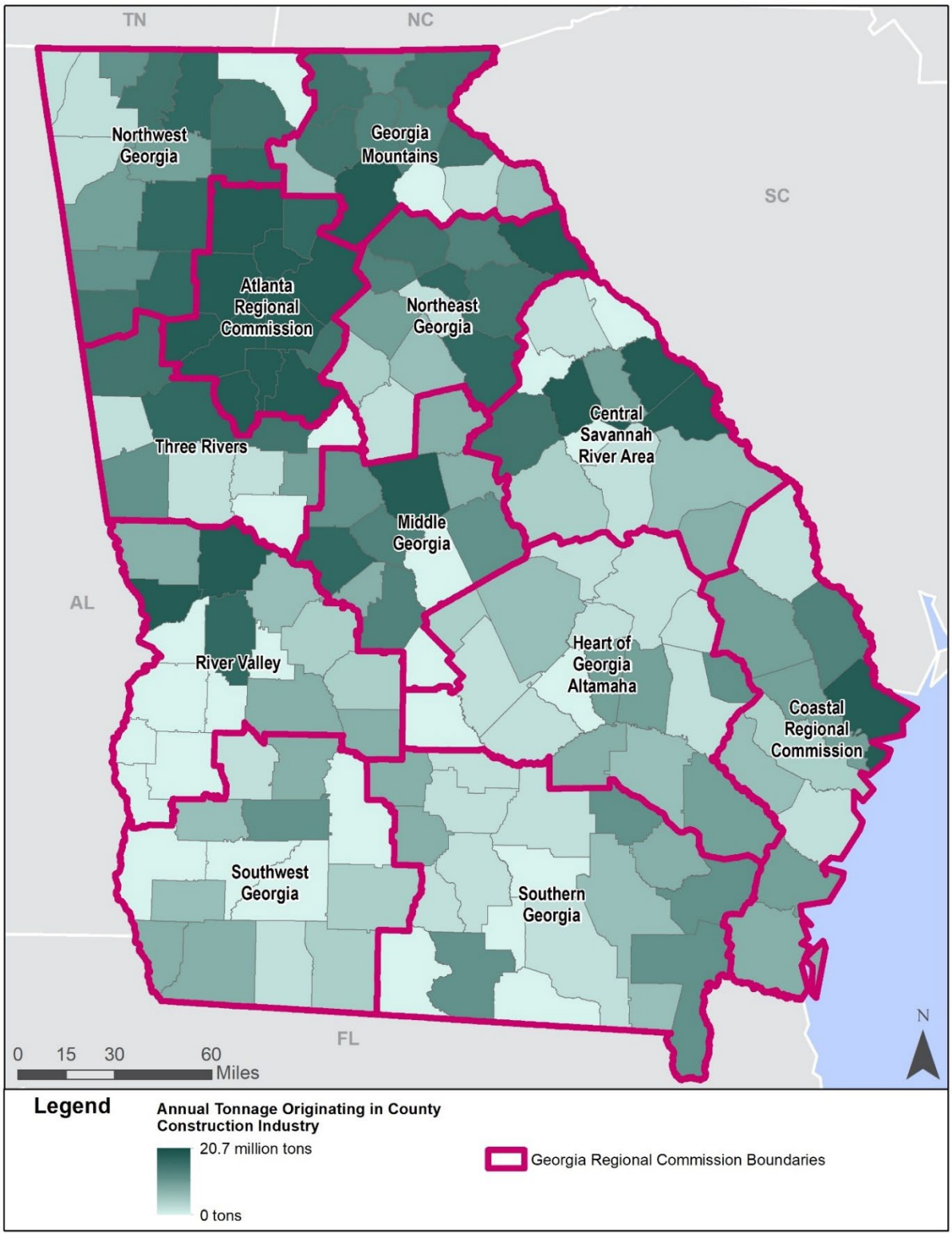
Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 41 and **Figure 42** present maps of the top origin and destination regions, respectively, in Georgia for construction tonnage within the state in 2019.

Among the counties in Georgia, Fulton County had the highest amount of inbound, outbound and within construction tonnage at 12 million tons, or 9 percent of all tonnage. Fulton was followed by Cobb County (11.9 million tons, or 8 percent) and Gwinnet County (10.5 million tons, or 7 percent). The top five counties of warehousing and distribution tonnage (including Dekalb and Muscogee Counties) accounted for 31 percent of all tonnage in this industry group, suggesting that the construction tonnage was widely distributed across the state.

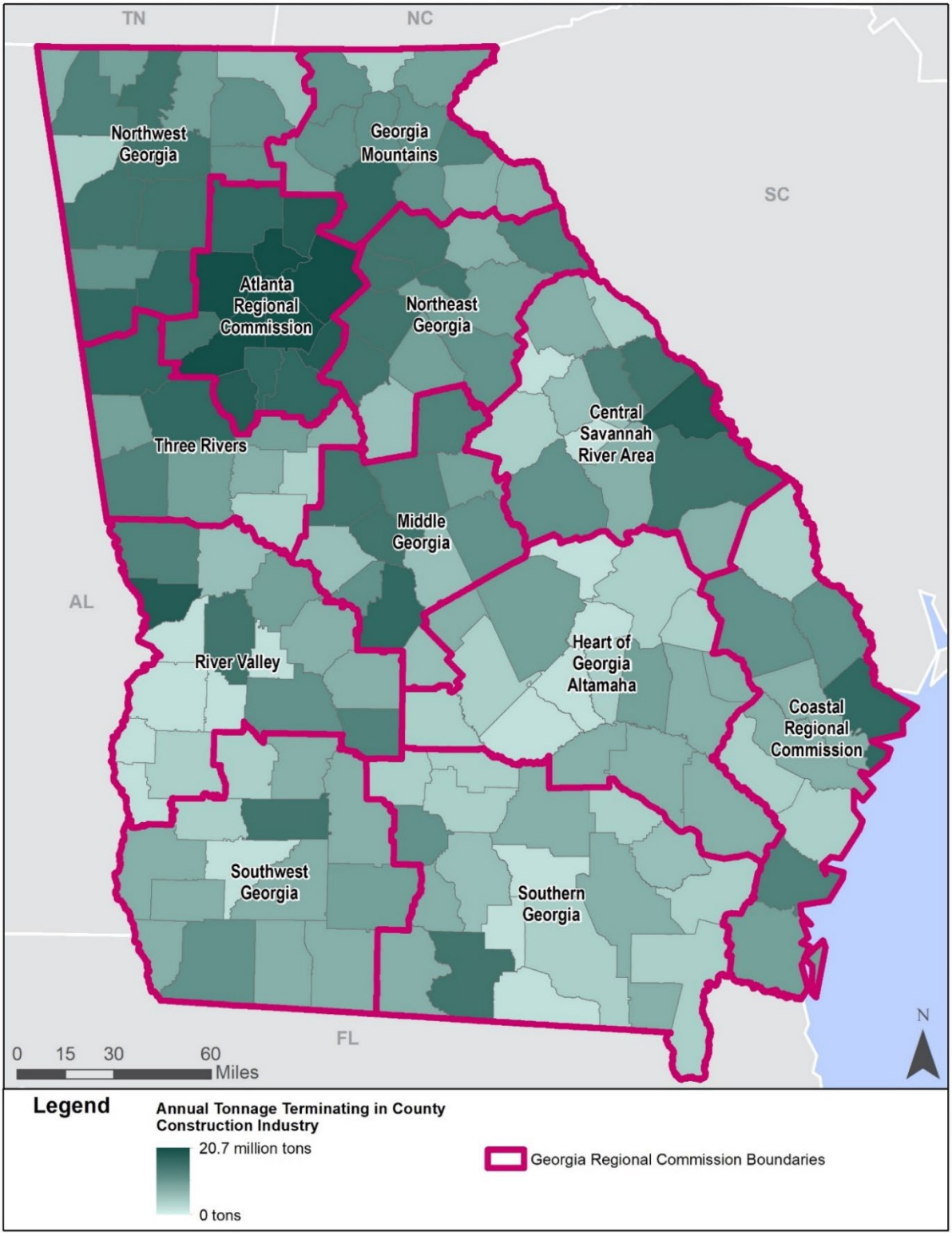
For all three counties, the highest share of construction tonnage was attributed to nonmetallic minerals, followed by clay, concrete, glass or stone. Cobb County had the highest amount of nonmetallic mineral tonnage of the three counties at 9.9 million tons, followed by Fulton County (9 million tons) and Gwinnett County (8.3 million tons).

Figure 41. Construction Top Origin Counties for Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 42. Construction Top Destination Counties for Tonnage (2019)



2.5.5. Energy

There are two major types of energy traffic in the state of Georgia: 1) the transport of coal by rail to utilities in the state for electricity generation; and 2) the transport of fuel by truck from pipeline-supplied tank farms moving to gas stations. In the data, fuel is included in a category identified as “petroleum refining products”. In the information presented below, this commodity is referred to as fuel or liquid fuel.

Table 67 shows the inbound energy tonnage by origin state and mode in 2019. Of the total of 21 million tons of inbound energy cargo, 17 million tons were transported by rail. The inbound rail tonnage was dominated by shipments to utilities in the state (16 million tons) whereas virtually all of the inbound tonnage by truck was comprised of liquid fuel (4 million tons).

The top origin state was Tennessee with 10 million tons followed by Indiana. This tonnage moved by rail and was predominately coal. The Tennessee tonnage by rail is a valid flow but the source of the product was elsewhere, most likely rail or barge traffic transferring at a Tennessee exchange location as Tennessee is no longer a coal producing state. South Carolina ranked third in tonnage with the majority being petroleum or coal products transported by truck. Again, this commodity category includes fuel moved by truck.

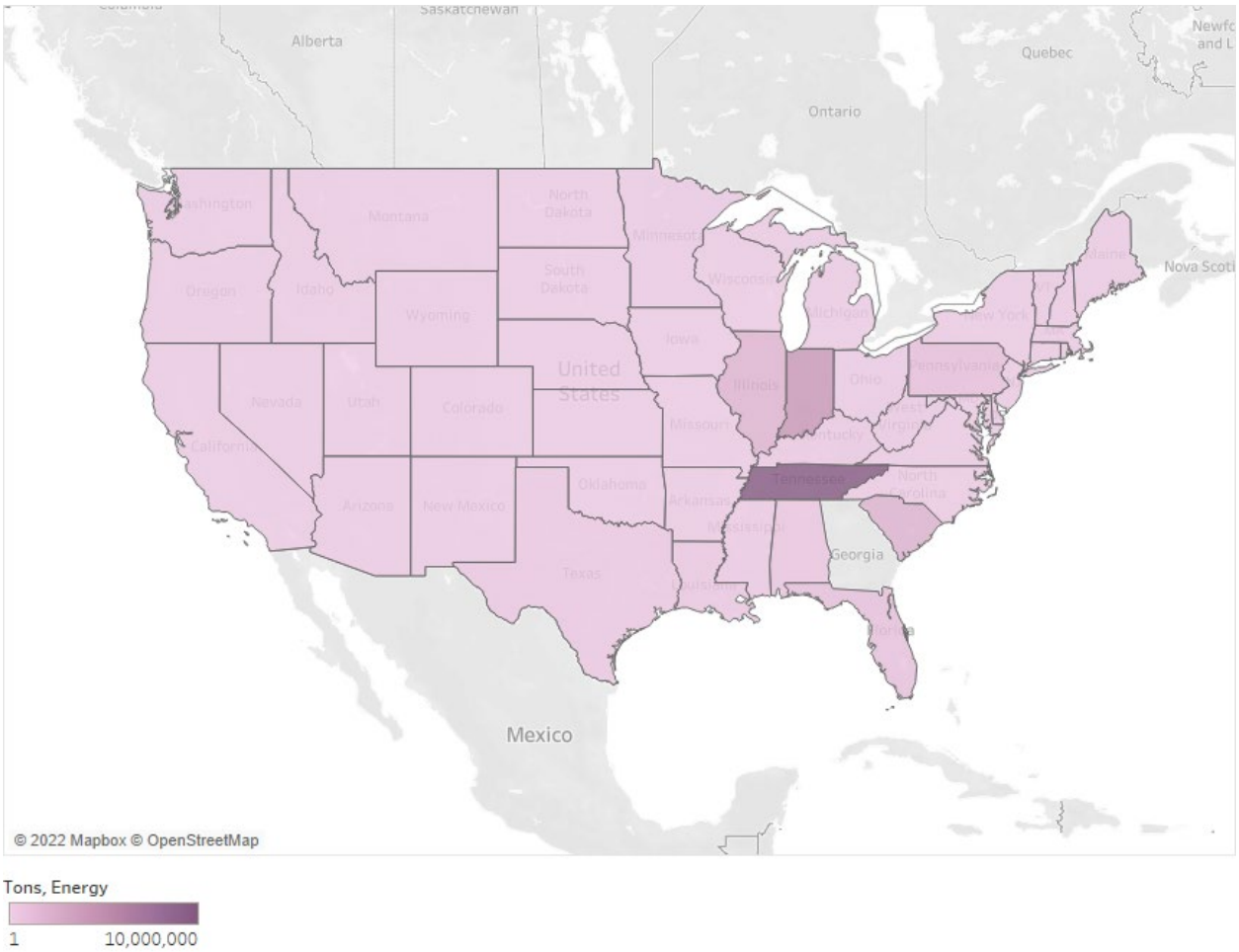
Table 67. Energy Inbound Tonnage by Origin State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
TN	677	9,013		<1	9,690
IN	2	4,054		<1	4,056
SC	1,826		<1		1,826
IL	5	1,803		<1	1,808
PA	<1	898	39	<1	937
FL	772		2	<1	774
AL	312	74	6	<1	393
LA	82	152	88		322
TX	99	33	166	<1	298
KY	16	187		<1	203
All Others	28	711			739
Total	**3,819**	**16,925**	**449**	**<1**	**21,193**

Source: Transearch 2019 data prepared by WSP USA Inc

The map **Figure 43** shows the source of inbound energy tonnage by origin state. This map is dominated by Tennessee. This flow has been identified as coming from other locations outside Tennessee but moving from there to Georgia by rail.

Figure 43. Energy Inbound Tonnage by Origin State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 68 shows the outbound energy tonnage by origin state and mode in 2019. Nearly all of the 5 million tons moving out of Georgia was liquid fuel.

Alabama was the number one destination with 2.8 million tons, followed by Florida with 928 thousand tons, and South Carolina was third with 863 thousand tons. Again, nearly all of this tonnage was fuel. Since Georgia does not have oil refineries, this cargo emanates from pipeline terminals and from the ports in Georgia.

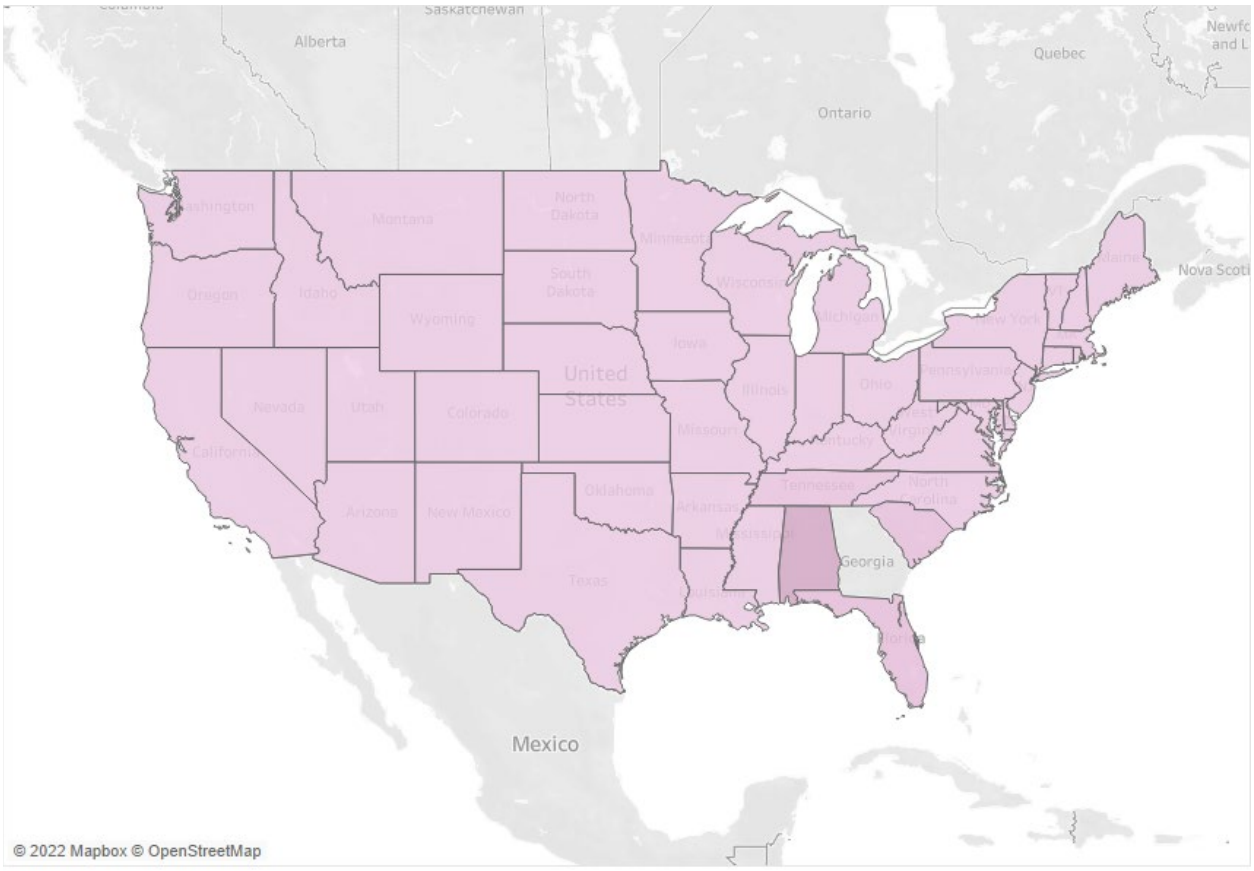
Table 68. Energy Outbound Tonnage by Destination State and Mode (2019) (Thousands of Tons)

	Truck	Rail	Water	Air	Total
AL	2,774			<1	2,774
FL	926		1	<1	928
SC	840	8	16		863
TN	548	11		<1	559
NC	89		1	<1	90
LA	<1	48		<1	48
NJ	5	3	23	<1	32
PA	6	14		<1	19
MD	4	15		<1	19
MA	2		7	<1	10
All Others	34	21			2,210
Total	**5,228**	**120**	**49**	**<1**	**5,397**

Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 44 maps the outbound tonnage by destination state, emphasizing the regional nature of this traffic.

Figure 44. Energy Outbound Tonnage by Destination State (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Table 69 shows the top inbound lanes for energy commodities in 2019, along with the percentage transported by truck. The highest tonnage lane was from Memphis, TN, to Middle Georgia with 9 million tons, nearly all of which was coal.

Second through fourth were Evansville, IN, St. Louis, MO, and Pittsburgh, PA, all to Northwest Georgia, with 3 million, 881 thousand, and 871 thousand tons, respectively. As with the cargo from Memphis, nearly all of this cargo was coal. These origin points reflect waterborne coal along the Ohio river system.

These top four O-D inbound energy lane pairs made up 64 percent of the total 21 million tons in energy cargo.

Table 69. Truck Inbound Energy to Regional Commissions (2019)

Share	External O	Georgia D	Tons (k)	% Truck
42%	Memphis, TN	Middle Georgia	8,969	0%
14%	Evansville, IN	Northwest Georgia	3,008	0%
4%	St. Louis, MO	Northwest Georgia	881	0%
4%	Pittsburg, PA	Northwest Georgia	871	0%
4%	St. Louis, MO	Three Rivers	749	0%
3%	Evansville, IN	Three Rivers	581	0%
2%	Indianapolis, IN	Northwest Georgia	447	0%
2%	Greenville, SC	Atlanta Regional Commission	407	100%
2%	Jacksonville, FL	Coastal Regional Commission	392	100%
1%	Greenville, SC	Georgia Mountains	311	100%
1%	Chattanooga, TN	Northwest Georgia	296	100%
1%	Jacksonville, FL	Southern Georgia	286	100%
1%	Chattanooga, TN	Atlanta Regional Commission	282	100%
18%	All Others	All Others	3,713	
Total			**21,193**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Table 70 shows the top energy outbound lanes moving by truck in 2019. The total outbound tonnage in 2019 for energy was 5 million tons. The primary lane was from Southwest Georgia to Tallahassee, FL. These shipments were mainly liquid fuel. Ranked second was 526 thousand tons of fuel moving from Southwest Georgia to Dothan, AL. Rounding out the top three was traffic from Northwest Georgia to Huntsville, AL.

Table 70. Outbound Energy Lanes (2019)

Share	Georgia O	External D	Tons (k)	% Truck
12%	Southwest Georgia	Tallahassee, FL	649	100%
10%	Southwest Georgia	Dothan, AL	526	100%
8%	Northwest Georgia	Huntsville, AL	421	100%
7%	Coastal Regional Commission	Savannah, GA (non-GA part)	359	100%
6%	River Valley	Montgomery, AL	339	100%
5%	Atlanta Regional Commission	Chattanooga, TN	246	100%
4%	Atlanta Regional Commission	Birmingham, AL	210	100%
4%	Atlanta Regional Commission	Huntsville, AL	191	100%
4%	Northwest Georgia	Birmingham, AL	189	100%
3%	River Valley	Columbus, GA (non-GA part)	185	100%
3%	Southwest Georgia	Columbus, GA (non-GA part)	179	100%
3%	River Valley	Dothan, AL	145	100%
2%	Coastal Regional Commission	Charleston, SC	127	88%
30%	All Others	All Others	1,631	
Total			**5,397**	

Source: Transearch 2019 data prepared by WSP USA Inc.

Energy moving within Georgia is shown in Table 71. Traffic internal to the Atlanta Regional Commission ranked at the top with 8 million tons and 43 percent share. Atlanta's population and demand for fuel drives these movements emanating from pipeline terminals in the region. Shipments within the Coastal Regional Commission made up the second highest tonnage. The third highest intra-Georgia flow moved from River Valley to the Atlanta Regional Commission.

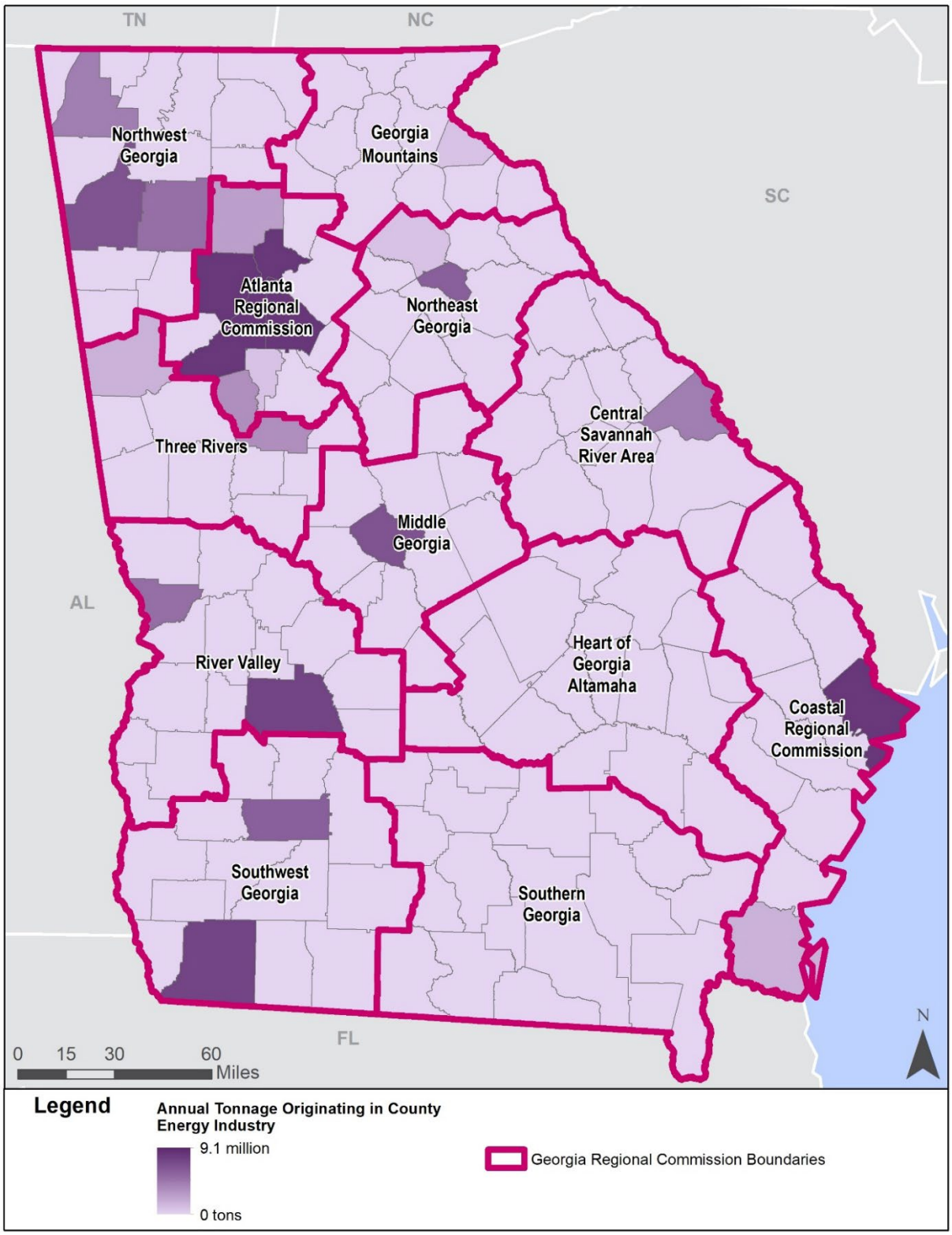
Table 71. Energy Top O-D Pairs – Internal (2019)

Share	Georgia O	Georgia D	Tons (k)
43%	Atlanta Regional Commission	Atlanta Regional Commission	7,639
8%	Coastal Regional Commission	Coastal Regional Commission	1,483
4%	River Valley	Atlanta Regional Commission	757
4%	Middle Georgia	Atlanta Regional Commission	738
3%	Atlanta Regional Commission	Northwest Georgia	491
3%	Northwest Georgia	Atlanta Regional Commission	463
3%	Southwest Georgia	Southwest Georgia	463
2%	Northeast Georgia	Atlanta Regional Commission	395
2%	Middle Georgia	Middle Georgia	332
2%	Northwest Georgia	Northwest Georgia	321
2%	River Valley	River Valley	311
1%	Coastal Regional Commission	Central Savannah River Area	256
1%	River Valley	Middle Georgia	246
22%	All Others	All Others	3,892
Total			**17,787**

Source: Transearch 2019 data prepared by WSP USA Inc.

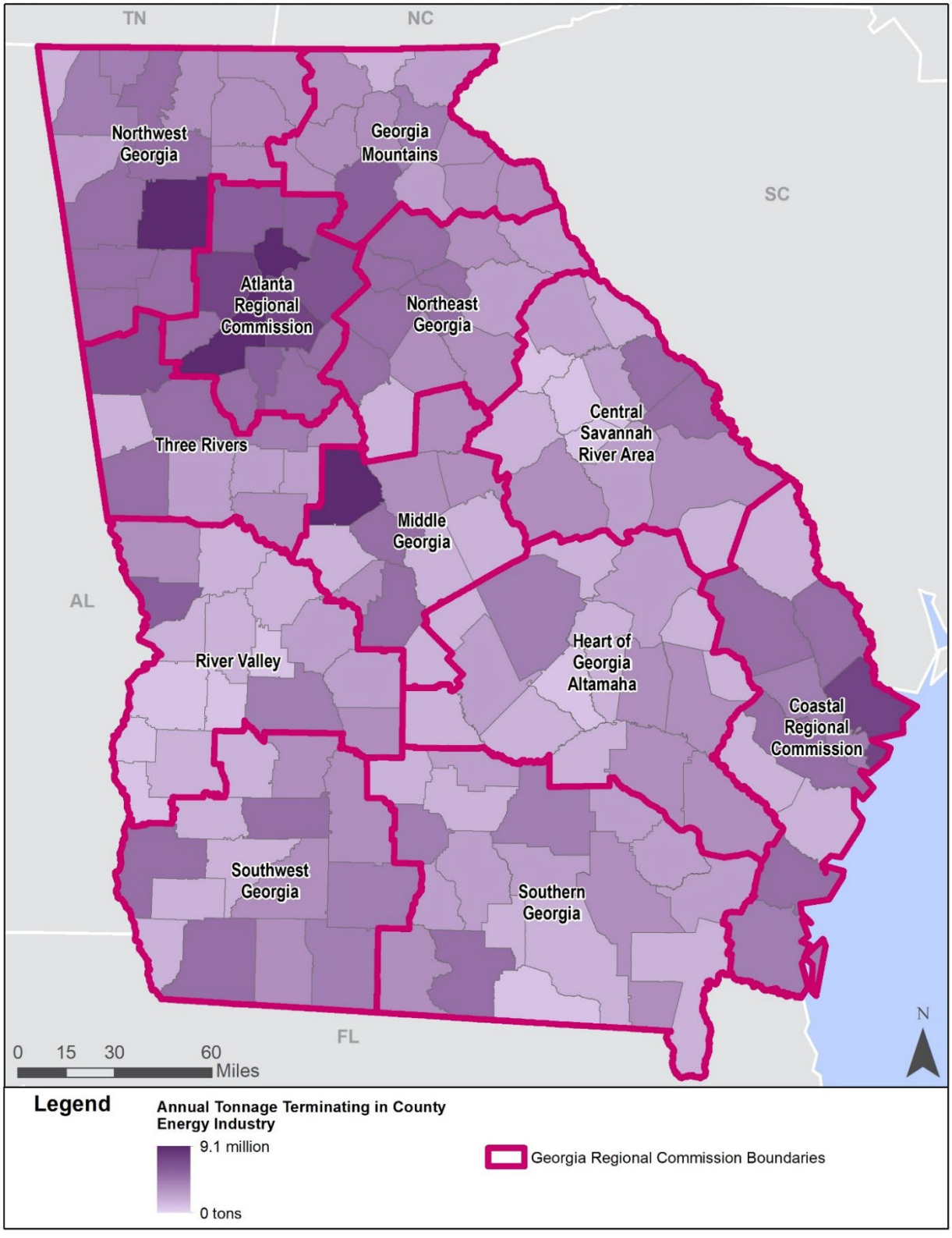
Figure 45 presents a map of the top origin counties and **Figure 46** shows a map of the top destination counties for energy tonnage in 2019. The destination locations are more widely spread throughout the state reflecting the heavy demand for energy products.

Figure 45. Origin Counties for Energy Tonnage (2019)



Source: Transearch 2019 data prepared by WSP USA Inc.

Figure 46. Energy Top Destination Counties for Energy Tonnage (2019)



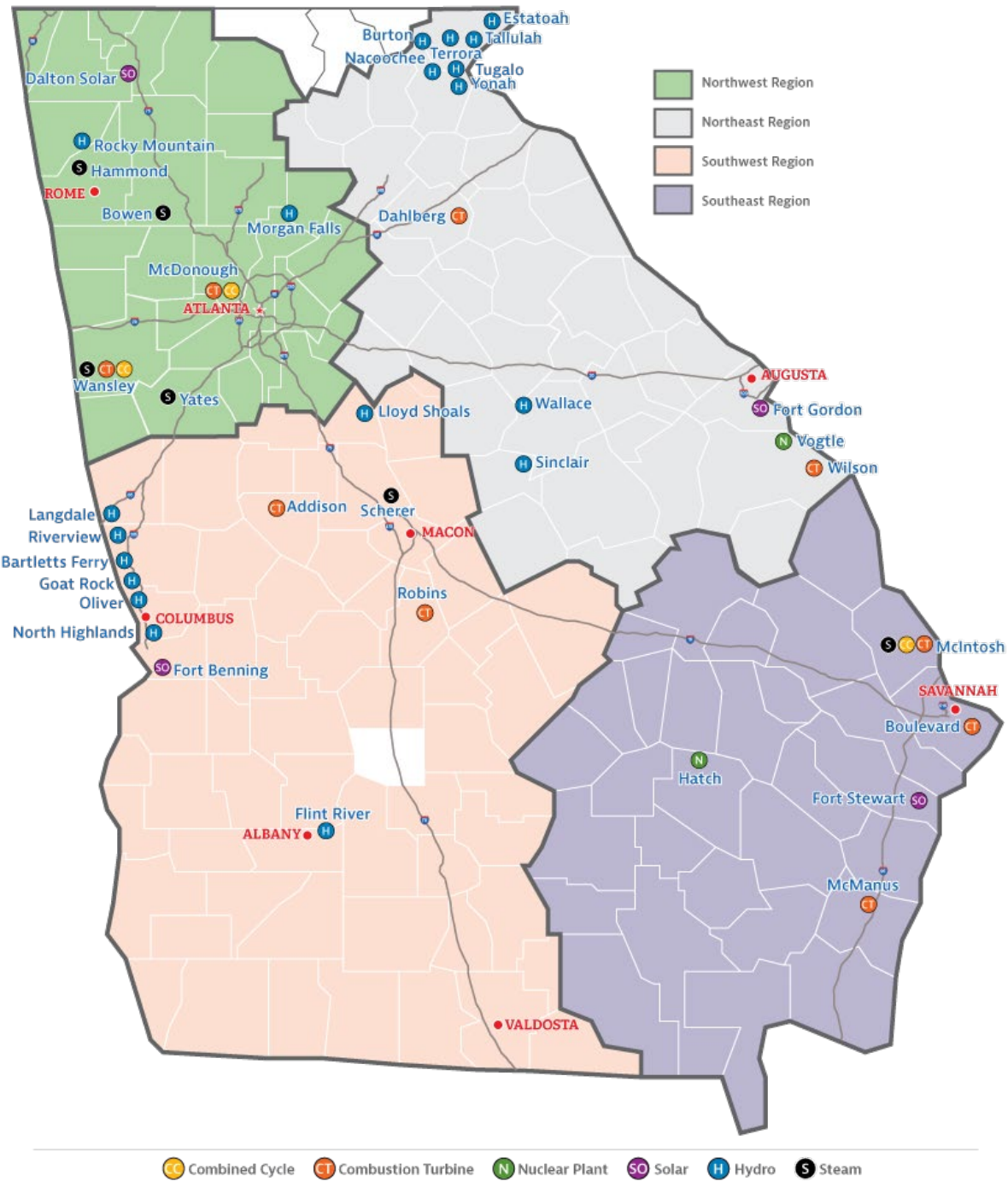
Source: Transearch 2019 data prepared by WSP USA Inc.

Among the counties in Georgia, Monroe County had the highest tonnage of inbound, outbound and within energy tonnage at 9 million tons, or 20 percent of all tonnage. Monroe was followed by Bartow County (5.5 million tons, or 12 percent), Chatham County (3.7 million tons, or 8 percent), Fulton County (3.7 million tons, or 8 percent), and Cobb County (3.6 million tons, or 8 percent). The top five counties as measured by energy tonnage accounted for 57 percent or slightly more than half of all energy tonnage in the state.

For Monroe and Bartow Counties, coal was the predominant form of energy tonnage at 9 million tons and 5 million tons in 2019, respectively. These coal volumes fit with the location of the three operational coal power plants in Georgia, shown in Figure 47, which are: Bowen Steam-Electric Generating Plant in Bartow County, just northwest of Atlanta; Robert W Scherer Power Plant in Monroe County, just northwest of Macon; and Hal B. Wansley Power Plant in Heard County, southwest of Atlanta and close to the border with Alabama.

Chatham, Fulton and Cobb Counties each had much higher amounts of liquid fuel tonnage than coal tonnage.

Figure 47. Electric Generation Plants in Georgia (2022)



Source: Georgia Power, sourced at https://www.georgiapower.com/company/energy-industry/generating-plants.html

2.6. Heavy Haul

The FAST Act identified oversize/overweight (OSOW) as a target for planning as particular attention must be paid to roadways that are utilized by heavy vehicles, because different design standards and maintenance levels could be desirable. Routes that serve heavy-haul equipment are more vulnerable to pavement deterioration and may need higher levels of maintenance. The GDOT State Route Prioritization identifies the State's 18,000 miles in four categories: Critical, High, Medium, and Low. The result of this research is used by GDOT to effectively allocate maintenance funding and ensure a high level of service and quality on Critical and High Priority routes. GDOT focuses its resources on the components of the transportation system that are most important to Georgia's economy, specifically, those that serve a significant role in freight movement, intrastate travel, tourism, and business travel.

Bridge structures are also of increasing importance due to weight limits and overhead clearance restrictions. Routing for cargo in all commodity groups can be affected but shipments in the OSOW category are particularly vulnerable to bridge and overpass related impediments causing rerouting and delay. There are over 14,000 bridges in the state, 2.5 percent of which have been identified as deficient and are slated for repair. The bridge number includes both GDOT and local bridge responsibility. There is an interactive map25 of posted bridge locations that can be viewed on the GDOT website.

OSOW shipments present regulatory challenges as well as physical infrastructure concerns. Shipments moving across state lines require transportation companies to interact with multiple jurisdictions creating a need for harmonization of regulations and processes. As the demand for OSOW shipments increases, the need for attention to these jurisdictional concerns grows.

2.6.1. Commodity Groups

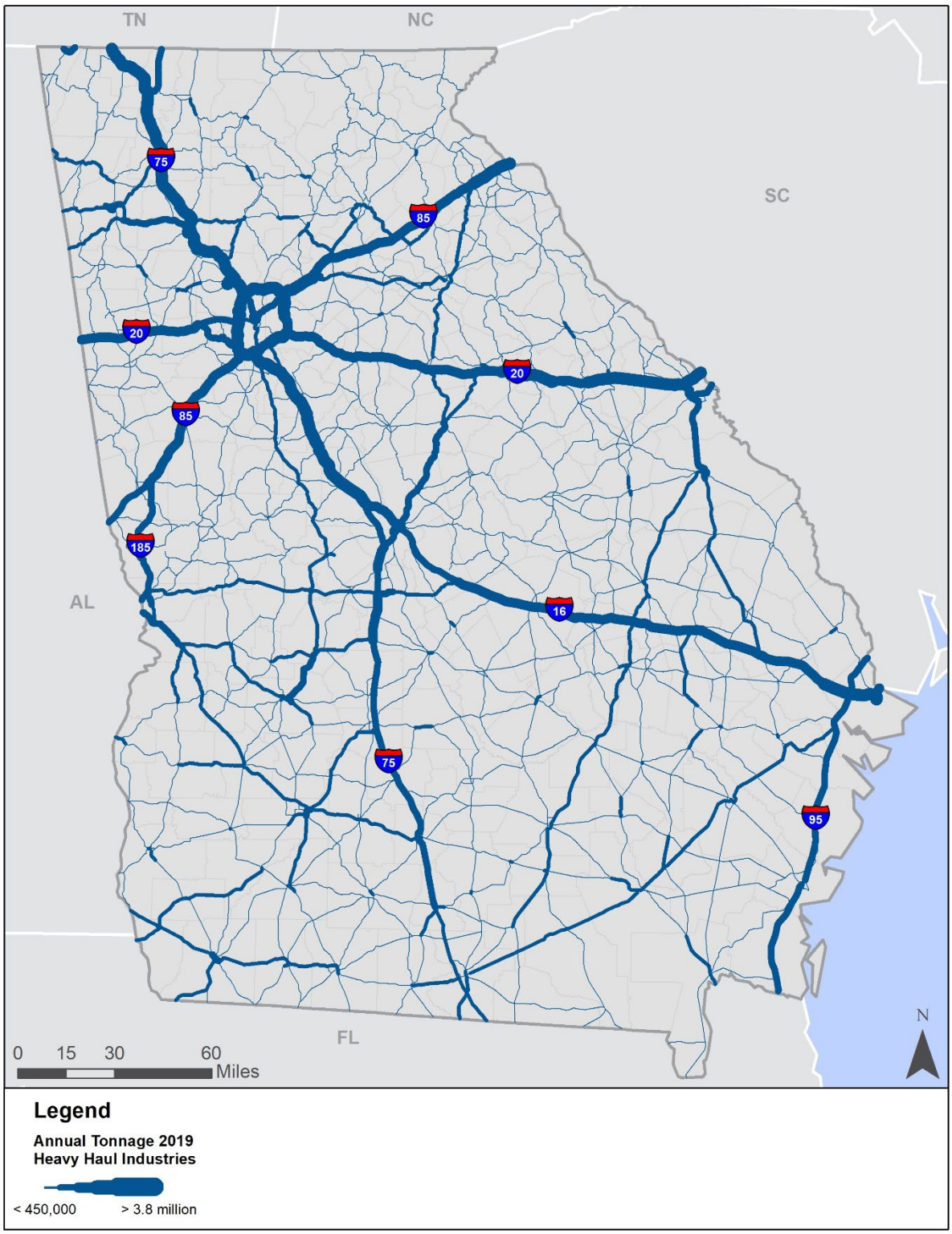
The FAST Act specifically identified the following commodity groups and shipment types to be addressed in the planning process:

- Mining
- Agricultural
- Energy Cargo
- Timber

The heavy haul market in Georgia is largely encompassed by agriculture, forestry, construction commodities and large equipment manufacturing for construction. Maps of heavy haul traffic in 2019 and the forecast for 2050 appear respectively in **Figure 48** and **Figure 49** below, followed by a discussion of each of the commodity groups. The highest volume of heavy haul in 2019 is on the Interstate highways, especially those surrounding the greater Atlanta metro area. The forecast indicates that the Interstates will continue to experience the highest traffic volumes, with the thickness of the lines in the map suggesting that the 2050 volumes will be considerably higher on these routes than they were in 2019.

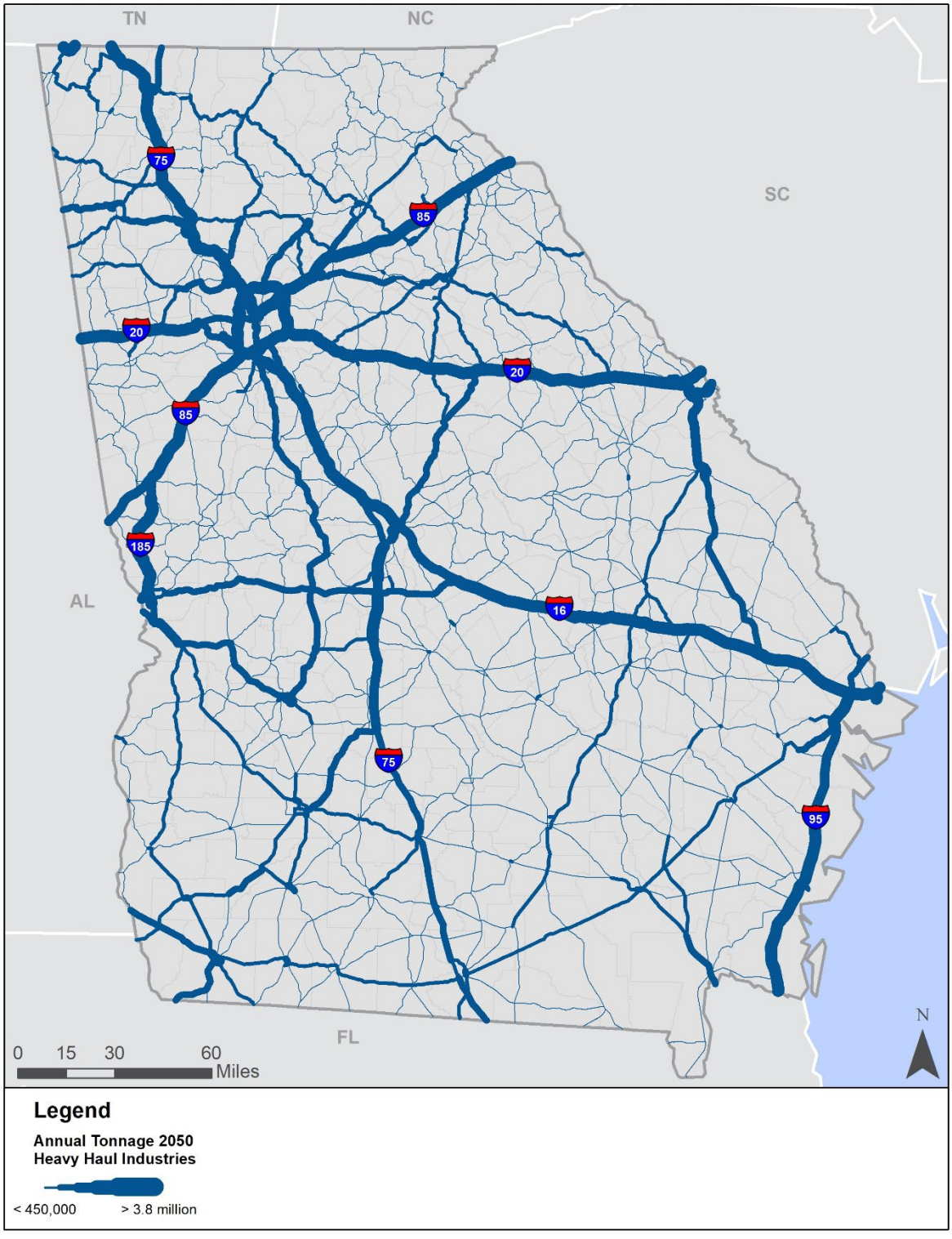
25 Posted and Restricted Bridges - Georgia DOT (ga.gov)

Figure 48. 2019 Heavy Haul Tonnage



Source: Transearch

Figure 49. 2050 Heavy Haul Tonnage



Source: Transearch

Mining

The US Geological Survey reports the value of Georgia's non-fuel mineral production from 2021 as just over two billion dollars ($2,040 million). The state is 12th in the US in this category but represents only 2.25 percent of the total national production. This data includes Portland cement, kaolin clay, sand and gravel for construction and sand and gravel for industrial use as well as crushed stone. Georgia produces significant quantities of titanium and zirconium minerals concentrates but the breakdown of volume is not available as it is considered proprietary information.

Georgia leads in the production of fuller's earth, kaolin, and iron oxide pigments. It is a major producer of barite, dimension stone, and feldspar. The kaolin mining industry has located its processing facilities in the communities near the deposits, primarily in the nine (9) rural counties between Macon and Augusta. Highly technical equipment and processes are employed to transform the crude kaolin into high quality products which are marketed around the world for a wide variety of applications.26 Kaolin clay is widely used in the paper industry and for that reason the associated tonnage was included with lumber and paper in the overall data analysis.

Construction related commodities such as stone and cement are part of this mining category. They have been included in the consideration of construction volumes in the Freight Plan.

Construction Equipment

The off-highway equipment group is defined to include self-propelled work machines used in construction, general purpose industrial, agricultural, forestry and specialized mining industries. Georgia is home to many manufacturers of this type of equipment including companies such as Caterpillar, Kubota, John Deere and Weiler Forestry. This equipment is transported nationally and internationally from their manufacturing facilities in Georgia.

Construction equipment components as well as finished equipment are both imported and exported through Georgia ports. Some of this equipment falls into the OSOW category. Large, finished equipment for export is currently being directed toward Brunswick as facilities are expanded to accommodate this cargo. Efficient movement of this large and heavy equipment is a critical component of the supply chain benefitting this industry group in Georgia.

Agriculture

Georgia is a top producer of agricultural and food products. The market covers a gamut of commodities, but those most associated with heavy haul shipments are grains and fertilizers. Animal feed products are also produced and imported through the network. Confinement

[26] https://www.usgs.gov › centers › mineral-industry-georgia and https://www.usgs.gov/centers/national-minerals-information-center/minerals-yearbook-metals-and-minerals

livestock operations can generate heavy haul shipments on local roads, most notably the slurry wagons used for manure handling.

Maintenance concerns on rural roads can also come from repetitive use from vehicles that do not exceed the legal weight limits but have a volume of traffic that puts a constant stress on the infrastructure. An example of this would be the poultry industry where the continual demand for feed and the seasonal demand for fuel requires 24/7 operations. Tractor trailer vehicles move continuously between farms and provisioning terminals. Poultry is a top commodity in Georgia. Operations frequently cross state lines making weight and roadway maintenance a regional issue.

Georgia Dairy Producers reported just under one million tons of milk produced in 2021. Milk is a commodity that often exceeds weight limits as trucks must fully empty farm tanks when picking up fresh milk for processing. The volume of this cargo is not easy to deduce or forecast. Federal regulations define milk as a non-divisible load and thus certain exemptions exist. Regulations are specifically defined further below.

Large farm equipment, classified as implements of animal husbandry, can also be problematic for infrastructure as the axle loading ratios are different than those for trucks creating different structural design needs particularly for bridges on local roads. Combines would be a specific example of this type of equipment. Local bridge postings can cause farmers to have to move equipment well out of route when moving between fields or to elevator locations, adding cost and time to the process.

Georgia is a major producer of agricultural equipment, most of which is considered small to mid-range in size. Transportation of this locally produced equipment does not pose a challenge to the infrastructure. However, the delivery of various types of large equipment to dealers and farm locations will fall into the OSOW category. Agricultural shipments may also make up some of the “through” traffic in Georgia and should be accounted in the mix when planning for OSOW operations.

Energy

A significant portion of OSOW shipments in most states with a concentration of energy-based cargo comes from coal, oil and gas production or the manufacture and installation of wind equipment.

Georgia is not currently active in any of these markets, and the bulk of energy-derived OSOW shipments in Georgia is associated with project cargo. Project cargo occurs as one-time moves needed for large components for use in facilities such as nuclear and hydroelectric power plants, either for new installations or for maintenance.

Timber

Georgia is the largest timber producer in the southeast and ranks in the top ten in the production of timber related products including pulp and paper. The harvesting and initial movement of logs most often occurs on local roads in the more rural areas of the state. When logging occurs in commercial forests, the road maintenance is shared by the producer. However, when the

logging trucks leave those locations, they are moving on local and state roads to reach processing facilities.

As in agriculture, forestry shipments can move regionally, crossing state lines in both directions. They can also fall into the category of repetitive movements that may not necessarily be OSOW but are heavy by nature and create constant demand on the infrastructure. The shipments of harvested logs are more likely to exceed weight and size restrictions. This is less frequently the case with finished products of the industry such as lumber and paper.

2.6.2. Identifying Oversize and Overweight Shipments

Georgia's highways support the movement of regular and OSOW loads in accordance with state and federal statutes. OSOW loads are those whose dimensions and/or weight exceed the legal limits and, with some exceptions, cannot be split into multiple smaller loads (non-divisible). A vehicle that exceeds the legal statutory dimensions usually requires an OSOW permit and must pay associated additional fees to legally travel on designated roadways. An OSOW permit typically includes conditions such as:

- Route specifics
- Dates of load travel
- Times of load travel
- Escort vehicles

The vehicle is routed to avoid permanent or temporary physical constraints of the transportation infrastructure. The laws governing truck size and weight in the State of Georgia are found in Ga. Code Ann. 32-6-20 et seq[27].

Summary of State Provisions that Exceed Federal Limits[28]

With respect to trucks operating on the NHS in Georgia, several provisions in State law allow trucks to exceed some elements of Federal limits. The State of Georgia:

1. Allows 20,340 lbs. on a single axle;
2. Allows 40,680 lbs. on a tandem axle on non-Interstate highways;
3. Allows 61,020 lbs. for a tridem axle on non-Interstate highways;
4. Allows vehicles carrying several commodity types to exceed State weight limits on non-Interstate highways up to 23,000 lbs. on any single axle and 46,000 lbs. on any tandem axle; and

[27] available via LexisNexis at http://www.lexisnexis.com/hottopics/gacode/Default.asp
[28] https://ops.fhwa.dot.gov/freight/policy/rpt_congress/truck_sw_laws/app_a.htm#ga

5. Allows an additional 5 percent variance for transportation of specified commodities within a 100-mile radius of the point of origin; poultry waste is allowed the 5 percent variance within a 250-mile radius. Many of these exemptions are limited to transportation from a farm or other point of origin to a processing facility.

Regular Operations

The gross weight of vehicles in regular operations (operating without a special permit) generally follows the Federal limits with a few exceptions. Georgia has adopted the Federal Bridge Formula (FBF) as its State bridge formula. See Exhibit 18 for a summary of Georgia's weight provisions under regular operations (Ga. Code Ann. § 32-6-26).

Table 72. Summary of Georgia Truck Weight Limits for Vehicles in Regular Operations

Single Axle	20,340 lbs. (18,000 lbs. + 13 percent) with low pressure tires 18,080 lbs. (16,000 lbs. + 13 percent) with high pressure, solid rubber, or cushion tires
Tandem Axle	34,000 lbs. 40,680 on non-Interstate highways (if vehicle is less than 55 feet long and GVW is less than 73,280)
Tridem Axle	Per FBF
Gross Weight	80,000 lbs.; subject to FBF if gross weight of vehicle is between 73,280 lbs. and 80,000 lbs.
Other	1,000 lbs. tolerance on axle loads

** Not specified in statute but are derived by calculating 113 percent of 18,000 lbs. and 113 percent of 16,000 lbs., respectively (see §32-6-26[b])*

Exemptions and Special Operations

Commodity Exemptions

State weight limits may be exceeded on any non-Interstate highway[28] without a permit if the load on any single axle does not exceed 23,000 lbs., the load on any tandem axle does not exceed 46,000 lbs., and the total gross weight of the vehicle and load does not exceed 80,000 lbs. for vehicles hauling the following:

- Forest products from the forest where cut to the first point of marketing or processing;
- Live poultry or cotton from a farm to a processing plant;
- Feed from a feed mill to a farm;

- Naturally occurring raw ore or mineral, including either block or sawed granite, from the quarry or stockpile area to a processing plant located in the same or an adjoining county and construction aggregates hauled to any point, unless otherwise prohibited;
- Solid waste or recovered materials from points of generation to a solid waste handling facility or other processing facility;
- Concrete that is in a freshly mixed and in an unhardened State for delivery to a customer; and
- Poultry waste from the point of origin to a farm (Ga. Code Ann. § 32-6-26[g][1])

A vehicle hauling these products or any other agricultural or farm product from a farm to the first point of marketing or processing is permitted a 5 percent variance from State weight limits within a 100-mile radius of the farm or point of origin. In addition and as previously noted, a vehicle hauling poultry waste from the point of origin to a farm is permitted a 5 percent variance from State weight limits within a 250-mile radius of the farm or point of origin (Ga. Code Ann. § 32-6-26[g][2 - 3]).

Emission Reduction/Special Fuel Exemptions

Emission Reduction Equipment: State law has adopted a weight exemption for auxiliary power units or idle reduction technology units similar to the exemption in 23 U.S.C. § 127(a)(12). The exemption, which applies to single axle weight, tandem axle weight, gross vehicle weight, or any group of axles, is up to 400 lbs. or the certifiable weight of the unit, whichever is less (Ga. Code Ann. § 32-6-27[a][3]).

Permits for Overweight Vehicles

The Commissioner of the Georgia Department of Transportation (or the Commissioner's designee) is authorized to issue permits for the transportation of non-divisible loads that exceed State size and weight limits, provided that the vehicle's operation on public roads does not threaten to unduly damage a road or any appurtenance thereto (Ga. Code Ann. § 32-6-28[a][1][A]).

Annual permits are available for vehicles with a GVW of up to 100,000 lbs. and a single axle weight of up to 25,000 lbs. Single- and multi-trip permits may be issued to any vehicle or load allowed by Federal law (Ga. Code Ann. § 32-6-28[b][1]).

An annual commercial wrecker emergency tow permit may be issued for vehicles with a single axle weight of up to 21,000 lbs. or a tandem axle weight of up to 40,000 lbs. (Ga. Code Ann. § 32-6-28[b][3])

The FAST Act identifies the following two conditions that are not mentioned above. The FAST Act amends 23 U.S.C. 127(a) to establish that a vehicle carrying fluid milk products shall be considered a load that cannot be easily dismantled or divided (non-divisible). States may, therefore, issue permits for such vehicles, in accordance with State law, to exceed the gross weight limit of 80,000 pounds or the maximum weight allowed by the Federal Bridge Formula.

[23 U.S.C. 127(a)(13)]. This is a particular concern in the dairy industry where tankers must empty the tanks completely when picking up at a farm location even though the limit may be exceeded.

Additionally, a vehicle operated by an engine fueled primarily by natural gas, may exceed any vehicle weight limit (up to a maximum gross vehicle weight of 82,000 pounds) under 23 U.S.C 127, by an amount that is equal to the difference between: the weight of the vehicle attributable to the natural gas tank and fueling system carried by that vehicle; and the weight of a comparable diesel tank and fueling system.

2.6.3. Permitting Process

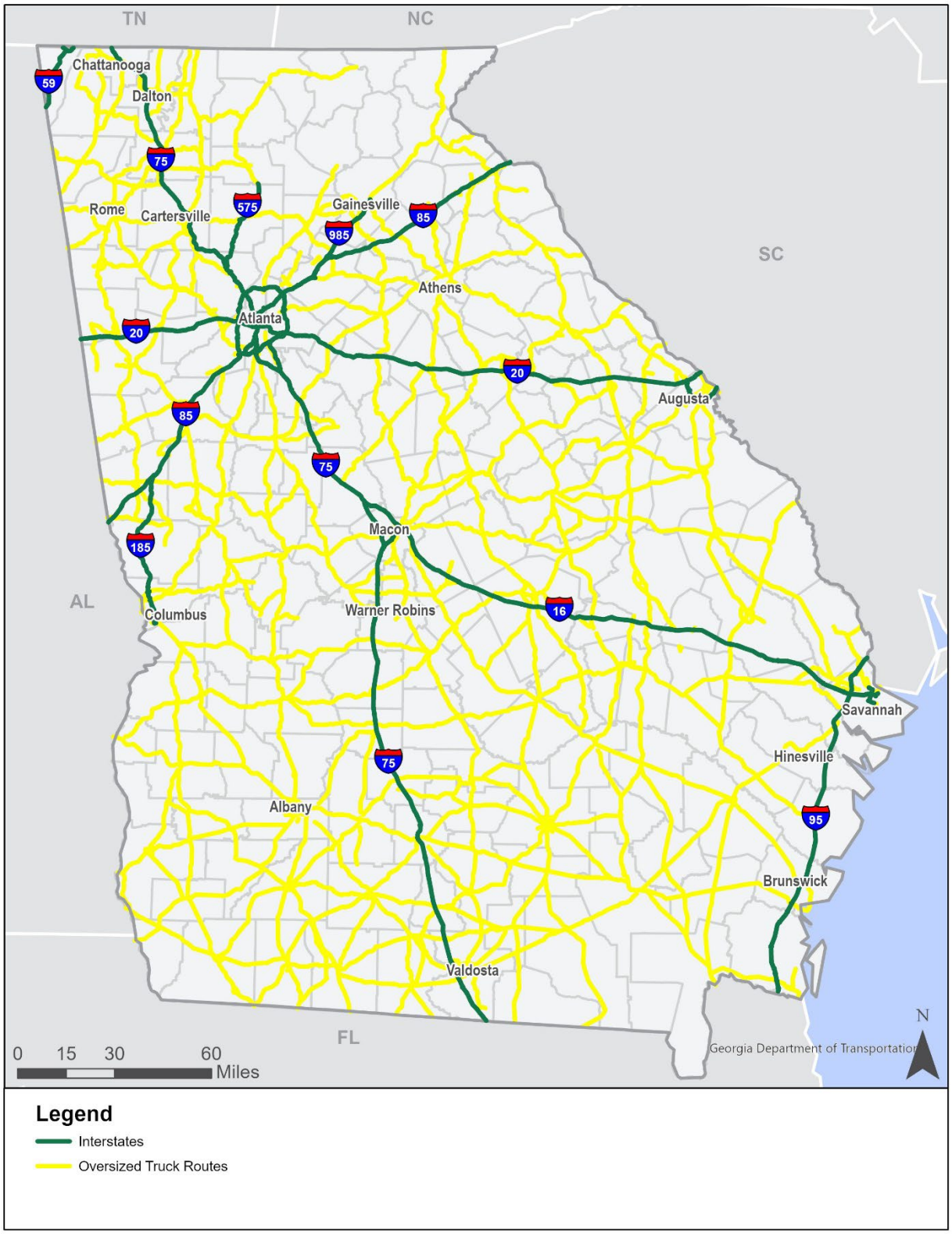
Permits for OSOW shipments are issued for varying time periods. Single use permits allow a one-time transaction for an individual shipment. Annual permits are common for some commodity groups where repeat shipments of the same type are likely. There are other options for validity period of a permit depending on the circumstances.

In addition to the routing considerations, certain shipments have a requirement for escort vehicles. This is determined by the size of the load and the complexity of the travel. The time of day for transport is also determined in the permit process.

Georgia has an automated permitting process, Georgia Pro. The state participated in an FHWA Freight Management and Operations study, Best Practices in Permitting OSOW vehicles. In this report the state indicated that 80 percent of the permit applications were currently managed through the automated system. The Georgia Pro system offers classes, videos and tutorials to educate users on use of the system and the regulatory requirements in the state.

Georgia permits are valid for a 10-day period. Carriers may be unaware If changes in conditions occur within that ten-day period, and this is sometimes a cause of problems with the process.

Figure 50. Georgia Oversize Truck Routes



Source: GDOT

2.6.4. Superloads

The definition of a superload varies by state. It is often related to bridge limits and overhead clearance concerns. In Georgia a superload is defined as loads that are more than 16′ wide, 15′ high, 110′ long and 120,000 lbs. OSOW shippers and carriers may move superloads using rail, but often the dimensions, primarily the width, do not fit the limits for rail transport.

The growth of superloads requiresplanning for current shipments as well as howto accommodate this freight in the future. Water transportation is the most feasible method of moving superloads where there is access. Even when rail and water are available and fit the needs of a superload, trucks often make at least one leg of the trip to origin, destination or linking modes in the route. Infrastructure development projects often create superload situations where large steel beams and preformed concrete structures are required.

Figure 51. Superload Transportation

Source: Freight Insights

2.6.5. Cross Jurisdictional Transport

The Transportation Research Board's National Cooperative Highway Research Program (NCHRP) Report 830: Multi-State, Multimodal, Oversize/Overweight Transportation, completed in 2016, produced a comprehensive study of OSOW conditions and concerns across the country. This research was directed toward issues in moving OSOW shipments across multiple jurisdictions as is often the case moving cargo from one state to or through another.

The degree to which regulations and permit requirements vary by jurisdiction impacts the operational efficiency of a shipment. The differences in regulations between states can be barriers to transportation. The study identified the degree to which those barriers exist along state lines. The map that depicts those barriers is shown in **Figure 52**.

At the time of this study and unchanged since, the restrictions between Georgia and Tennessee and Georgia and North Carolina were minimal while the barriers between Georgia and Florida, Alabama and South Carolina were more restrictive. Improving the ease of transportation throughout the network connecting Georgia to the rest of the country would allow for better operations for the growing OSOW market segments which are important to some of Georgia's most important commodities.