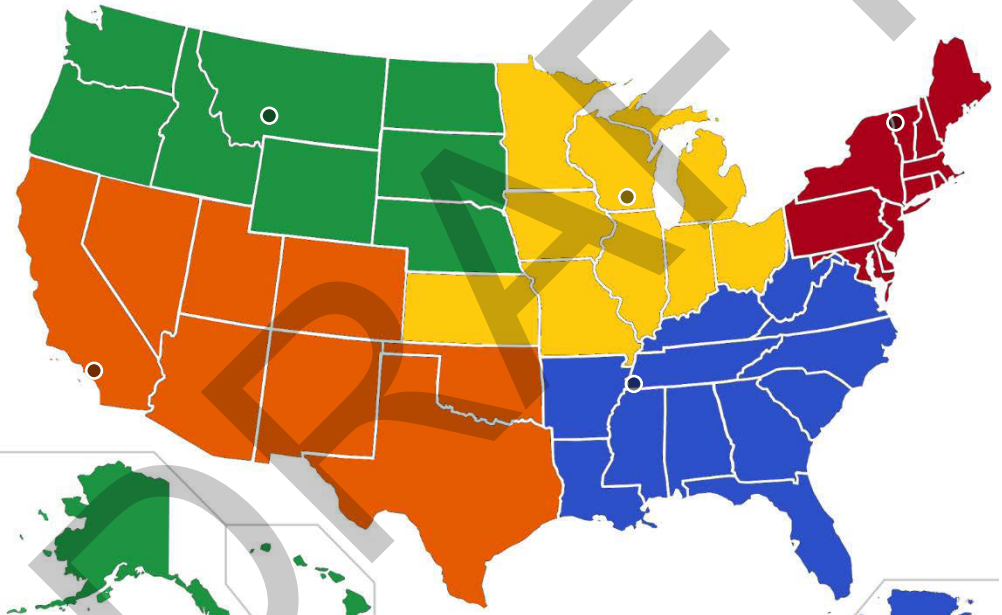
U.S. Department of Transportation
Federal Highway Administration

Southeast Transportation Workforce Center
SETWC
at the University of Memphis

Job Priorities and Needs Report
Phase 1: Southeast Region




Executive Summary of Major Sections

Job Priorities and Needs Report
Phase 1: Southeast Region

Introduction and Overview of the Report

In recent years, there has been increasing focus on attracting and retaining qualified workers into the transportation industry with the recognition that an unprecedented number of transportation professionals would be eligible for retirement due to the aging "Baby Boomer" population (Cronin, Anderson, et al., Strategies to Attract and Retain a Capable Transportation Workforce 2011). Additional workforce challenges include competition from other workforce sectors for skilled labor, increased demand on transportation agencies due to expanding use of the transportation system and aging infrastructure, and the need for training so the transportation workforce has the skills necessary to keep pace with changing technology (Transportation Research Board 2003; Adams and Collura 2012). Rising tuition costs and soaring college debt have also put a strain on the nation's workforce as outlined by President Obama with remarks from the White House on June 9th, 2014. This further underscores the need to ensure US citizens are aware of job opportunities in transportation, and understand education and training pathways that will lead to successful careers. The efforts to recruit and retain a skilled workforce must target points all along the career pipeline, from K-12 to post-employment, including retraining for second careers.

Beyond the potential workforce shortage created by retiring professionals, finding employees with the skillsets necessary to be successful in transportation jobs may be an even greater issue that must be overcome. With the rapid increase of new technologies it is even more important that potential employees are prepared with 21st century skills, and in particular in science, technology, engineering, and math (STEM), as these skillsets are required for the transportation workforce of the future (Adams and Collura 2012). State DOTs are also realizing major shifts in knowledge and skills are needed in historically defined job categories, leading to rightsizing and reorganization challenges.

While the entire transportation industry must address these broad issues, each mode may face specific challenges (such as specialized technology advances) that require unique skillsets. This can create an even greater shortage of qualified workers and the need to develop targeted workforce training programs. Diversity is another problem within the transportation workforce that varies by mode or occupation, particularly with regard to gender. While women account for 47% of the total workforce nationally, they make up only 2-20% of the workforce in specific transportation occupations (State Transportation Statistics 2014). This is important because a diverse workforce is a critical component to supplying the variety of perspectives and skillsets required for successfully solving the transportation challenges of the future.

As a result of these workforce issues, many recommendations have ensued for both recruitment and retention in transportation fields. NCHRP Report 685 highlights the need to get the message about transportation careers to K-12 students as early and as frequently as possible. The report recommends highlighting opportunities available through transportation careers and providing students a better understanding of skill sets required and how they are used in the field (Cronin, Anderson, et al., Strategies to Attract and Retain a Capable Transportation Workforce 2011). In addition, it underscores the importance of providing training for incumbent workers to not only reduce turnover but to also address changing technology and skill requirements to scaffold ladders to success.

The above described transportation workforce challenges exist across the nation as a whole, and experiences in the Southeast Region of the United States are no different in that these same challenges are experienced when working to develop a high-quality transportation workforce. This report focuses on

issues related specifically to the Southeast Region in terms of the workforce. It provides an overview of the transportation industry in the Southeast and specific workforce needs within the region. It also details information on the key types of transportation occupations available in the region currently as well as job projections for the next seven years. Based on these findings, skills required for key occupations are identified, including noting skills that need additional training/development based on the experiences of transportation stakeholders within the region.

Methodology

The methodology for developing this report includes several key phases, which are described below.

Background Review. The initial phase of this project involved thorough review of existing data and published reports related to the transportation industry and workforce. This review included state and federal agency data and reports (i.e. data and reports from U. S. Department of Transportation, Federal Highway Administration, US Department of Labor, state Departments of Transportation, and state Departments of Economic and Community Development), modal publications and datasets, and published literature and reports pertaining to specific demographics, transportation workforce challenges, and workforce trends. In addition, regional and national-level review of current job postings (both for frequency and skillset requirements) was conducted to supplement findings and aid in the analysis of regional priorities.

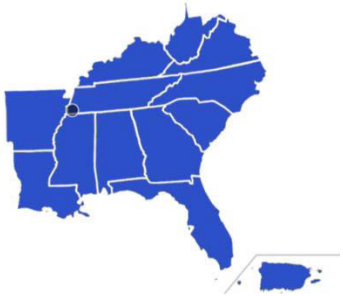
Engage Stakeholders. Transportation industry stakeholders (public sector, private sector, and education) are a critical component to producing valid workforce projections and identifying priority occupations for our region. As such, numerous stakeholder meetings and interviews were conducted from January – October 2015 to obtain input regarding regional transportation workforce challenges and expected growth in specific job categories. A formal review period for the draft Southeast Job Needs and Priorities Report will also be conducted from November – January 2015. During this time, transportation leaders in the southeast will be invited to provide commentary and further refine the resulting final report.

Estimating regional workforce demand for occupations. Data collected in the background review and insight obtained from transportation industry stakeholders was integrated to generate and analyze historic, current, and future occupational estimates for all priority transportation occupations identified. Supplementing occupational demand information available from existing datasets with input from regional stakeholders allows development of a more accurate regional picture of job needs and priorities.

The following sections provide an overview of our research and modes under study. While the focus of this report is on surface transportation, and thus the categories discussed are geared to this, it is noted that air transportation is a significant driver of job needs in the Southeast Region. A specific modal description for air transportation is outside of the purview of this report, however; it is noted within the state-level descriptions contained within this report where air transportation industry is a dominant employment sector.

Description of Industry in Southeast Region and Major Drivers of Transportation Needs

The Southeast Transportation Workforce Center's region includes twelve states and Puerto Rico. This covers 570,432 square miles of land, or 15% of the United States (which is approximately 3.8 million square miles, in total). In contrast, it contains 26.6% of the US population (U.S. Census Bureau 2014). Within these thirteen areas, the landscape of the transportation industry varies substantially. The size of each area within the Southeast Region varies from 3,515 square miles (the Commonwealth



of Puerto Rico) to 65,755 square miles (the State of Florida). It contains 4 of the top 25 US cities in terms of population (Jacksonville, Charlotte, Memphis and Nashville). Table 1 provides an overview of the states included in the Southeast Region, with information regarding population, land area, and transportation infrastructure.

Table 1: Overview of Population and Transportation Information by State/Commonwealth for the Southeast Region
(U.S. Census Bureau 2014; State Transportation Statistics 2014)

State/Commonwealth	Population	Area Miles	Public Road Miles	Commuters using Public Transit	Freight Railroad Miles	Inland Waterway Miles
Alabama	4,849,000	52,419	101,811	0.40%	3,255	1,270
Arkansas	2,966,000	53,179	100,123	0.50%	2,698	1,860
Florida	19,890,000	65,755	121,829	2.20%	2,902	1,540
Georgia	10,100,000	59,425	125,523	2.00%	4,666	720
Kentucky	4,413,000	40,409	79,321	1.00%	2,562	1,590
Louisiana	4,650,000	52,271	61,326	1.20%	2,912	2,820
Mississippi	2,994,000	48,434	75,181	0.40%	2,432	870
North Carolina	9,944,000	53,819	106,063	1.10%	3,245	1,150
Puerto Rico	3,548,000	3,515	16,691	N/A	N/A	N/A
South Carolina	4,832,000	32,020	66,244	0.50%	2,292	480
Tennessee	6,549,000	42,181	95,523	0.80%	2,651	950
Virginia	8,326,000	42,775	74,592	4.40%	3,214	670
West Virginia	1,850,000	24,230	38,684	0.70%	2,213	680

NOTES: N/A denotes no given data

The total transportation expenditures by state and local governments in the Southeast Region exceed 47 billion dollars per year, as shown in Table 2 (U.S. Census Bureau 2014) (State Transportation Statistics 2014). This makes up approximately 19.5% of the 241 billion spent by state and local governments within the United States. The Southeast Region contributes 22.10% of funds in the United States for highways, 5.58% of total funds for transit, 24.70% of total funds for air transportation, and 33.81% of total funds for water transportation.

Table 2: Budget by State and Mode (in Millions of Dollars)
(U.S. Census Bureau 2014) (State Transportation Statistics 2014)

	Total	Highway	Transit	Air	Water
Alabama	$2,578	$2,211	$67	$188	$112
Arkansas	$1,542	$1,384	$38	$112	$7
Florida	$12,786	$8,350	$1,708	$2,237	$491
Georgia	$4,776	$2,913	$701	$949	$213
Kentucky	$2,560	$2,280	$136	$136	$8
Louisiana	$3,799	$3,021	$214	$266	$298
Mississippi	$1,866	$1,685	$18	$114	$49
North Carolina	$4,798	$3,861	$475	$431	$31
Puerto Rico	N/A	N/A	N/A	N/A	N/A
South Carolina	$1,907	$1,548	$88	$140	$130
Tennessee	$3,175	$2,393	$247	$531	$3

Virginia	$5,872	$3,695	$552	$1,273	$353
West Virginia	$1,422	$1,315	$49	$57	$1
Total	**$47,081**	**$34,656**	**$4,293**	**$6,434**	**$1,696**

NOTES: N/A denotes no given data

Transportation systems across the Southeast Region are multimodal, with many different types of occupations that individuals can fill. For example, Tennessee is home to the world's second-busiest cargo airport and its infrastructure and strategic geographic position has helped create a burgeoning logistics industry which employs over 250,000 individuals and is slated to increase by 12 percent in the next decade. Furthermore, the state ranks first in the Southeast and sixth in the country for truck transportation employment. Tennessee is also home to some of the largest and busiest inland ports in the US. Adding to this, Memphis is one of only four US cities served by five or more of the nation's seven long-haul Class I rail systems (Norfolk Southern, BNSF, Union Pacific / Southern Pacific, CSX and Canadian National) (Tennessee Department of Economic & Community Development 2014).

In a different vein, Louisiana is home to five of the fifteen largest ports in the United States that carried 449 million tons of waterborne commerce, accounting for 20% of all waterborne commerce in the United States (Waterborne Commerce of the United States 2010). Furthermore, transportation workers are needed by public and private employers to operate and maintain 13,050 bridges and 61,326 miles of roadway of which 1,827 bridges are structurally deficient and 4.07% of roads are in poor condition, more than double the national average (Louisiana Department of Transportation 2015). As can be seen in these two states, there are many differing needs for the transportation industry workforce. The requirements for various jobs will differ; however, key skills that require training and development will likely overlap across these various occupations.

The Southeast is home to the busiest airports in the US both in terms of total passenger boardings, Hartsfield-Jackson Atlanta International Airport, and total cargo throughput, Memphis International Airport. Memphis is also the second-busiest cargo airport in the world behind Hong Kong. The Louisville International Airport and Miami International Airport are both listed in the top ten largest airports in regards to total cargo throughput at 3rd and 5th, respectively (Federal Aviation Administration 2015). Given the high level of cargo moving through these airports, air freight is a significant contributor to transportation employment in the Southeast.

Out of the twelve states that are found within the Southeast Region, eight have coastlines, plus the island nation of Puerto Rico. The US has a total of 94,122 miles of coastline with the Southeast Region making up 25,658 miles of the total not including Puerto Rico. Puerto Rico itself has 311 miles of coastline.

Determining major employers within the transportation industry is a difficult task as many large companies with focuses other than transportation have large transportation workforces and needs that may not be easily seen at the surface level. Companies such as International Paper, whose main focus is pulp and paper, employ a variety of individuals within transportation related fields including warehousing, distribution, and logistics. Key transportation industries, major transportation employers, and employers with large transportation related workforces are discussed in the following section for each state.

State by State Descriptions of the Southeast Region

Alabama

Leading transportation-related industries in Alabama include aerospace, automotive, distribution (freight and warehousing), and ship manufacturing (Alabama Department of Labor 2015). Major employers in Alabama include Honda, Hyundai, Mercedes-Benz, and Maxwell Airforce Base, as well as, six trucking

companies including Hanna Truck Line, Schneider, Wiley Sanders Truck Lines, Evergreen Transport, Western Express, and Dorsey Trailers (America's Career InfoNet 2015). Alabama's transportation infrastructure includes 90 public airports, over 4,000 acres of port including the 9th largest port in the US (Port of Mobile), 3,000 miles of rail, and over 74,000 miles of public roadways including six major interstate highways.

Arkansas

Arkansas' transportation-related industry base includes aerospace, distribution and logistics, and transportation equipment manufacturing (Arkansas Economic Development Commission 2015). Major employers in Arkansas include Union Pacific Railroad, Walmart (operating the largest private trucking fleet in the US), J. B. Hunt Transport Services, Inc., United Parcel Service, Inc., USA Truck, Inc., the Arkansas State Highway and Transportation Department, and BNSF, which operates its headquarters out of Arkansas (America's Career InfoNet 2015). Over 85,000 Arkansans are employed in the distribution and logistics industry. Arkansas has three ports along the Arkansas River and four Mississippi River terminals, three major highways (I-40, I-55, and I-30), three Class I rail systems, and two major international and six regional airports (Arkansas Economic Development Commission 2015).

Georgia

Georgia's key industries include aerospace and logistics and transportation (Industries in Georgia 2015). Major employers in Georgia include Fort Benning, Fort Stewart, Robins Air Force Base, Lockheed Martin Corp, Air Service Corp, Coca-Cola, Home Depot, and Gulfstream Aerospace Corporation (America's Career Center 2015). In addition, Delta Air Lines is headquartered and has its largest hub in Atlanta and is the world's largest airline in terms of scheduled passengers carried. Georgia boasts significant transportation infrastructure, including the world's busiest passenger airport (Hartsfield-Jackson Atlanta International Airport) with 14 cargo-only carriers and access within two hours to 80% of the US market, the fourth-largest US container port (Port of Savannah), the nation's busiest seaport for automobile imports (Port of Brunswick), two Class I railroads and the largest intermodal hub in the southeast, and six major interstates (Infrastructure in Georgia 2015).

Florida

Florida has major logistics and distribution and aerospace and aviation industry sectors (Florida Department of Economic Opportunity 2015). The state has nearly 80,000 workers employed in the aerospace and aviation industry with more than 2,000 related companies, 12 major aviation-related military installations, and over 50,000 active military (Enterprise Florida 2015). Home to the second largest foreign trade zone in the country, Florida is the largest exporter by air in the U. S., has the 3rd largest cluster of distribution and logistics companies, and the 5th highest number of distribution and logistics jobs in the country. Major employers include American Airlines, the Florida Department of Transportation, HSN, and the US Post Office. In addition, Ryder Systems, Inc., Landstar Systems, Inc., CEVA Logistics US, Inc., and CSX Corporation are headquartered in Florida and Boeing, Embraer, General Dynamics, Lockheed Martin, Airbus, FedEx, and UPS are large employers for the state. Florida has the top-ranked transportation infrastructure in the US with 19 commercial airports, 15 deepwater seaports, two Class I railroads, and four major US highways (Enterprise Florida 2015).

Kentucky

Kentucky's transportation industry base is centered in the automotive and logistics sectors with more than 275 tons of freight per week moving along Kentucky roadways. Kentucky boasts two global shipping hubs with UPS and DHL. Other major employers in Kentucky include Cincinnati/Northern Kentucky International Airport, Toyota, Ford, and GE. Kentucky has ten interstate highways, five commercial airports, the nation's largest inland port, and three Class I railroads (Kentucky Center for Economic Development 2015).

Louisiana
Louisiana's key transportation industry base includes both automotive and aerospace. Major employers include Ingalls Shipbuilding, the US Post Office, Barksdale Air Force Base, Lockheed Martin, Naval Air Station in Belle Chasse, NASA, and Navistar (InfoNet 2015). Louisiana has 6 interstate highways, 6 Class I railroads (one of only two states in the US where all six Class I railroads converge, six deepwater ports, and seven primary airports (Louisiana Economic Development 2015).

Mississippi
Mississippi's transportation-related industries include automotive, shipbuilding, and aerospace. Over 23,000 workers are employed in shipbuilding related jobs. Huntington Ingalls is the state's largest private employer, and has produced 70% of the warships for the US Navy at its location in Pascagoula (Mississippi Development Authority 2015). Other major employers in Mississippi with transportation workers include Keesler Air Force Base, Toyota, US Army Corps of Engineers, and Gulfport Naval Cbc (America's Career InfoNet 2015). Specific transportation industry employers include GE Aviation, Airbus Helicopters, Lockheed Martin, US Marine, VT Halter Marine, Signet Maritime, and Signal International. Additionally, Aurora Flight Sciences, Northrop Grumman, and Start Aerospace manufacture unmanned aerial systems in Mississippi. Mississippi's transportation infrastructure includes six interstates, five Class 1 railroads, 15 ports (two deepwater), and seven commercial airports (including two international airports) (Mississippi Development Authority 2015).

North Carolina
North Carolina's transportation-related industry base includes aerospace, aviation, automotive, trucking and heavy equipment companies. It is ranked 10th among all states in total automotive cluster employment (Economic Development Partnership of North Carolina 2015). Major employers in North Carolina include Mack Trucks, Volvo Trucks North America, First Flight Solutions, Transportation Impact, LoadMatch Logistics, All State Express, Jetpool, and Transportation Insight (America's Career InfoNet 2015). More than 180 aerospace companies are located within the borders of North Carolina and employee over 9,500 people. Adding to that, there are 160 companies within the automotive, truck, and heavy equipment industries located within North Carolina, which account for more than 17,000 jobs. North Carolina boasts the second largest ferry system in the nation and the largest on the East Coast, with 22 ferries on seven different routes. The NCDOT maintains over seven major highways (I-26, I-40, I-73, I-74, I-77, I-85, and I-985), two Class I railroads and 19 short lines, and nine airports with regularly schedule commercial flights, two of which offer international service (North Carolina Department of Transportation 2015).

Puerto Rico
Puerto Rico's transportation-related industry base includes aerospace, maritime, and export services (Puerto Rico Industrial Development Company 2015). Major employers in Puerto Rico include Walmart, Honeywell Aerospace, and Pepsi Cola (America's Career InfoNet 2015). Other transportation-related employers include Lockheed Martin, Pratt & Whitney, and Hamilton Sunstrand. Puerto Rico has nine maritime ports along its coastline and is a hub for transshipment between the Americas and Europe. The Port of San Juan is ranked 9th in container movement in the US. Puerto Rico has over 24,000 miles of highway and 11 airports (three of which are international) (Puerto Rico Industrial Development Company 2015).

South Carolina
South Carolina has significant employment in transportation through the maritime and distribution and logistics (South Carolina Department of Commerce 2015)) sectors. Major employers in South Carolina include Southeastern Freight Lines, Inc., CoLinx, LLC, Eagle Construction Company, Continental Tire North America, Shaw Airforce Base, JEAR logistics, WDS, and Artisan Logistics (America's Career

InfoNet 2015). South Carolina has three ports along the Atlantics Coast and maintains the 34th largest port in the US in terms of cargo volume and 8th in the US by value of foreign trade, five major highways (I-20, I-26, I-77, and I-85, and I-95), two Class I rail systems, and six commercial airports (South Carolina Department of Commerce 2015).

Tennessee

Tennessee's transportation-related industry base includes aerospace and defense, automotive, and transportation, distribution, and logistics. Major transportation employers in Tennessee include FedEx, Gulf Stream Aircraft, Pilot Travel Centers, Autozone, International Paper, US Xpress Enterprises, Averitt Express, Ozburn-Hessey Logistics LLC, Covenant Transport Inc., Kenco Logistics Service, The H.T. Hacnkey Co., Western Express Inc., Ingram Marine Management Co., Versant Supply Chain Inc., Landair, Ozark Motor Lines, Big G Express, Titan Transfer, and Arnold Engineering Development Center (Tennessee Department of Economic & Community Development 2014; America's Career InfoNet 2015). Ranked 10th in the country in regards to warehousing and storage employment, Tennessee has over 250,000 thousand jobs in the transportation and material moving industry. Tennessee has four inland ports located along the Mississippi, Tennessee, and Cumberland Rivers, eight major highways (I-24, I-26, I-40, I-55, I-65, I-75, and I-81), six Class I rail systems and 18 short line railroads, and six commercial airports along with the largest freight airport in the United States located in Memphis, TN (Tennessee Department of Economic & Community Development 2014).

Virginia

Virginia has a broad transportation industry employment base with workers needed in aerospace, automotive, shipbuilding, and distribution and logistics (Virginia Economoic Development Partnership 2015). Major employers in Virginia include Estes Forwarding Worldwide, Huntington Ingalls Industries, Newport News shipbuilding, and Exxon Mobile (America's Career InfoNet 2015). The aerospace industry employs over 30,500 workers within Virginia. To add to that, 16,000 workers are employed by the automotive industry and over 69,000 workers are employed by the distribution industry. Virginia has ten ports along the coast and within its inland waterways including the nation's 6th largest port in terms of cargo volume, six major highways (I-95, I-85, I-81, I-77, I-66, and I-64), two Class I rail systems, and 14 commercial airports (Virginia Economic Development Partnership 2015).

West Virginia

West Virginia's transportation-related jobs are largely comprised of aerospace, automotive, and distribution and logistics occupations. Major employers in West Virginia include Pratt and Whitney, Lockheed Martin, Goodrich Corporation, Bombardier Aerospace, Alliant Techsystems, FCX Systems, FMW Composite Systems, Aurora Flight Sciences, Toyota, Diamond Electric, NGK Spark Plugs, Sogefi, and Okuno (West Virginia Department of Commerce 2015). West Virginia boasts six major highways (I-64, I-77, I-79, I-68, I-70, and I-81), two Class I rail systems, and five primary commercial service airports and two non-primary commercial service airports (Freight Rail Works 2015; West Virginia Department of Transportation 2015).

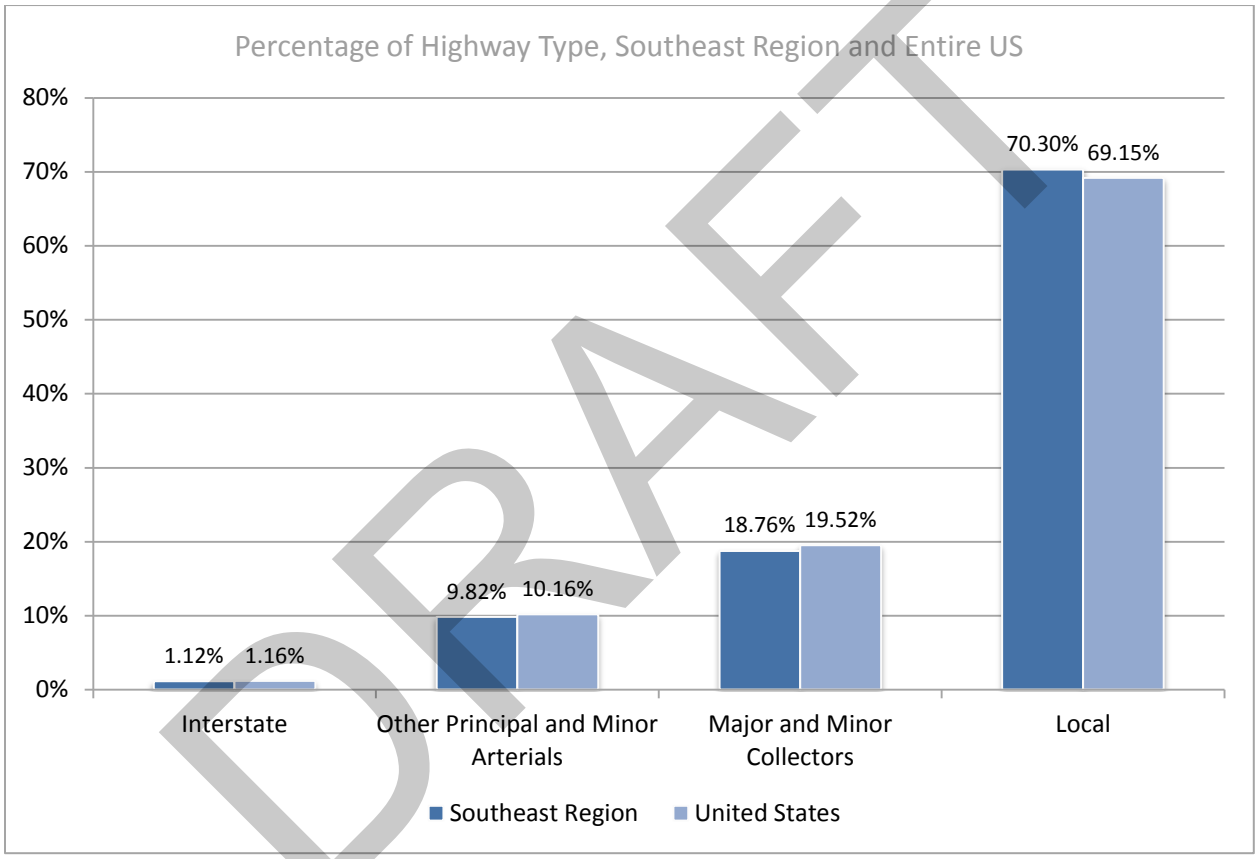
In the remainder of this section, each of major surface mode of transportation in the Southeast Region will be described in additional detail.

Mode by Mode Descriptions of the Southeast Region

Highways

The national highway system is a network of highways within the United States, including the Interstate Highway System, other freeways and expressways, arterial highways, collector highways, and local

highways. Many of these roads, in addition to streamlining the transportation of people, also enable other forms of transportation, serving airports, rail or truck terminals, railway stations, and ports. The United States (including Puerto Rico) contains the largest highway system in the world, covering over 4.11 million miles (U.S. Census Bureau 2014; American Road & Transportation Builders Association 2015). The Southeast Region only encompasses 3.8 million square miles, 14.99% of the US area, but has approximately 1,046,220 miles of highway or roughly 25.46% of all the highways in the US. This includes 11,680 miles of interstate highways, 24.48% of the interstate highway mileage in the country. This high amount of highway and interstate mileage poses important challenges in regards to maintenance, workforce planning, and staffing as the Southeast is home to some of the largest freight and logistics companies in the country.



There are a total of 170,546 bridges contained within the Southeast Region. This represents 28.2% of the 605,471 bridges in the United States. Of the bridges in the region, 15,672 are structurally deficient and 25,966 are functionally obsolete. This comprises 24.7% of structurally deficient bridges and 31.1% of functionally obsolete bridges nationwide (State Transportation Statistics 2014). The high percentage of total bridges, as well as the increased totals of deficient and obsolete bridges, indicate that the Southeast Region will likely encounter a high demand for bridge work, requiring workers who are familiar with traditional, as well as newer forms of bridge construction and maintenance. Table 3 provides an overview of bridges and their conditions within the Southeast region.

Table 3: Bridge Totals and Condition in the Southeast Region (State Transportation Statistics 2014)			
	All Bridges	**Structurally Deficient**	**Functionally Obsolete**
Alabama	16,078	1,405 (8.74%)	2,203 (13.70%)
Arkansas	12,748	880 (6.90%)	2,014 (15.80%)
Florida	12,070	259 (2.15%)	1,785 (14.79%)
Georgia	14,769	835 (5.65%)	1,765 (11.95%)
Kentucky	14,116	1,234 (8.74%)	3,202 (22.68%)
Louisiana	13,050	1,827 (140%)	1,963 (15.04%)
Mississippi	17,044	2,274 (13.34%)	1,362 (7.99%)
North Carolina	18,168	2,308 (12.70%)	3,226 (17.76%)
Puerto Rico	2,280	315 (13.82%)	957 (41.97%)
South Carolina	9,275	1,048 (11.30%)	872 (9.40%)
Tennessee	20,058	1,157 (5.77%)	2,645 (13.19%)
Virginia	13,765	1,186 (8.62%)	2,402 (17.45%)
West Virginia	7,125	944 (13.25%)	1,570 (22.04%)

Transit

Public transit encompasses city buses, trolleys, trams or light rail, rapid transit, passenger trains, and ferries. Because bus systems operate on normal roads, they require less infrastructure. Buses and bus systems are often used in smaller cities and towns, and are also used to supplement other means of transit in large cities. Trains, particularly rapid transit systems, provide the ability to move a high capacity of individuals over short or long distances, but since they have full grade separation from other traffic, require additional infrastructure (including the building and maintenance of track, signaling, and stations). Light rail systems are not fully separated from traffic, operating typically at street or curb level on existing streets, and are often integrated into rapid transit systems. Table 4 describes the total use of transit in the Southeast as a whole, which makes up a very small percentage of passenger movement compared to the rest of the United States. The national average is 5.00% with every state in the Southeast below that average. Key factors regarding the Southeast's low levels of transit use should be looked at closely in order to better understand the region's current and future job needs.

Table 4: Commuter Use of Public Transit (U.S. Census Bureau 2014; State Transportation Statistics 2014)		
State/Commonwealth	**Population**	**Commuters using Public Transit**
Alabama	4,849,000	0.40%
Arkansas	2,966,000	0.50%
Florida	19,890,000	2.20%
Georgia	10,100,000	2.00%
Kentucky	4,413,000	1.00%
Louisiana	4,650,000	1.20%
Mississippi	2,994,000	0.40%
North Carolina	9,944,000	1.10%
Puerto Rico	3,548,000	N/A
South Carolina	4,832,000	0.50%
Tennessee	6,549,000	0.80%
Virginia	8,326,000	4.40%
West Virginia	1,850,000	0.70%
United States	**313,914,040**	**5.00%**

Notes: N/A indicates no available data.

Transit in the Southeast is heavily dominated by bus, with 83% or more of public transit commuters choosing to travel by bus in nine out of twelve states (no statistics are available for Puerto Rico). There are many reasons for this, the most apparent being an automobile dominated market and little to no use of heavy rail as a means of passenger transport throughout much of the region. In fact, the only state with any prominent heavy rail usage is Georgia with 43.70% of public transit commuters. Moreover, light rail

is only used in six out of twelve states and within that tops out at only 17.90% of public transit users in Louisiana, as shown in Table 5.

Table 5: Public Transit Commuters, by Mode, in the Southeast Region
(State Transportation Statistics 2014)

	Bus	Heavy Rail	Light Rail	Commuter Rail	Other
Alabama	83.30%	0.00%	0.00%	0.00%	16.70%
Arkansas	95.40%	0.00%	1.80%	0.00%	2.80%
Florida	85.00%	6.70%	0.10%	1.40%	6.70%
Georgia	54.60%	43.70%	0.00%	0.00%	1.70%
Kentucky	96.70%	0.00%	0.00%	0.00%	3.30%
Louisiana	72.50%	0.00%	17.90%	0.00%	9.60%
Mississippi	85.20%	0.00%	0.00%	0.00%	14.80%
North Carolina	88.40%	0.00%	6.80%	0.00%	2.20%
Puerto Rico	N/A	N/A	N/A	N/A	N/A
South Carolina	93.90%	0.00%	0.00%	0.00%	6.10%
Tennessee	88.30%	0.00%	4.60%	0.90%	6.20%
Virginia	88.90%	0.00%	1.80%	6.30%	3.00%
West Virginia	70.80%	0.00%	0.00%	0.00%	29.20%

Notes: N/A indicates no available data.

Ferries are boats or ships used to carry either passengers or vehicles across bodies of water. Located in waterside cities, ferries carried over 100 million passengers within the United States in 2009. The Southeast accounted for 20 million passengers or 20% of the total passengers in the country. The majority of these trips take place within coastal states such as Florida, Louisiana, Virginia, North Carolina, and South Carolina. Table 6 provides total numbers of passengers and vehicles carried by ferry within the Southeast region.

Table 6: Passenger and Vehicles Carried by Ferry in the Southeast Region
(Highlights of Ferry Operators in the United States 2014)

	Passengers Carried	Vehicles Carried	Route Miles
Alabama	760,941	217,403	4.6
Arkansas	346,746	16,292	0.8
Florida	1,959,079	108,821	352.9
Georgia	918,596	0	40
Kentucky	1,155,784	485,113	3.2
Louisiana	7,013,117	4,596,278	18.1
Mississippi	N/A	N/A	N/A
North Carolina	2,017,789	367,412	54.1
Puerto Rico	N/A	N/A	N/A
South Carolina	1,372,229	32	22
Tennessee	59,480	69,539	1
Virginia	4,561,189	1,976,175	9.8
West Virginia	N/A	N/A	N/A
Total	**20164950**	**7837065**	**506.5**

Notes: N/A indicates no available data.

Increasingly new services are emerging to offer more "just-in-time" and flexible transport operations, such as Uber, Lyft, and Bridj. In addition, add-on connector services such as CarShare, ZipCar, and Bikeshare programs are connecting to transit operations. These services have the potential to transform, or potentially disrupt, current transit operations, especially in urban areas, as well as the workforce needed to ensure transit systems are successful. For example, rideshare programs can be a compliment to public transit in that they can help to close gaps in service and serve difficult to reach areas (Transit Cooperative Research Program 2012; Highlights of Ferry Operators in the United States 2014). However, car share services could also decrease transit usage (Martin and Shaheen 2011).

Rail

Freight rail transportation is used to transport cargo. The United States is connected by an extensive, unified standard gauge rail network that also connects to Canada and Mexico. Most trackage is owned by private companies that also operate trains on those tracks. Freight trains are typically hauled by diesel locomotives. There are four different types of freight railroad: Class I, regional, local line hail, and switching & terminal. As of 2012, rail moved more than 10% of the United States' freight (Freight Facts and Figures 2013)

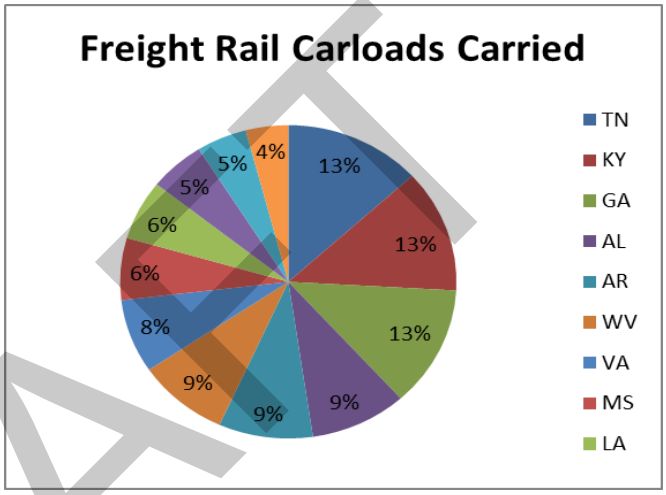


Table 7: Freight Rail Characteristics in the Southeast Region
(American Road & Transportation Builders Association 2015)

State/Commonwealth	Number of Freight Railroads	Track Mileage
Alabama	24	3,255
Arkansas	25	2,698
Florida	14	2,902
Georgia	23	4,666
Kentucky	13	2,562
Louisiana	17	2,912
Mississippi	27	2,432
North Carolina	22	3,245
Puerto Rico	N/A	N/A
South Carolina	14	2,292
Tennessee	25	2,651
Virginia	9	3,214
West Virginia	9	2,213
United States		**140,000**

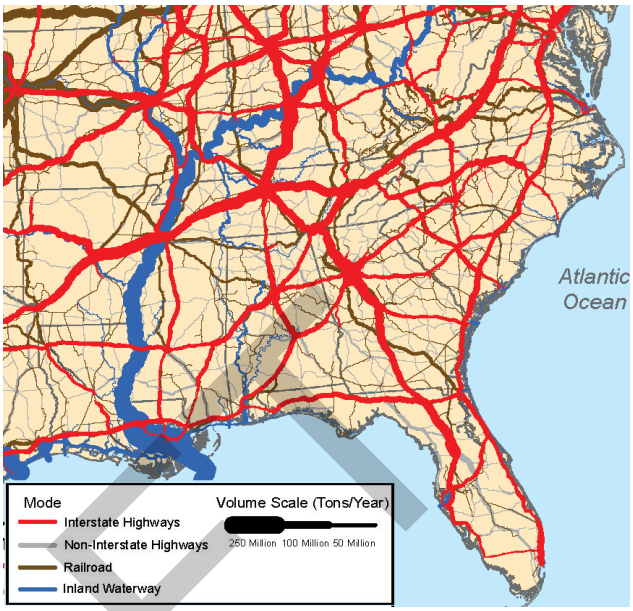
Notes: N/A indicates no available data.

All of the states within the Southeast Region include freight rail operations. In fact, the region contains more than 25% of the 140,000 miles of track in the United States, indicating this mode is of greater importance and accounts for more freight operations than in other parts of the country. Table 7 outlines the number of freight railroads and track mileage by state for the Southeast Region.

Kentucky and West Virginia lead the region in the percent of total freight value shipped via rail, with more than 10% of freight in these states using this mode. Intermodal operations including rail account for a 6-14% of total freight value shipped by state region wide.

Motor

Trucking transports large quantities of raw materials, works in progress, and finished goods over land, typically from manufacturing plants to distribution centers. The motor mode focuses on this transport and includes freight. Large trucks require a commercial driver's license (CDL) to operate. Obtaining a CDL requires extra education and training dealing with the special knowledge requirements and handling characteristics of such a large vehicle.



The shipping industry (which does not include the USPS in this definition) also influences motor transportation: FedEx Freight is the top less than truckload (LTL) carrier, and UPS Freight is fourth LTL in the country (Logistics Management 2012). LTLs carry small freight such as packages, rather than shipments that require a full semi-trailer. An increased dependence on e-commerce has driven consistent increases in the usage of the shipping industry, including ground shipping, within the United States (FedEx 2014). This increased usage occurs across the US, but a large focus can be seen within the Southeast Region as it contains the headquarters and global hubs of two of the largest shipping companies in the world, FedEx and UPS.

Trucking is the dominant mode for shipment of freight in the Southeast Region. The extensive interstate system contained within these states and the intersection of significant rail, port, and air terminals in the region leads to a large component of multimodal shipments in the region as well. Table 8 provides the percentage of total freight shipment value moved by truck in the region by state (American Road & Transportation Builders Association 2015).

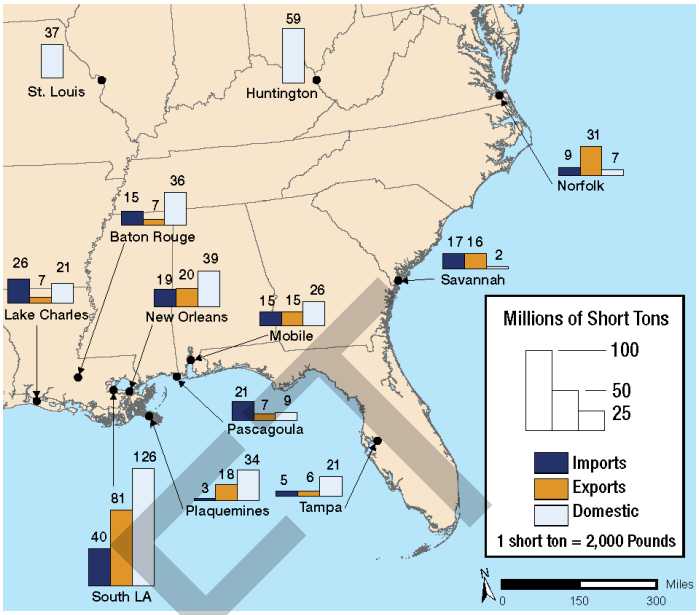
Table 8: Percentage of Total Value of Freight Shipments
(American Road & Transportation Builders Association 2015)

State/Commonwealth	% Trucking	% Multimodal & Mail
Alabama	79	12
Arkansas	81	8
Florida	82	12
Georgia	85	9
Kentucky	73	6
Louisiana	36	9
Mississippi	78	6
North Carolina	88	8
Puerto Rico	N/A	N/A
South Carolina	85	10
Tennessee	77	15
Virginia	81	13
West Virginia	67	14

Notes: N/A indicates no available data.

Marine

Maritime transportation is used for moving both passengers (ferry) and cargo (freight), though maritime transportation for passengers has decreased due to an increase in timely and economic alternatives. Water transportation can be over any distance, by boat, sailboat, ship or barge, through canals, along rivers, or across lakes and oceans. The US Department of Transportation Maritime Administration maintains 21 Marine Highway routes, many of which go through or are adjacent to areas covered by the Southeast Region. This is due to the Southeast's large amount of coastline. These marine highways serve as extensions of the surface transportation system, and follow established navigable waterways and shipping lanes. They are commercially navigable coastal, inland, and intracoastal waters of the United States or connections between US ports on those waterways, described in terms of the specific landside transportation routes (road or rail line) that they supplement or connect.



As shown in Table 9, the top 25 water ports by tonnage handle more than two-thirds of the weight of all foreign and domestic goods moved by water. Of the 25 ports, 11 are located in the Southeast Region, primarily within Louisiana and Florida. The Southeast moves over 1 billion short tons of freight through its ports, accounting for approximately 39% of the total national cargo volume (American Road & Transportation Builders Association 2015).

Table 9: Cargo volume at US ports 2013, short tons, 000s
(American Association of Port Authorities 2013)

RANK	PORT/STATE	TONS
1	South Louisiana, LA[1]	238,586
2	Houston, TX	229,247
3	New York/New Jersey	123,323
4	Beaumont, TX	94,404
5	Long Beach, CA	84,493
6	Hampton Roads, VA[1]	78,664
7	New Orleans, LA[1]	77,159
8	Corpus Christi, TX	76,158
9	Baton Rouge, LA[1]	63,875
10	Los Angeles, CA	57,929
11	Plaquemines, LA[1]	56,876
12	Lake Charles, LA[1]	56,577
13	Mobile, AL[1]	53,993
14	Texas City, TX	49,674
15	Huntington – Tristate, WV[1]	46,831
16	Baltimore, MD	36,579
17	Duluth-Superior, MN and WI	36,477

18	Port Arthur, TX	34,699
19	St. Louis, MO and IL	33,575
20	Pittsburgh, PA	32,746
21	Pascagoula, MS[1]	32,428
22	Tampa, FL[1]	32,407
23	Savannah, GA[1]	31,990
24	Valdez, AK	28,166
25	Philadelphia, PA	26,046

Notes: [1]Indicates Southeast Region state

Non-Motorized

Non-motorized transportation includes both pedestrian and bicycles. While the majority of short trips are still conducted using motorized vehicles (American Public Transportation Association 2014), trends illustrate that non-motorized transportation is increasing, and is likely to continue increasing over time (Davis, Dutzik and Baxandall 2012). The introduction of programs like bike sharing, where a fleet of public-accessible short-term bike rentals are located at multiple stations are increasing this (Ting, Chao and Erdoğan 2015). As of 2015, there were 20 bike sharing programs, offering 5,763 bicycles and over 570 stations within the Southeast Region (Pedestrian and Bicycle Information Center 2015). Table 10 gives a breakdown of bikes and stations within the region.

Table 10: Bike Share Programs in Southeast Region
(Pedestrian and Bicycle Information Center 2015)

Name	City/Institution	State	Open Year	Bikes	Stations
Atlanta Bike Share	Atlanta	GA	2015	500	
Broward B-cycle	Broward County	FL	2011	275	26
Charlotte B-cycle	Charlotte	NC	2012	200	20
Bike Chattanooga	Chattanooga	TN	2012	300	30
Greenville B-cycle	Greenville	SC	2013	35	8
Louisville B-cycle	Louisville	KY	2011	15	3
DecoBike Miami Beach	Bay Harbor Island	FL	2011	1,000	100
ValloCycle	Montevallo	AL	2012	52	3
Nashville B-cycle	Nashville	TN	2014	200	20
CAT Bike	Savannah	GA	2014		2
Spartanburg B-cycle	Spartanburg	SC	2011	28	4
Coast Bike Share	Tampa	FL	2015	300	
Capital Bikeshare	Alexandria	VA	2010	2,500	337
Bike Emory: Emory University	Atlanta	GA	2007		1
ViaCyclce: Georgia Tech University	Atlanta	GA	2011	35	5
Tar Heel Bikes: University of North Carolina at Cha	Chapel Hill	NC	2012	30	4
University of Virginia	Charlottesville	VA	2015	120	
Duke University	Durham	NC	2014	50	4
CycleUShare: University of Tennessee, Knoxville	Knoxville	TN	2011	20	2
Borrow our Bikes: University of South Florida	Tampa	FL	2011	103	1

Non-motorized transportation is particularly important within the Southeast Region because it influences the design and construction of roads, and changes the way that the transportation world does business. This includes adjusted delay estimation and signal timing design techniques (Wang, Wang and Furth 2015), more effective signage (Greenwood and Grossman 2015), and additional bike parking (Kamargianni 2015), as well as wider painted shoulders and special bike lanes. These new challenges require an array of workers well versed in the safe usage of non-motorized transportation as a unique and increasing mode within the area.

Pipeline

Pipeline transportation moves liquids or gas, including crude and refined petroleum, fuels, slurry, and water. Transportation pipelines are mainly long pipes with large diameters between cities, countries, and continents. All states include some sort of pipeline transportation, moving natural gas, crude oil, and refined oil. These include interstate, intrastate, and international pipelines. Within the Southeast Region, pipelines are concentrated within Louisiana, Arkansas, Mississippi, and West Virginia, as shown in Table 11. Louisiana leads the region in pipeline transport, with 26% of the total value of freight shipments from the state being transported by pipeline.

Table 11: Percentage of Total Value of Freight Shipments
(American Road & Transportation Builders Association 2015)

State/Commonwealth	Pipeline
Alabama	2
Arkansas	3
Florida	<1
Georgia	1
Kentucky	2
Louisiana	26
Mississippi	6
North Carolina	N/A
Puerto Rico	N/A
South Carolina	<1
Tennessee	<1
Virginia	<1
West Virginia	4

Notes: N/A indicates no available data.

As illustrated in the state and mode descriptions in this section, transportation systems across the Southeast Region are multimodal, with many different types of occupations that individuals can fill. Furthermore, the Southeast faces multiple workforce challenges that are unique to the region, including an emphasis on distribution/logistics and aerospace/aviation workers. As a result, there are many differing needs for the transportation industry workforce. While the specific requirements for numerous jobs will differ, key skills that require training and development will likely overlap across different occupations.

Transportation Workforce with the Southeast Region

Given the wide range of transportation modes important in the Southeast Region and the varying types of occupations that are needed to ensure transportation functions smoothly and efficiently within each of these modes, it is necessary to consider the various jobs that need to be filled by employees. As such, occupations that serve each mode described above were identified for inclusion in this effort. Using

occupational codes, data were identified from existing Department of Labor (DOL) and Bureau of Labor Statistics (BLS) databases to provide an overview of the current transportation workforce in the Southeast.

The transportation industry employs a great number of people across the Southeast Region of the US. In total, there are over 1.3 million transportation and warehousing employees in the region, as reported by the BLS (see Table 12). Over four fifths (82.9%) of these employees work in private organizations, with the remaining one fifth (17.1%) employed by the federal, state, or local government. While these individuals work in different modes of transportation and different types of organizations, this overview of the total number of positions serves to show the importance of focusing on transportation positions and careers in the region due to the prevalence of these types of jobs.

Table 12: Number of Employees in Transportation and Warehousing Occupations (NAICS Codes 48-49) by State, September 2014

	Employees in Private Organizations	Percentage of Employees in Private Organizations	Employees in Federal, State, and Local Government	Percentage of Employees in Federal, State, and Local Government	Total Number of Employees
US TOTAL	**4,644,255**	**82.9%**	**957,755**	**17.1%**	**5,602,010**
Alabama	56,493	80.6%	13,597	19.4%	70,090
Arkansas	53,184	90.2%	5,811	9.8%	58,995
Florida	238,224	85.2%	41,530	14.8%	279,754
Georgia	176,032	85.5%	29,882	14.5%	205,914
Kentucky	92,093	90.3%	9,873	9.7%	101,966
Louisiana	79,023	90.9%	7,937	9.1%	86,960
Mississippi	43,041	89.8%	4,890	10.2%	47,931
North Carolina	118,419	84.5%	21,694	15.5%	140,113
Puerto Rico	15,453	79.3%	4,038	20.7%	19,491
South Carolina	57,236	88.3%	7,553	11.7%	64,789
Tennessee	148,348	91.6%	13,612	8.4%	161,960
Virginia	107,111	85.8%	17,793	14.2%	124,904
West Virginia	20,695	71.2%	8,357	28.8%	29,052
Total in Southeast Region	**1,205,352**	**86.6%**	**186,567**	**13.4%**	**1,391,919**

Source. BLS Employment Data www.bls.gov/oes/current/oessrcst.htm

There are a larger number of employees in private organizations than federal, state, or local government. Private organizations account for 82.9% of transportation employees within the US and 86.6% of transportation employees within the Southeast. Every state within the region employees more people within private organizations with only West Virginia and Puerto Rico maintaining more than 20% of their transportation workforce through federal, state, and local government jobs with 28.8% and 20.7%, respectively. Tennessee is the smallest percentage of government employment at only 8.4%.

Moving from employees across the transportation industry, the next element of the workforce to consider is specific occupations. There are a variety of transportation occupations across the Southeast Region.

Federal agencies and other organizations that collect, analyze, and share information about occupations organize the data using a Standard Occupational Classification (SOC) system. This allows for consistent reporting and analysis of occupations. Within the SOC system, there are 23 major groups of occupations. One of these is Transportation and Material Moving Occupations, which are designated by SOC codes that begin with "53". Table 13 provides data for occupations within this major group that were identified as relevant for the Southeast Region Analysis. For each occupation, the table includes the SOC code (used to identify occupations by the BLS), occupation title, number of employees in the Southeast in May 2014, national average hourly wage, and the typical education required for entry into the occupation. An expanded version of this table, which includes the same data for all of the states in the Southeast Region, is provided in Appendix A.

When considering the landscape of the transportation workforce across the region, it is also important to examine changes that might impact the number and type of employees required for transportation organizations in the near future. For example, some occupations may be expected to grow immensely in the near future, while other occupations will be expected to decrease in number or remain steady in terms of the number of employees. The BLS and individual state DOLs develop 10-year predictions to help with long term planning, specifically with regard to career choice. As such, typical required education is provided for each occupation. The projections are based on how fast employment is expected to grow or decline for each occupation. The projections are updated every two years. As such, the data in this report include both the number of employees in the Southeast in each occupation, as well as a 10-year projection. This information is provided based on the most recent projections (i.e., 2012 and 2022). As such, Table 13 also provides a glimpse at projected changes in employment within each occupation from 2012 to 2022.

Table 13: Occupational Data and Projections for Relevant Occupations in the Southeast Region within the SOC Major Group of "Transportation and Material Moving Occupations"								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
53-1011	Aircraft Cargo Handling Supervisors	1,100	$24.41	High school diploma or equivalent	1,130	1,180	50	4.42%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	46,740	$23.55	High school diploma or equivalent	42,950	48,890	5,940	13.83%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	53,600	$27.66	High school diploma or equivalent	62,531	69,321	6,790	10.86%
53-2011	Airline Pilots, Copilots, and Flight Engineers	19,790	*	Bachelor's degree	16,884	18,021	1,137	6.73%
53-2012	Commercial Pilots	10,530	*	High school diploma or equivalent	9,717	11,138	1,421	14.62%
53-2021	Air Traffic Controllers	5,150	$57.11	Associate's degree	6,320	6,620	300	4.75%
53-2022	Airfield Operations Specialists	1,140	$24.61	High school diploma or equivalent	1,520	1,660	140	9.21%
53-2031	Flight Attendants	23,810	*	High school diploma or equivalent	14,942	16,200	1,258	8.42%
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	4,430	$12.26	High school diploma or equivalent	3,810	4,990	1,180	30.97%
53-3021	Bus Drivers, Transit and Intercity	26,790	$18.95	High school diploma or equivalent	30,535	35,257	4,722	15.46%
53-3022	Bus Drivers, School or Special Client	111,210	$14.38	High school diploma or equivalent	123,316	129,929	6,613	5.36%
53-3031	Driver/Sales Workers	102,100	$13.33	High school diploma or equivalent	118,370	131,875	13,505	11.41%
53-3032	Heavy and Tractor-Trailer Truck Drivers	436,220	$20.16	Postsecondary non-degree award	460,000	520,291	60,291	13.11%
53-3033	Light Truck or Delivery Services Drivers	201,940	$16.28	High school diploma or equivalent	214,811	232,338	17,527	8.16%
53-3041	Taxi Drivers and Chauffeurs	33,540	$12.35	Less than high school	46,579	55,938	9,359	20.09%
53-3099	Motor Vehicle Operators, All Other	10,620	$16.02	High school diploma or equivalent	8,450	9,400	950	11.24%
53-4011	Locomotive Engineers	7,360	$27.41	High school diploma or equivalent	6,380	6,460	80	1.25%
53-4012	Locomotive Firers	0	$27.41	High school diploma or equivalent	0	0	0	0.00%
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	150	$21.54	High school diploma or equivalent	1,030	1,010	-20	-1.94%
53-4021	Railroad Brake, Signal, and Switch Operators	2,890	$25.14	High school diploma or equivalent	4,220	4,360	140	3.32%

Table 13: Occupational Data and Projections for Relevant Occupations in the Southeast Region within the SOC Major Group of "Transportation and Material Moving Occupations"								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
53-4031	Railroad Conductors and Yardmasters	8,620	$26.84	High school diploma or equivalent	7,177	7,174	-3	-0.04%
53-4041	Subway and Streetcar Operators	290	$28.48	High school diploma or equivalent	210	240	30	14.29%
53-4099	Rail Transportation Workers, All Other	150	$28.82	High school diploma or equivalent	85	82	-3	-3.53%
53-5011	Sailors and Marine Oilers	13,050	$19.70	Less than high school	12,260	14,440	2,180	17.78%
53-5021	Captains, Mates, and Pilots of Water Vessels	15,670	$38.07	Bachelor's degree	17,100	19,750	2,650	15.50%
53-5022	Motorboat Operators	1,790	$19.78	High school diploma or equivalent	1,990	2,310	320	16.08%
53-5031	Ship Engineers	5,000	$35.87	Bachelor's degree	4,660	5,150	490	10.52%
53-6011	Bridge and Lock Tenders	750	$22.22	High school diploma or equivalent	889	943	54	6.07%
53-6021	Parking Lot Attendants	32,130	$10.39	Less than high school	30,585	35,053	4,468	14.61%
53-6041	Traffic Technicians	1,150	$22.38	High school diploma or equivalent	1,130	1,191	61	5.40%
53-6051	Transportation Inspectors	4,340	$34.05	High school diploma or equivalent	4,300	4,980	680	15.81%
53-6061	Transportation Attendants, Except Flight Attendants	2,050	$13.01	High school diploma or equivalent	3,912	4,312	400	10.22%
53-6099	Transportation Workers, All Other	7,490	$17.28	High school diploma or equivalent	7,360	8,160	800	10.87%
53-7011	Conveyor Operators and Tenders	11,830	$16.35	Less than high school	11,368	11,656	288	2.53%
53-7021	Crane and Tower Operators	14,870	$25.75	High school diploma or equivalent	15,801	18,687	2,886	18.26%
53-7031	Dredge Operators	510	$21.94	Less than high school	340	380	40	11.76%
53-7032	Excavating and Loading Machine and Dragline Operators	13,880	$21.23	High school diploma or equivalent	15,238	17,097	1,859	12.20%
53-7033	Loading Machine Operators, Underground Mining	1,150	$22.84	Less than high school	996	841	-155	-15.56%
53-7041	Hoist and Winch Operators	210	$23.47	Less than high school	511	520	9	1.76%
53-7051	Industrial Truck and Tractor Operators	147,420	$16.02	Less than high school	146,291	147,867	1,576	1.08%
53-7061	Cleaners of Vehicles and Equipment	74,590	$11.22	Less than high school	77,771	87,458	9,687	12.46%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	682,820	$13.07	Less than high school	620,550	699,081	78,531	12.66%

Table 13: Occupational Data and Projections for Relevant Occupations in the Southeast Region within the SOC Major Group of "Transportation and Material Moving Occupations"								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
53-7063	Machine Feeders and Offbearers	23,290	$14.73	Less than high school	30,651	31,567	916	2.99%
53-7064	Packers and Packagers, Hand	180,620	$11.08	Less than high school	168,761	183,151	14,390	8.53%
53-7071	Gas Compressor and Gas Pumping Station Operators	860	$26.65	Less than high school	811	797	-14	-1.73%
53-7072	Pump Operators, Except Wellhead Pumpers	1,630	$22.45	Less than high school	2,673	2,764	91	3.40%
53-7073	Wellhead Pumpers	1,610	$23.36	Less than high school	1,876	2,105	229	12.21%
53-7111	Mine Shuttle Car Operators	1,490	$26.36	Less than high school	2,302	1,886	-416	-18.07%
53-7121	Tank Car, Truck, and Ship Loaders	1,950	$21.41	Less than high school	2,770	3,040	270	9.75%

Sources. [a]BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm) and [b]BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm).

In looking at this employment data, it can be seen that the greatest number of employees in these occupations in the Southeast Region are *Laborers and Freight, Stock, and Material Movers, Hand* and *Heavy and Tractor-Trailer Truck Drivers*. With regard to the modes discussed previously, *Laborers and Freight, Stock, and Material Movers, Hand* can be found within the rail, motor, and marine modes, while *Tractor-Trailer Truck Drivers* belong to the motor mode. As can be seen in these data, most of the transportation occupations in the Southeast are expected to see an increase in employees in the long-term (i.e., from 2012 to 2022). Exceptions include *Rail Yard Engineers, Dinkey Operators, and Hostlers*, *Rail Transportation Workers - All Other, Loading Machine Operators, Underground Mining,* and *Gas Compressor and Gas Pumping Station Operators.* In regards to the employment data, each of the modes described in this report are represented in the occupations presented in the previous table, showing that the workforce in each of these areas is important for transportation in the Southeast Region.

When considering the transportation workforce, one important thing to note is that many employees are not in occupations specific to transportation. For example, many transportation agencies employ engineers, which are not included in the list of occupations in Table 13. This is because, while engineers are often employed by transportation organizations, they also work in other industries. Because of this cross-industry employment, occupations in other SOC major groupings, outside of Transportation and Materials Moving Occupations were also examined. So while not in transportation-specific occupations, these employees can play an important role in and have a large impact on transportation organizations. For these occupations that are not solely focused on transportation, employees need to come into their jobs with skills related to their occupations. Then, during their careers, they can develop contextual skills and knowledge that are relevant to transportation. For example, a financial analyst would need to come into a transportation organization knowing about finances and financial reporting, however he/she would be able to learn about specific elements related to the transportation organization through working there.

One group of employees who serve an important role in transportation are engineers and other scientists who are responsible for designing and building needed infrastructure, as well as the individuals who work in construction and maintenance/repair of roads, tracks, or other structures used in transportation. To provide information on these types of occupations, Table 14 includes data for relevant occupations from the following SOC Major Groups:

- Architecture and Engineering Occupations (17-0000)
- Life, Physical, and Social Science Occupations (19-0000)
- Construction and Extraction Occupations (47-0000)
- Installation, Maintenance, and Repair Occupations (49-0000)
- Production Occupations (51-0000).

When considering the outlook for these occupations in terms of number of employees, it is important to note that in these industry-spanning occupations by nature there will likely be more competition for employees due to the diverse employers for which they can work. This is especially true for occupations that are expected to grow in the next 10 years.

Table 14: Occupational Data and Projections for Relevant Occupations in the Southeast Region within Engineering, Science, Construction, and Maintenance/Repair SOC Codes								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
17-1021	Cartographers and Photogrammetrists	2,420	$31.04	Bachelor's degree	2,688	3,383	695	25.86%
17-1022	Surveyors	11,290	$29.00	Bachelor's degree	11,567	13,321	1,754	15.16%
17-2011	Aerospace Engineers	12,610	$51.78	Bachelor's degree	14,530	16,840	2,310	15.90%
17-2051	Civil Engineers	59,910	$41.89	Bachelor's degree	65,076	78,977	13,901	21.36%
17-2071	Electrical Engineers	37,810	$46.05	Bachelor's degree	34,458	38,734	4,276	12.41%
17-2081	Environmental Engineers	13,080	$41.51	Bachelor's degree	12,801	15,099	2,298	17.95%
17-2112	Industrial Engineers	56,700	$40.92	Bachelor's degree	52,550	57,201	4,651	8.85%
17-2121	Marine Engineers and Naval Architects	2,580	$47.67	Bachelor's degree	2,280	2,630	350	15.35%
17-2141	Mechanical Engineers	46,200	$41.89	Bachelor's degree	45,672	49,663	3,991	8.74%
17-3011	Architectural and Civil Drafters	18,810	$25.23	Associate's degree	19,818	20,428	610	3.08%
17-3012	Electrical and Electronics Drafters	5,430	$29.83	Associate's degree	4,764	5,443	679	14.25%
17-3013	Mechanical Drafters	13,110	$26.57	Associate's degree	12,926	13,392	466	3.61%
17-3021	Aerospace Engineering and Operations Technicians	1,300	$30.92	Associate's degree	2,660	2,870	210	7.89%
17-3022	Civil Engineering Technicians	18,320	$24.18	Associate's degree	18,605	19,858	1,253	6.73%
17-3023	Electrical and Electronics Engineering Technicians	31,100	$29.01	Associate's degree	33,482	35,633	2,151	6.42%
17-3025	Environmental Engineering Technicians	4,970	$24.53	Associate's degree	5,058	6,165	1,107	21.89%
17-3026	Industrial Engineering Technicians	14,220	$26.76	Associate's degree	14,646	15,230	584	3.99%
17-3027	Mechanical Engineering Technicians	8,690	$26.67	Associate's degree	8,402	9,158	756	9.00%
17-3029	Engineering Technicians, Except Drafters, All Other	11,220	$30.35	Associate's degree	11,538	11,925	387	3.35%
17-3031	Surveying and Mapping Technicians	16,720	$21.09	High school diploma or equiv.	17,891	20,917	3,026	16.91%
19-1031	Conservation Scientists	3,660	$30.97	Bachelor's degree	3,080	3,238	158	5.13%
19-3051	Urban and Regional Planners	6,640	$33.18	Master's degree	6,606	7,517	911	13.79%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	14,800	$20.41	High school diploma or equiv.	15,004	18,055	3,051	20.33%
47-2073	Operating Engineers and Other Construction Equipment Operators	87,660	$23.09	High school diploma or equiv.	91,062	106,457	15,395	16.91%
47-2111	Electricians	139,700	$26.21	High school diploma or equiv.	147,677	174,624	26,947	18.25%
47-2152	Plumbers, Pipefitters, and Steamfitters	85,730	$26.26	High school diploma or equiv.	92,366	110,156	17,790	19.26%

Table 14: Occupational Data and Projections for Relevant Occupations in the Southeast Region within Engineering, Science, Construction, and Maintenance/Repair SOC Codes								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
47-4051	Highway Maintenance Workers	35,470	$18.22	High school diploma or equiv.	36,370	39,775	3,405	9.36%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2,670	$24.39	High school diploma or equiv.	3,224	3,390	166	5.15%
49-2091	Avionics Technicians	5,930	$28.11	Associate's degree	4,230	4,700	470	11.11%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3,410	$26.65	Postsecondary non-degree award	3,320	3,640	320	9.64%
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1,850	$15.83	Postsecondary non-degree award	2,640	2,630	-10	-0.38%
49-3011	Aircraft Mechanics and Service Technicians	37,870	$28.29	Postsecondary non-degree award	33,140	36,090	2,950	8.90%
49-3021	Automotive Body and Related Repairers	34,640	$21.09	High school diploma or equiv.	35,896	39,971	4,075	11.35%
49-3022	Automotive Glass Installers and Repairers	3,670	$16.37	High school diploma or equiv.	5,390	6,080	690	12.80%
49-3023	Automotive Service Technicians and Mechanics	170,220	$19.22	High school diploma or equiv.	192,450	212,930	20,480	10.64%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	58,680	$21.71	High school diploma or equiv.	61,129	67,332	6,203	10.15%
49-3043	Rail Car Repairers	4,040	$25.27	High school diploma or equiv.	3,880	4,190	310	7.99%
49-3051	Motorboat Mechanics and Service Technicians	6,360	$18.56	High school diploma or equiv.	7,266	8,496	1,230	16.93%
49-3052	Motorcycle Mechanics	4,330	$17.21	High school diploma or equiv.	4,228	4,901	673	15.92%
49-3091	Bicycle Repairers	1,510	$12.96	High school diploma or equiv.	1,677	2,181	504	30.05%
49-3092	Recreational Vehicle Service Technicians	2,180	$17.80	High school diploma or equiv.	2,005	2,356	351	17.51%
49-3093	Tire Repairers and Changers	29,370	$12.31	High school diploma or equiv.	28,340	32,163	3,823	13.49%
49-9092	Commercial Divers	1,370	$24.55	Postsecondary non-degree award	1,590	2,020	430	27.04%
49-9097	Signal and Track Switch Repairers	760	$28.81	High school diploma or equiv.	940	970	30	3.19%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	8,180	$24.43	High school diploma or equiv.	4,770	6,220	1,450	30.40%
51-2022	Electrical and Electronic Equipment Assemblers	42,330	$15.42	High school diploma or equiv.	38,105	37,831	-274	-0.72%
51-2031	Engine and Other Machine Assemblers	6,150	$19.32	High school diploma or equiv.	8,300	10,050	1,750	21.08%
51-4121	Welders, Cutters, Solderers, and Brazers	95,940	$19.25	High school diploma or equiv.	97,065	109,545	12,480	12.86%

Table 14: Occupational Data and Projections for Relevant Occupations in the Southeast Region within Engineering, Science, Construction, and Maintenance/Repair SOC Codes								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
51-8092	Gas Plant Operators	2,670	$30.48	High school diploma or equiv.	2,141	2,040	-101	-4.72%
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	8,200	$30.37	High school diploma or equiv.	8,980	9,260	280	3.12%
51-9197	Tire Builders	9,440	$20.17	High school diploma or equiv.	8,530	8,300	-230	-2.70%

Sources. [a] BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm) and [b] BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm).

The findings in Table 14 show that in general, there is expected to be an increase in the number of engineers employed in the Southeast Region by 2022, especially in civil and environmental engineers within the field of engineering. When looking at occupations, it is important to not only focus on occupations with high numbers of employees, because specialized occupations are also key to completing transportation work and may require focus in terms of training employees to be ready for future open positions. For example, in the set of occupations included in this table, the greatest projected percentage increase in is for *Bicycle Repairers* and *Aircraft Structure, Surfaces, Rigging, and Systems Assemblers*. While there are less than 7,000 people employed or projected to be employed in these two occupations in the Southeast, these employees may be of specific importance in the region. Therefore, it can be beneficial to focus on smaller occupations such as these to ensure there are adequate training programs to provide needed employees.

Beyond the engineering and technical employees that support transportation organizations, there are also employees in the areas of management, finance, and support. Table 15 provides occupational data and projects for these types of occupations, which come from the following SOC major groups:

- Management Occupations (11-0000)
- Business and Financial Operations Occupations (13-0000)
- Computer and mathematical occupations (15-0000)
- Protective Service Occupations (33-0000)
- Office and Administrative Occupations (43-0000).

Like the previous occupational data and projections tables, Table 15 provides the SOC code, occupation title, number of employees in the Southeast in May 2014, national average hourly wage, and the typical education required for entry into the occupation as well as occupational projections from 2012 to 2022.

Table 15: Occupational Data and Projections for Relevant Occupations in the Southeast Region within Management, Service, and Support Occupations								
SOC Code	**Occupation Title**	**# of employees in the SE, May 2014[a]**	**National Average Hourly Wage[a]**	**Typical Education Needed For Entry[a]**	**# of Employees in the SE, 2012[b]**	**Projected # of Employees in the SE, 2022[b]**	**Change in # of Employees[b]**	**Percent Change[b]**
11-3021	Computer and Information Systems Managers	67,710	$65.52	Bachelor's degree	67,705	80,508	12,803	18.91%
11-3071	Transportation, Storage, and Distribution Managers	24,110	$44.80	High school diploma or equiv.	25,002	27,472	2,470	9.88%
11-9041	Architectural and Engineering Managers	33,800	$66.69	Bachelor's degree	37,289	42,242	4,953	13.28%
13-1081	Logisticians	30,620	$36.94	Bachelor's degree	29,572	37,392	7,820	26.44%
13-2031	Budget Analysts	14,260	$35.55	Bachelor's degree	15,183	16,994	1,811	11.93%
13-2051	Financial Analysts	42,410	$44.35	Bachelor's degree	42,558	51,783	9,225	21.68%
15-1122	Information Security Analysts	26,000	$44.04	Bachelor's degree	23,996	33,645	9,649	40.21%
15-1142	Network and Computer Systems Administrators	81,060	$38.35	Bachelor's degree	80,082	95,039	14,957	18.68%
15-1143	Computer Network Architects	41,160	$48.42	Bachelor's degree	47,766	57,082	9,316	19.50%
15-1152	Computer Network Support Specialists	40,380	$31.80	Bachelor's degree	38,366	43,212	4,846	12.63%
15-2031	Operations Research Analysts	21,660	$39.88	Bachelor's degree	19,365	24,129	4,764	24.60%
33-3041	Parking Enforcement Workers	1,350	$18.15	High school diploma or equiv.	1,298	1,448	150	11.56%
33-3052	Transit and Railroad Police	450	$25.56	High school diploma or equiv.	750	810	60	8.00%
33-9091	Crossing Guards	11,230	$13.00	High school diploma or equiv.	10,938	11,174	236	2.16%
33-9093	Transportation Security Screeners	10,750	$18.56	High school diploma or equiv.	13,661	15,286	1,625	11.90%
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	36,140	$16.73	High school diploma or equiv.	42,265	42,723	458	1.08%
43-5011	Cargo and Freight Agents	20,620	$21.14	High school diploma or equiv.	20,401	24,540	4,139	20.29%
43-5021	Couriers and Messengers	19,830	$13.63	High school diploma or equiv.	26,481	25,485	-996	-3.76%
43-5051	Postal Service Clerks	18,000	$23.58	High school diploma or equiv.	17,426	13,333	-4,093	-23.49%
43-5052	Postal Service Mail Carriers	77,110	$24.90	High school diploma or equiv.	76,826	69,677	-7,149	-9.31%
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	25,040	$23.42	High school diploma or equiv.	27,918	21,850	-6,068	-21.74%
43-5071	Shipping, Receiving, and Traffic Clerks	153,140	$15.27	High school diploma or equiv.	163,448	169,076	5,628	3.44%
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	20,040	$14.77	High school diploma or equiv.	21,192	23,700	2,508	11.83%

Sources. [a] BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm) and [b] BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm).

Three of the occupations shown in Table 15 are expected to see large increases in employees, both in terms of the number of employees as well as the percent change. As such, transportation organizations are likely to see increased competition for *Computer and Information Systems Managers*, *Financial Analysts*, and *Logisticians*. Each of which play integral roles within the transportation industry.

Finally, occupational data and projections were analyzed at the state level to begin identifying differences in the workforce and potential workforce needs across the Southeast Region. Table 16 provides a first look at this state-level information. Specifically, for each state the occupations with the largest expected increases and decreases in employment from 2012 to 2022 are identified. Complete data for occupations by state is provided in Appendix A.

Table 16: Transportation Occupations with Greatest Expected Increases and Decreases in Employment, by State in the Southeast Region

State	SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change	Percent Change
Alabama	51-2031	Engine and Other Machine Assemblers	2,150	3,430	1,280	59.53%
	53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	340	450	110	32.35%
	15-1122	Information Security Analysts	1,030	1,360	330	32.04%
	43-5052	Postal Service Mail Carriers	4,910	3,600	-1,310	-26.68%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1,320	930	-390	-29.55%
	43-5051	Postal Service Clerks	1,020	700	-320	-31.37%
Arkansas	53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	30	40	10	33.33%
	15-1122	Information Security Analysts	860	1,100	240	27.91%
	33-9093	Transportation Security Screeners	230	290	60	26.09%
	47-4061	Rail-Track Laying and Maintenance Equipment Operators	150	120	-30	-20.00%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	890	710	-180	-20.22%
	43-5051	Postal Service Clerks	720	570	-150	-20.83%
Florida	49-3091	Bicycle Repairers	680	940	260	38.24%
	13-1081	Logisticians	4,460	6,040	1,580	35.43%
	17-1021	Cartographers and Photogrammetrists	690	930	240	34.78%
	51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	260	230	-30	-11.54%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	6,490	3,420	-3,070	-47.30%
	43-5051	Postal Service Clerks	3,720	1,960	-1,760	-47.31%
Georgia	51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	1,380	1,930	550	39.86%
	53-3099	Motor Vehicle Operators, All Other	680	940	260	38.24%

Table 16: Transportation Occupations with Greatest Expected Increases and Decreases in Employment, by State in the Southeast Region						
State	**SOC Code**	**Occupation Title**	**# of Employees, 2012**	**Projected # of Employees, 2022**	**Change**	**Percent Change**
	53-7121	Tank Car, Truck, and Ship Loaders	110	150	40	36.36%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	3,570	2,840	-730	-20.45%
	43-5051	Postal Service Clerks	2,010	1,550	-460	-22.89%
	53-7033	Loading Machine Operators, Underground Mining	40	30	-10	-25.00%
Kentucky	53-2012	Commercial Pilots	240	400	160	66.67%
	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	1,340	2,140	800	59.70%
	15-1122	Information Security Analysts	530	740	210	39.62%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1,620	1,070	-550	-33.95%
	43-5051	Postal Service Clerks	840	500	-340	-40.48%
	51-8092	Gas Plant Operators	280	160	-120	-42.86%
Louisiana	13-1081	Logisticians	930	1,280	350	37.63%
	17-1021	Cartographers and Photogrammetrists	90	120	30	33.33%
	15-2031	Operations Research Analysts	690	900	210	30.43%
	43-5052	Postal Service Mail Carriers	6,490	5,780	-710	-10.94%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2,530	2,230	-300	-11.86%
	43-5051	Postal Service Clerks	1,480	1,280	-200	-13.51%
Mississippi	53-2022	Airfield Operations Specialists	10	20	10	100.00%
	53-5022	Motorboat Operators	10	20	10	100.00%
	15-1122	Information Security Analysts	230	310	80	34.78%
	53-7033	Loading Machine Operators, Underground Mining	40	30	-10	-25.00%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	350	260	-90	-25.71%
	43-5051	Postal Service Clerks	350	250	-100	-28.57%
North Carolina	17-3021	Aerospace Engineering and Operations Technicians	20	30	10	50.00%
	15-1122	Information Security Analysts	3,040	4,250	1,210	39.80%
	53-7021	Crane and Tower Operators	930	1,300	370	39.78%
	49-9097	Signal and Track Switch Repairers	80	70	-10	-12.50%
	53-7072	Pump Operators, Except Wellhead Pumpers	60	50	-10	-16.67%
	51-9197	Tire Builders	1,600	1,250	-350	-21.88%
Puerto Rico	15-1122	Information Security Analysts	190	290	100	52.63%
	53-3022	Bus Drivers, School or Special Client	1,490	2,140	650	43.62%
	17-3025	Environmental Engineering	200	260	60	30.00%

Table 16: Transportation Occupations with Greatest Expected Increases and Decreases in Employment, by State in the Southeast Region						
State	**SOC Code**	**Occupation Title**	**# of Employees, 2012**	**Projected # of Employees, 2022**	**Change**	**Percent Change**
		Technicians				
	53-7121	Tank Car, Truck, and Ship Loaders	60	50	-10	-16.67%
	43-5051	Postal Service Clerks	570	470	-100	-17.54%
	53-7063	Machine Feeders and Offbearers	270	220	-50	-18.52%
South Carolina	15-1122	Information Security Analysts	1,030	1,450	420	40.78%
	53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	670	910	240	35.82%
	49-9092	Commercial Divers	90	120	30	33.33%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1,110	900	-210	-18.92%
	51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	50	40	-10	-20.00%
	43-5051	Postal Service Clerks	830	650	-180	-21.69%
Tennessee	17-2121	Marine Engineers and Naval Architects	70	100	30	42.86%
	53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	270	380	110	40.74%
	15-1122	Information Security Analysts	800	1,080	280	35.00%
	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2,060	1,790	-270	-13.11%
	51-9197	Tire Builders	590	510	-80	-13.56%
	49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	200	170	-30	-15.00%
Virginia	53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	190	320	130	68.42%
	15-1122	Information Security Analysts	10,030	15,070	5,040	50.25%
	15-2031	Operations Research Analysts	4,790	6,550	1,760	36.74%
	43-5052	Postal Service Mail Carriers	7,120	5,670	-1,450	-20.37%
	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2,950	2,250	-700	-23.73%
	43-5051	Postal Service Clerks	1,850	1,380	-470	-25.41%
West Virginia	15-1122	Information Security Analysts	136	175	39	28.68%
	33-9093	Transportation Security Screeners	91	116	25	27.47%
	49-3091	Bicycle Repairers	17	21	4	23.53%
	53-7041	Hoist and Winch Operators	61	50	-11	-18.03%
	53-7033	Loading Machine Operators, Underground Mining	356	291	-65	-18.26%
	53-7111	Mine Shuttle Car Operators	1,192	946	-246	-20.64%

Examining projected changes in the transportation workforce in the Southeast in this way begins to show the similarities and differences across the region. For example, most of the states in the region are expected to see increases in the number of computer and logistics professionals required during the studied period. This could indicate that efforts to train and recruit these employees would be beneficial across the Southeast Region. There are also differences between the states when you start to examine expected changes in the workforce. For example, Arkansas and North Carolina will likely see a decrease in rail maintenance occupations whereas West Virginia is likely to see the biggest decreases in mining-related occupations. Understanding the workforce across states can help identify areas where coordination of effort or sharing of ideas would be most useful for transportation organizations and stakeholders.

Key Occupations across the Region as Identified through Stakeholders and Archival Information

The transportation industry, like all industries, is in a constant state of flux. As demands grow and technologies change, the industry must have the forethought to find potential key occupations within the sector and provide adequate funding to the educational and skills pipelines that make preparation of a right-sized workforce for these key occupations possible. Without proper planning, funding, and execution the development of these pipelines will suffer and with it the industry as a whole will face challenges. By looking at the data through a wide variety of lenses, including stakeholder information, archival information, occupation specific growth, and current occupation demand, a well-rounded forecast of current and future needs, gaps, and priorities can be established. Once established, plans can be laid which provide increased preparedness for current and future transportation occupations at all levels. Filling educational and skills gaps for every level of employee within the transportation industry acts as a rising tide, lifting all boats.

This section examines a more narrow set of occupations within the transportation workforce of the Southeast Region. Thus far, the report has focused on providing an overarching view of the workforce and occupations in the region to show the breadth of the transportation workforce. Next, details on specific jobs that are important to stakeholders in the region will be explored in greater depth.

Occupation Prioritization Criteria

In order to finalize a list of priority occupations in the Southeast Region, it is necessary to consider criteria that are the most important to the stakeholders and workforce in the region as well as focus areas of the Southeast Transportation Workforce Center (SETWC) where there is potential to impact workforce development. An evaluation system was developed in an effort to prioritize the key occupations from each of these perspectives. The system includes two phases: the first phase involves evaluating occupations using quantitative criteria based on a review of industry documents and BLS data. The second phase involves applying qualitative criteria based on results from participant interviews and alignment with SETWC focus areas.

The criteria for the evaluation and prioritization of occupations in the Southeast are presented in Table 17.

Table 17: Criteria for the Prioritization of Transportation Occupations in the Southeast Region	
Criteria	**Potential Qualification(s) for Inclusion**
Phase 1 Screening Criteria: Based on Industry Assessment and BLS Data	
Increasing demand for employees/ High growth of occupation	▪ Examine gross "percentage" of increasing demand change to identify those occupations with the greatest percentage of expected growth ▪ Eliminate occupations that are expected to decrease in terms of number of employees the near future because less employees will be needed to fill these occupations
Established high demand for employees	▪ Examine historic, current, and future "number" of employees in the occupation ▪ Select occupations with the greatest number of employees or job openings, as there will be many positions that will need to be filled in these occupations
Phase 2 Screening Criteria: Based on Stakeholder Interviews and Alignment with SW \Focus Areas	
Limited supply of new graduates	▪ Use data from training programs to identify areas where there may not be enough graduates to fill needed positions ▪ Select occupations with the greatest gaps between number of available positions and new graduates because these occupations will likely require support in terms of identifying new sources of employees or increasing the number of students in training programs
Experienced challenges in recruiting or retaining employees	▪ Gather input from stakeholders regarding occupations in the region that there have traditionally been challenges in filling or keeping filled ▪ Selected occupations that have traditionally had these problems because these occupations may benefit from additional attention
Occupation has requirements for or relies upon new or up-and-coming technology	▪ Based on job requirements or stakeholder input, identify occupations in which employees must use technology frequently. Then, determine if the technology used in the occupation is new or evolving ▪ Select occupations with the greatest reliance on new technology as it is likely employees in these areas will have new training or educational requirements or the occupations will require different types of employees than in the past
Uniqueness of critical job functions	▪ Based on job requirements, identify unique occupations that do not share job functions with other occupations ▪ Select these occupations because they have the most individualized needs and would benefit from specialized attention.
Occupations that are unique to the Southeast or have a higher demand in the region than in other regions	▪ Use existing job data to identify occupations that are unique to the region or in higher demand in the Southeast states (e.g., specialized job functions, reliance on specific technology, certain seasonal work) ▪ Select these occupations because they are specific to the region and therefore likely important elements of the workforce that will not be examined by other regions

Aligned with focus areas of the SETWC	▪ Determine if the occupation or the potential workforce align with any of the region's areas of focus:
	  ▪ Women in transportation
	  ▪ Freight (including rail, truck, warehousing, and logistics)
	  ▪ Military/veteran transition to transportation workforce

Ability of Center to positively impact occupation	▪ Consider the reasons for challenges experienced in hiring/retaining employees in the occupation to determine if there are actions that the center can feasibly take to improve workforce issues ▪ Select only those occupations for which the center can reasonably have a positive impact

During the first phase, data from the Bureau of Labor Statistics and Projection Central (Projections 2015) was used to identify occupations with the greatest percentage of expected growth based on projections

between 2012 and 2022. The gross quantity of each set of workers historically, today, and projected was also used as a priority to identify areas where the greatest numbers of workers will be required. Analysis of these regional statistics resulted in a list of approximately 30 occupations to be evaluated through a multi-level screening process.

During this second phase where final screening was conducted, occupations were again reviewed to identify those to prioritize based upon limited pipeline or specialized education requirements, unique regional import, and alignment to SETWC focus areas. Additionally, SETWC staff conducted numerous interviews and focus groups with private sector, public sector, and education stakeholders throughout the region during the months of January – October 2015. These discussions were used to further inform the prioritization process. More than 100 stakeholders were part of this process, with representatives from all states and all modes in the region. Stakeholders were asked to provide input regarding the following:

- Industry/organization and representative's role within the organization
- States where the industry/organization conducts business
- Types of employees hired
- Current workforce challenges (including hiring for specific jobs, retention, diversity, training/education)
- Expected job growth areas
- Hiring expectations immediately/in 5 years
- Identification of most significant barrier to organization's workforce goals

Through the review of "In-Demand" occupations and the input received from stakeholders, occupations were identified as priority occupations in the transportation industry across the region. These occupations were organized into 4 categories, which are:

- STEM Occupations
- Vocational or Technical Occupations
- Laborer Occupations
- Supply Chain and Logistics Occupations

SETWC staff purposefully withheld information regarding the job categories/occupations identified as potential priority areas through phase 1 activities. This approach was taken in order to avoid influencing comments and insight shared by stakeholders. A 'phase 3' review will take place November 2015-January 2016 so that stakeholders have the opportunity to review this report, the prioritized job listing, and provide additional feedback regarding the representativeness of the resulting list for the region. Phase 3 comments (and any necessary additions/revisions to the prioritized regional list) will be incorporated into a final version of this report that will be released in March 2016 as part of the second annual Choosing Transportation Summit to be held in Memphis, TN.

The occupations identified through phase 2 screening are described in detail in the following sections.

STEM Occupations

Critical to building an American workforce with 21st century skills is the recruitment, retention and graduation of students in science, technology, engineering, and mathematics (STEM) fields. However, nationwide, lack of student interest in and preparation for various STEM fields, in particular engineering and computer majors, results in a shortage of workforce talent. This is of particular importance to the transportation industry, where civil engineers and computer specialists are critical but are in short supply due to education requirements, limited graduates, and stiff competition from numerous other industries (Committee on Prospering in the Global Economy of the 21st Century 2005; National Academy of Sciences 2005; U.S. Congress Joint Economic Committee 2012; Langdon, et al. 2011; Change the

Equation n.d.; Carnevale, Smith and Melton 2011). Table 18 outlines the STEM occupations prioritized for the Southeast Region.

Table 18: Southeast STEM Priority Occupations

Occupation	SOC Code	Rationale
Computer and information systems managers	11-3021	• Industry currently lacks a solid pipeline or recruitment methodology • Significant competition from other industries • Advances in technology, rapid growth in temperature controlled logistic, and interest in using 'big data' increase demand for these professionals
Civil engineers	17-2051	• Large-scale retirement of Baby Boomer generation will result in significant gap in this workforce • Limited numbers of civil engineering graduate are produced in the region- less than needed to meet demand • Competition for civil engineers from other sub disciplines and between public/private sector
Network and Computer Systems Administrators	15-1142	• Industry currently lacks a solid pipeline or recruitment methodology • Significant competition from other industries • Advances in technology, rapid growth in temperature controlled logistic, and interest in using 'big data' increase demand for these professionals

The occupations identified in this category all face similar issues. A minimum of a bachelor's degree is required, and the specific program areas leading to these degrees are challenging. Diversity issues plague these occupations in greater proportion than in other STEM professions, with the percentage of women less than 15% and minorities represented in these fields less than 6%. With the strong technical sector representation in all of the Southeast Region, programs to increase the numbers of candidates pursuing degrees, entering transportation professions, and being retained in these fields are important.

Vocational or Technical Occupations

The transportation occupations in this category require less formal education than the STEM occupations, but there are greater numbers of these workers required and many of these occupations require specialized skills. Lifestyle issues associated with these job categories also limit the number of applicants and lead to retention issues. Lack of awareness of job opportunity, impact on company/profession, and understanding of ladders of opportunity may also limit the pipeline to these occupations. Table 19 outlines the vocational and technical priority occupations for the Southeast Region.

Table 19: Southeast Vocational or Technical Priority Occupations

Occupation	SOC Code	Rationale
Bus and truck mechanics and diesel engine specialists	49-3031	• New technologies in terms of hybrids and alternative fuels • Large SE region employers facing significant challenges in finding trained diesel engine specialists • This was identified as one of the highest regional priorities by both public and private sector stakeholders

Bus drivers, transit and intercity	53-3021	• Difficult to retain and industry currently lacks recruitment methodology • Public sector stakeholders identify this as main workforce challenge and need to attract diverse candidates
Heavy and tractor-trailer drivers	53-3032	• Individuals ages 18-25 cannot be truck drivers due to insurance barrier, so they follow other career paths and do not return to pursue truck driving • Background checks and drug checks present a barrier • Generation currently entering the workforce does not prefer being on the road for extended periods of time, and seeks an 8-hour workday and work-life balance which truck driving does not always provide • Increasing freight volume leads to significant growth in numbers of drivers needed
Operating engineers and other construction equipment operators	47-2073	• Growing need for heavy equipment operators
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	51-2011	• Specialized and unique training required for this job category • Limited pipeline, lack of awareness

Many of the occupations identified as priorities for the Southeast Region also follow national trends. For instance, Bus Drivers and Heavy and Tractor-Trailer Drivers have received significant national attention due to projected shortages. The Federal Transit Administration issued a request for proposals for specific workforce-related innovations, and awarded $9.5M in grants to address transit workforce needs (Lockshin 2015). Both Bus Drivers and Heavy and Tractor-Trailer Drivers are also specifically associated with extreme underrepresentation of women. Organizations such as Women in Trucking (WIT) are devoted specifically to addressing this disparity at the national scale. The SETWC has partnered with WIT to create an annual index benchmarking representation of women in the trucking industry and tracking industry progress toward diversity goals (Women In Trucking 2015). Additionally, the Southeast Region's freight movement is heavily dominated by the trucking mode. With the expected and dramatic increases in freight volumes over the next 10 years (as much as 29%), shortage of truck drivers may be a particular issue for the region (McNally 2015). Region-specific needs were also isolated in the priority occupations in this category, with Aircraft Structure, Surfaces, Rigging and Systems Assemblers and Operating Engineers and Other Construction Equipment Operators. Projections in these occupations were considered significant because of the regional aviation/aerospace industry concentration (9 out of 13 states/ commonwealth in the region have major industry concentration) and the construction expected due to the deterioration of aging infrastructure at the regional level that exceeds that of national averages.

Laborer Occupations

Laborer occupations generally reflect large needs in terms of numbers of workers, and may face difficulties due to worker dependability, continued need for training, and general shortage of suitable applicants. The transportation industry has many areas where laborers are required, with construction to warehousing to port operations among the long list of sectors needing laborers. Table 20 highlights the occupation and rationale for priority for Southeast laborer occupations.

Table 20: Southeast Laborer Priority Occupations		
Occupation	**SOC Code**	**Rationale**
First-line supervisors of transportation and material-moving machine and vehicle operators	53-1031	• Growing need for development of transportation and material-moving machine and vehicle operators

The laborers in this occupation are not limited to transportation-oriented jobs. Many of these workers are employed in the manufacturing sector. As manufacturing is a key industry for most states in the southeast, it is expected that there will be strong competition for these workers, making attraction to transportation a priority.

Supply Chain and Logistics Occupations

Supply chain and logistics professionals are predominately highly skilled and/or well-educated and many may be able to apply their specialized knowledge to other industries. These workers are critical to a strong freight-driven economy, which is prevalent in many Southeast Region states. Table 21 lists the regional priority occupations.

Table 21: Southeast Supply Chain and Logistics Priority Occupations		
Occupation	**SOC Code**	**Rationale**
Logisticians	13-1081	• Growing need for employees for warehouse operations • Rapid growth expected for cold-chain logistics will increase demand for these employees • Southeast Region has significant transportation, distribution, and logistics sector, thus increased demand
Operations Research Analysts	15-2031	• Highly specialized education; requires a minimum of Bachelor's Degree • Challenge educational program and limited schools with OR majors leads to pipeline shortage • Competition from other industries is significant; expertise is highly sought-after by large private sector employers
Laborers and freight, stock, and material movers, hand	53-7062	• Growing need for employees for warehouse operations • Southeast Region has significant transportation, distribution, and logistics sector, thus increased demand

The supply chain and logistics field faces limited pipelines of majors for these professions. Diversity is a particular issue with logisticians, and companies in the Southeast Region specifically identified recruitment of a diverse workforce a real challenge in this area. The high percentage of distribution and logistics jobs in the Southeast Region is also a driver for considering these occupations as priorities. Eleven of the 13 states/commonwealth in the region have significant distribution and logistics industries, leading to this segment being considered a high priority for the region.

Analysis of Key Occupations using Labor Market Databases

This section provides information about each of the key occupations that have been identified across the region. For each occupation the demand across the region, types of employers for each key occupation, and educational requirements for employees are provided.

STEM Occupations

As previously described, STEM professionals are in high demand and significant shortage nationally. Table 22 provides the occupational projections for the Southeast Region for the priority job titles for this category.

Table 22: Occupational Projections for STEM Occupations in the Southeast

SOC Code	Occupation Title	# of Employees, 2012[b]	Projected # of Employees, 2022 [b]	Change in # of Employees [b]	Percent Change [b]
11-3021	Computer and Information Systems Managers	67,705	80,508	12,803	18.91%
17-2051	Civil Engineers	65,076	78,977	13,901	21.36%
15-1142	Network and Computer Systems Administrators	80,082	95,039	14,957	18.68%

Source BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm)[b]

Other job titles for Computer and Information Systems Managers include:

- Application Development Director
- Chief Technology Officer
- Computer Operations Manager
- Computer Security Manager
- Data Operations Director
- Data Processing Manager
- Information Systems Director
- Information Systems Manager
- Information Technology Director
- Information Technology Systems Director
- Internet Technology Manager
- Management Information Systems Director
- MIS Director

Job titles for Civil Engineers might include:

- Architectural Engineer
- Bridge Engineer
- Civil Engineer
- Construction Engineer
- Facilities Engineer
- Geotechnical Engineer
- Highway Engineer
- Hydrographic Engineer
- Railroad Design Consultant
- Research Hydraulic Engineer
- Structural Engineer

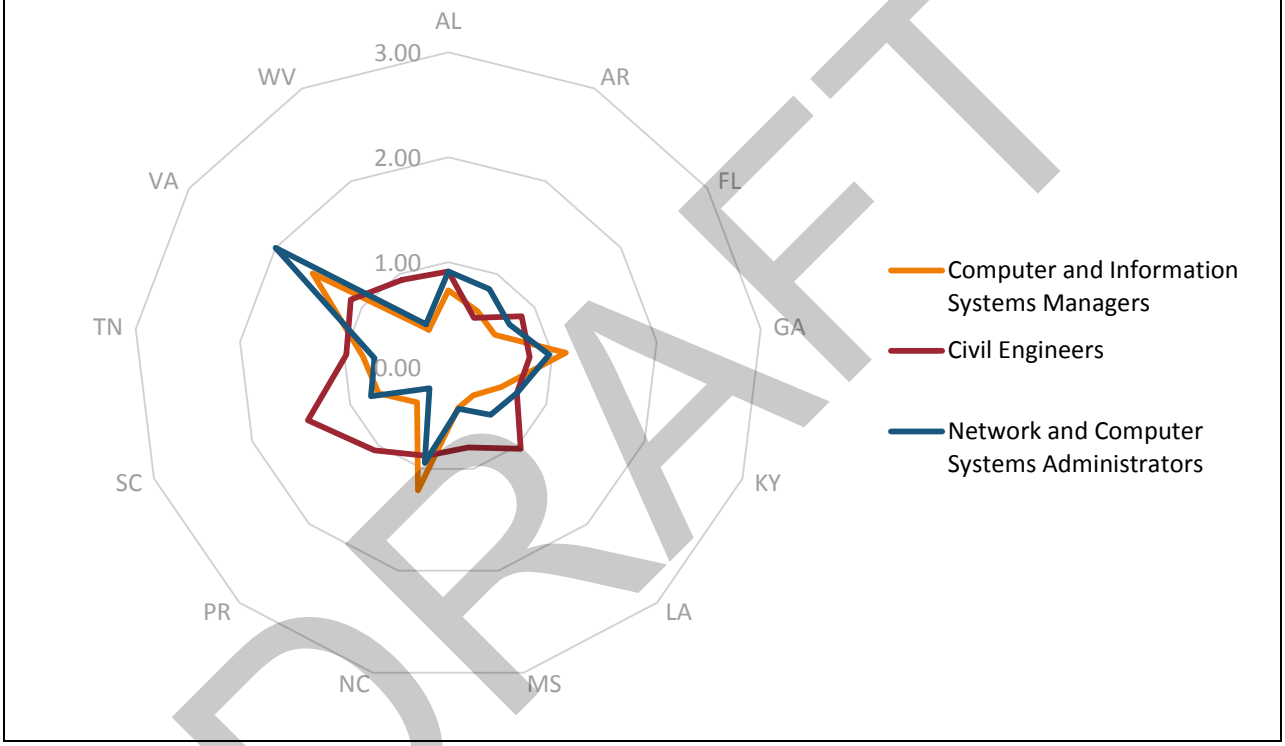
For Network and Computer Systems Administrators, examples of job titles are:

- Computer Systems Security Administrator
- LAN Administrator
- LAN Systems Administrator
- Local Area Network Administrator
- Network Coordinator
- Network Security Administrator
- Network Support Coordinator
- Network Support Manager
- Network Systems Administrator
- Network Systems Coordinator
- WAN Systems Administrator
- Wide Area Network Administrator

Demand for Key STEM Occupations across the Southeast Region

Demand for STEM professionals in the Southeast largely reflects national trends with the exception of Virginal, where the location quotient (1.0 indicates state-level trends match national statistics) exceeds 1 for all three priority occupations. This is expected due to its heavy concentration in aerospace, automotive, shipbuilding, and distribution and logistics sectors. South Carolina also shows a somewhat higher than average demand for Civil Engineers, although its location quotient for Computer and Information Systems Managers and Network and Computer Systems Administrators. The higher demand for Civil Engineers may reflect expected infrastructure projects for the state. The following figure depicts the concentration of STEM occupations across the southeast.

Concentration of STEM Occupations Across the Southeast



Employers of Key STEM Occupations across the Southeast Region

STEM occupations are reflected in many industries, with higher than average demand and limited supply a hallmark feature for most STEM professions. Not all STEM occupations are solely in the transportation industry, which leads to strong competition for employees. Table 23 provides a snapshot of job listings that are specifically in transportation versus other major industries based upon review of existing data for the region and the nation (National Center for O*NET Development n.d.)

Table 23: Industries Employing STEM Occupations

	Percentage of Job Listings in Transportation Industry	Other Major Industries Employing this Occupation
Computer and Information Systems Managers	<21%	▪ Professional, Scientific, and Technical Services (28%) ▪ Finance and Insurance (13%) ▪ Information (12%)

Table 23: Industries Employing STEM Occupations		
	Percentage of Job Listings in Transportation Industry	**Other Major Industries Employing this Occupation**
		▪ Management of companies and enterprises (9%) ▪ Government (7%)
Civil Engineers	<15%	▪ Professional, Scientific, and Technical Services (52%) ▪ Government (28%) ▪ Construction (5%)
Network and Computer Systems Administrators	<37%	▪ Professional, Scientific, and Technical Services (25%) ▪ Educational Services (11%) ▪ Information (11%) ▪ Finance and Insurance (9%) ▪ Manufacturing (7%)

Large employers of these professionals in the Southeast Region include FedEx, UPS, International Paper, AutoZone, Boeing, Embraer, General Dynamics, Lockheed Martin, state DOTs, and the US Army Corps of Engineers, with large installations in Vicksburg, Mississippi and Memphis, Tennessee.

Educational Requirements for STEM Occupations in the Southeast Region

All occupations in this category require a minimum of a Bachelor's degree. Many employers expect to hire employees with graduate-level educational attainment in these fields, or for employees to pursue graduate education as part of the benefits provided through employment. Table 24 provides hourly wages expected (based on national averages).

Table 24: Educational and Salary Data for STEM Occupations in the Southeast Region			
SOC Code	**Occupation Title**	**National Average Hourly Wage [a]**	**Typical Education Needed For Entry [a]**
11-3021	Computer and Information Systems Managers	$65.52	Bachelor's degree
17-2051	Civil Engineers	$41.89	Bachelor's degree
15-1142	Network and Computer Systems Administrators	$38.35	Bachelor's degree

Source. BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm)[a]

Vocational or Technical Occupations

The vocational/technical occupations identified as priorities for the Southeast Region reflect the heavy freight and aerospace industry concentration and the general difficulty in attracting professional drivers (both transit and tractor-trailer). Table 25 provides projects for each priority occupation in this category for the region.

Table 25: Occupational Projections for Vocational or Technical Occupations in the Southeast					
SOC Code	**Occupation Title**	**# of Employees, 2012[b]**	**Projected # of Employees, 2022 [b]**	**Change in # of Employees[b]**	**Percent Change [b]**
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	61,129	67,332	6,203	10.15%
53-3021	Bus Drivers, Transit and Intercity	30,535	35,257	4,722	15.46%
53-3032	Heavy and Tractor-Trailer Truck Drivers	460,000	520,291	60,291	13.11%
47-2073	Operating Engineers and Other Construction Equipment Operators	91,062	106,457	15,395	16.91%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	4,770	6,220	1,450	30.40%

Source. BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm)[b]

Examples of job titles for Bus and Truck Mechanics and Diesel Engine Specialists are as follows:

- Biodiesel Engine Specialist
- Diesel Engine Fitter
- Diesel Service Technician
- Marine Diesel Technician
- School Bus Mechanic
- Tractor Trailer Mechanic
- Truck Engine Technician

Types of Transit and Intercity Bus Drivers are:

- Charter Coach Driver
- Motor Coach Bus Driver
- Motor Coach Driver
- Motor Coach Tour Operator
- Public Transit Bus Driver
- Public Transit Trolley Driver

Heavy and Tractor-Trailer Truck Drivers might include:

- Auto Carrier Driver
- Cement Truck Driver
- Concrete Mixer Driver
- Concrete Mixer Truck Driver
- Fuel Truck Driver
- Garbage Truck Driver
- Line Haul Driver
- Logging Truck Driver
- Moving Van Driver
- Over-the-Road Driver
- Semi-Truck Driver
- Tanker Driver
- Tow Truck Operator

Examples of Operating Engineers and Other Construction Equipment Operators are as follows: Angle Dozer Operator

- Blade Grader Operator
- Bulldozer Operator
- Ditching Machine Operating Engineer
- Grader Operator
- Motor Grader Operator
- Scraper Operator
- Steam Shovel Operating Engineer
- Steam Shovel Operator

Aircraft Structure, Surfaces, Rigging, and Systems Assemblers are named:

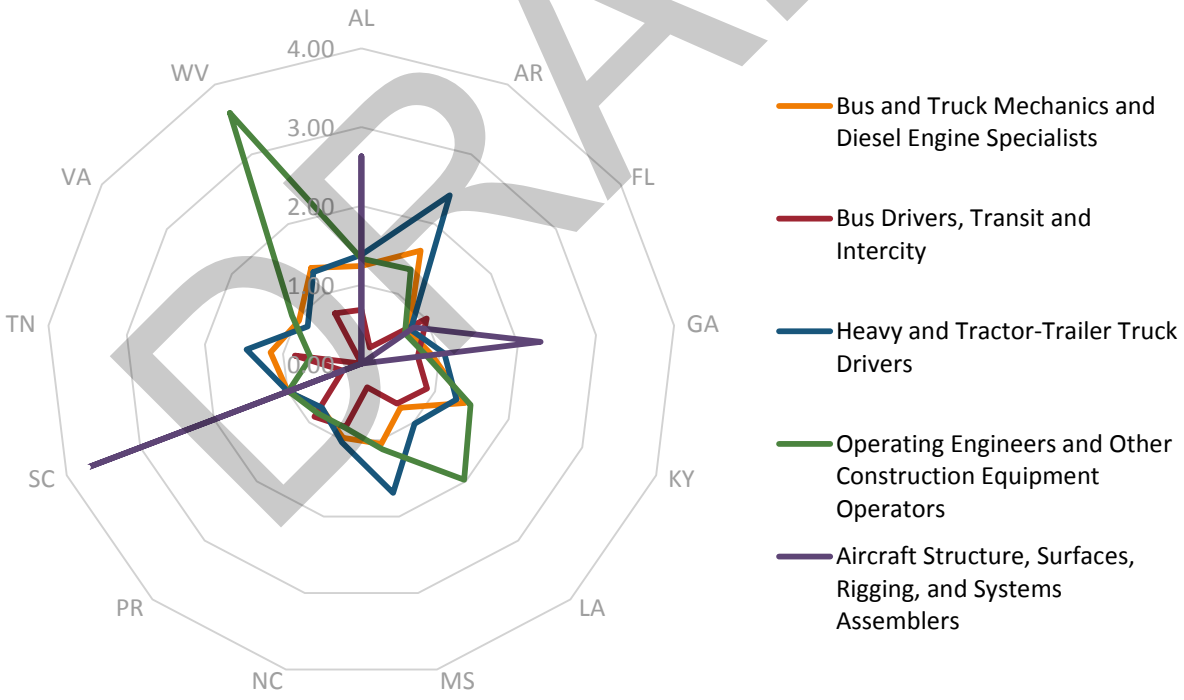
- Aircraft De-Icer Installer
- Aircraft Fuselage Framer

- Aircraft Layout Worker
- Aircraft Line Assembler
- Aircraft Part Assembler
- Aircraft Riveter
- Aircraft Sheet Metal Mechanic
- Helicopter Airframe Mechanic
- Propeller Layout Worker
- Tool Room Supervisor

Demand for Key Vocational or Technical Occupations across the Southeast Region

The demand for these priority occupations is more highly concentrated in Southeastern states than in other parts of the country. This can be seen in the following figure that displays location quotients for each priority occupation by state. Louisiana and West Virginia have a much higher concentration (LQ >3) for Operating Engineers and other Construction Equipment Operators. This may be due to infrastructure improvements projected for the state or expansion in numerous industries requiring construction workers. South Carolina, Georgia, and Alabama has a higher than average LQ for Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (although magnitude may be exacerbated by lack of data for this occupation). These three states all have large Air Force bases, numerous regional and international airports, and employers such as Lockheed Martin and Gulfstream that lead to this demand. Arkansas, Kentucky, Mississippi, and Tennessee all have higher concentrations of Heavy and Tractor-Trailer Truck Drivers than is reflected at the national level. This is expected with the importance of freight to these state economies and the dominance of trucking for freight shipments. Tennessee, West Virginia, Arkansas, and Kentucky all show slightly higher concentrations of Bus and Truck Mechanics and Diesel Engine Specialists than national averages. Again, the heavy presence of freight and employers (many headquartered) such as FedEx, UPS, and Walmart in these states support this finding.

Concentration of Vocational or Technical Occupations Across the Southeast



Note: Data is missing from most states for the Aircraft Structure, Surfaces, Rigging, and Systems Assemblers occupation

Employers of Key Vocational or Technical Occupations across the Southeast Region
Operating Engineers and Other Construction Equipment Operators are required for any construction project. Thus, not all of these employees may be part of the transportation industry specifically. Additionally, many of the employees in the Aircraft Structure, Surfaces, Rigging, and Systems Assemblers occupation may be employed in the manufacturing sector. This leads to competition for qualified workers with other industries for transportation employers. Table 26 outlines the percentage of job listings in the transportation industry for each occupation, along with other industries competing for these employees.

Table 26: Industries Employing Vocational or Technical Occupations

	Percentage of Job Listings in Transportation Industry	Other Major Industries Employing this Occupation
Bus and Truck Mechanics and Diesel Engine Specialists	100%	▪ Government
Bus Drivers, Transit and Intercity	100%	▪ Government
Heavy and Tractor-Trailer Truck Drivers	100%	
Operating Engineers and Other Construction Equipment Operators	<42%	▪ Construction (58%) ▪ Government (19%)
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	<5%	▪ Manufacturing (95%)

Source. National Center for O*NET Development n.d.

Regional employers for these job categories include transit agencies, state DOTs, airports, Air Force bases, and private industry employers such as JB Hunt, Ryder, Averitt Express, FedEx, UPS, Lockheed Martin, Gulfstream, Boeing, Walmart, and LandAir.

Educational Requirements for Vocational or Technical Occupations in the Southeast Region
All priority occupations in this category require limited educational attainment. Most require only a high school diploma. Heavy and Tractor-Trailer Truck Drivers requires a commercial driver's license (CDL) beyond the high school diploma. Table 27 outlines national average hourly wages for these jobs.

Table 27: Educational and Salary Data for Vocational or Technical Occupations in the Southeast			
SOC Code	**Occupation Title**	**National Average Hourly Wage [a]**	**Typical Education Needed For Entry [a]**
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	$21.71	High school diploma or equivalent
53-3021	Bus Drivers, Transit and Intercity	$18.95	High school diploma or equivalent
53-3032	Heavy and Tractor-Trailer Truck Drivers	$20.16	Postsecondary non-degree award
47-2073	Operating Engineers and Other Construction Equipment Operators	$23.09	High school diploma or equivalent
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	$24.43	High school diploma or equivalent

Source. [a] BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm)

Laborer Occupations

The only priority occupation in this category identified for the Southeast Region is First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand. Table 28 describes the projections for employee demand for the region for this occupation.

Table 28: Occupational Projections for Laborer Occupations in the Southeast					
SOC Code	**Occupation Title**	**# of Employees, 2012 [b]**	**Projected # of Employees, 2022 [b]**	**Change in # of Employees [b]**	**Percent Change [b]**
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	42,950	48,890	5,940	13.83%

Source. BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm)[b]

Examples of job titles from the First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand occupation are:

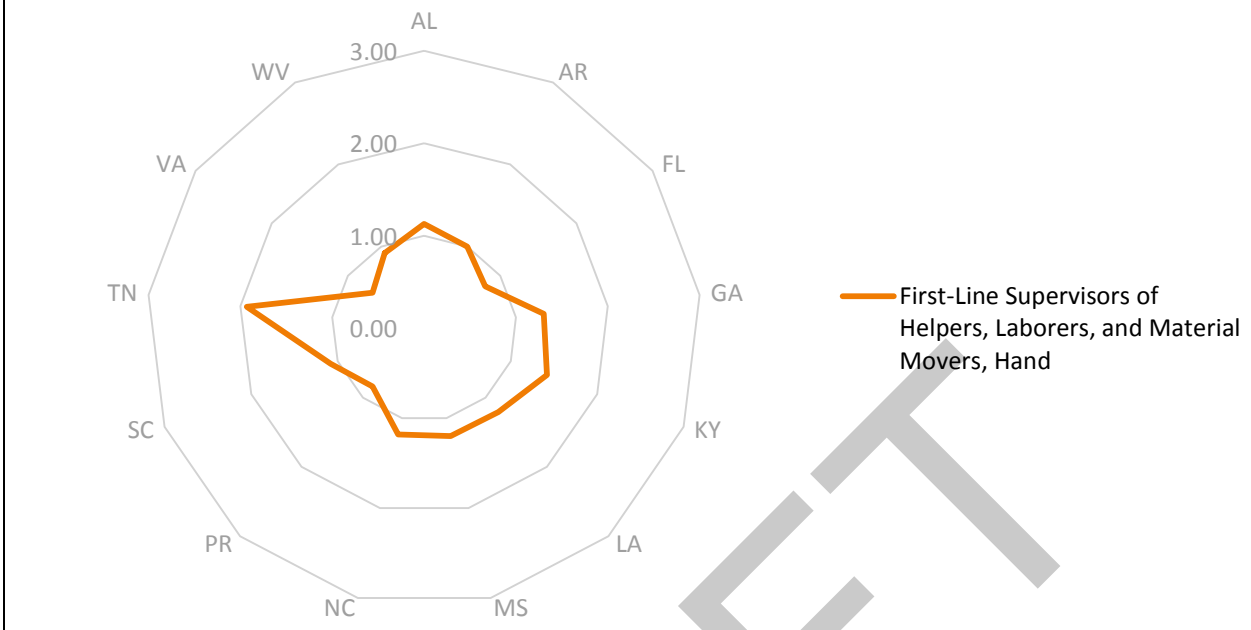
- Material Handling Crew Supervisor
- Warehouse Supervisor

These job titles are prevalent in the distribution and logistics sector.

Demand for Key Laborer Occupations across the Southeast Region

The jobs associated with this occupation are predominantly freight-related. Given the strong industry segment reflected in most states in the Southeast Region, this supports its selection as a priority occupation. Further, the following figure shows Tennessee has a higher than average concentration (LQ=2) of these workers than is seen in national statistics. Georgia, Kentucky, Alabama, Mississippi, and North Carolina also show slightly higher than average concentrations.

Concentration of Laborer Occupations Across the Southeast



Employers of Key Laborer Occupations across the Southeast Region

The manufacturing sector is the primary competition for this key laborer occupation, as indicated in Table 29. This means that transportation employers may have to use more aggressive recruiting methods and provide equal or better pay and benefits to attract and retain these workers.

Table 29: Industries Employing Laborer Occupations

	Percentage of Job Listings in Transportation Industry	Other Major Industries Employing this Occupation
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	52%	▪ Manufacturing

Employers for these workers in the Southeast Region include private sector companies such as Toyota, FedEx, UPS, DHL and Walmart.

Educational Requirements for Laborer Occupations in the Southeast Region

Workers for the First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand occupation need only a high school diploma or equivalent to qualify for these jobs. The national average hourly wage is shown in Table 30. One possible mechanism for attracting and recruiting workers specifically to these jobs in the transportation industry would be through partnerships with local Career and Technical Education Transportation, Distribution, and Logistics pathway programs in high schools.

Table 30: Educational and Salary Data for Laborer Occupations in the Southeast			
SOC Code	**Occupation Title**	**National Average Hourly Wage [a]**	**Typical Education Needed For Entry [a]**
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	$23.55	High school diploma or equivalent

Source. BLS Employment Data (www.bls.gov/oes/current/oes_nat.htm)[a]

Supply Chain and Logistics Occupations

Supply Chain and Logistics occupations include a wide variety of professionals, many of whom must have advanced education. Two of the three priority occupations for the Southeast Region in this category fall into this segment, while the other falls into the class of laborer. Table 31 shows the projections for each priority occupation in this category for the Southeast Region.

Exhibit 31: Occupational Projections for Supply Chain and Logistics Occupations in the Southeast					
SOC Code	**Occupation Title**	**# of Employees, 2012[b]**	**Projected # of Employees, 2022[b]**	**Change in # of Employees[b]**	**Percent Change [b]**
13-1081	Logisticians	29,572	37,392	7,820	26.44%
15-2031	Operations Research Analysts	19,365	24,129	4,764	24.60%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	620,550	699,081	78,531	12.66%

Source. BLS Long Term Projections (www.projectionscentral.com/Projections/LongTerm)[b]

Examples of job titles for Logisticians are:

- Logistician
- Logistics Analyst
- Logistics Coordinator
- Logistics Planner
- Logistics Specialist

Operations Research Analyst job titles are as follows:

- Operations Analyst
- Operations Research Analyst
- Procedure Analyst
- Process Analyst

Job titles from the Laborers and Freight, Stock, and Material Movers, Hand occupation include:

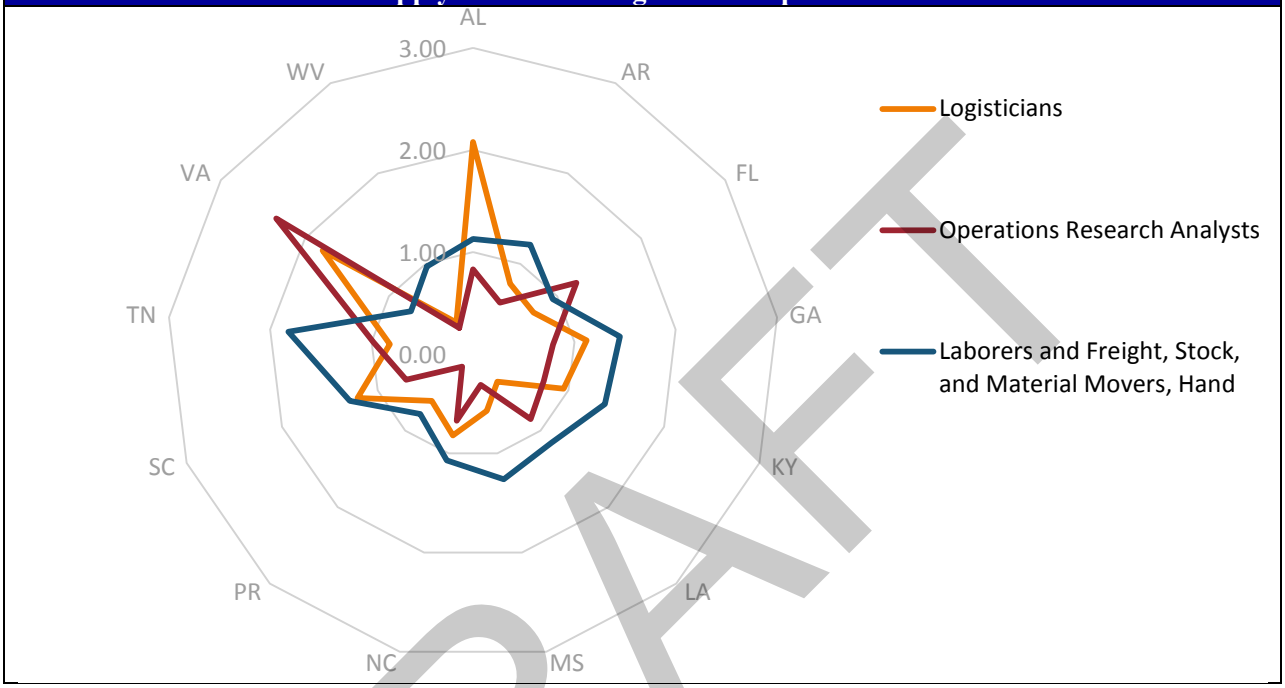
- Cargo Handler
- Cart Pusher
- Freight Handler
- Grave Digger
- Manufacturing Laborer
- Material Handler
- Package Handler
- Shipping and Receiving Material Handler
- Stock Mover
- Van Loader
- Wharf Laborer

Demand for Key Supply Chain and Logistics Occupations across the Southeast Region

The demand for these priority occupations is stronger in several Southeast Region states than national averages. For instance, Logisticians have a strong concentration in Alabama, Virginia, South Carolina, and Georgia (LQ = 2 for Alabama and >1 for Virginia, South Carolina, and Georgia). Operations Research Analyst jobs are highly concentrated in Virginia (LQ = 2) and Florida (LQ >1). Laborers and

Freight, Stock, and Material Movers, Hand are highly concentrated in Tennessee, North Carolina, South Carolina, Mississippi, Louisiana, Kentucky, Georgia, Arkansas, and Alabama, with all states posting LQ >1 for this occupation. The predominance of distribution and logistics industry employers within the Southeast Region account for the higher concentrations seen within this job category. The following figure depicts the location quotients for each state and each priority occupation within the Supply Chain and Logistics category.

Concentration of Supply Chain and Logistics Occupations Across the Southeast



Employers of Key Supply Chain and Logistics Occupations across the Southeast Region

The manufacturing and finance/insurance industries are key competitors for workers in this set of priority occupation listings. Government agencies (other than transportation related) are also key competitors for workforce talent in this area. Table 32 provides information regarding estimates for percentages of job listings found in the transportation industry for these occupations, as well as key industry competitors for workers in these fields.

Table 32: Industries Employing Supply Chain and Logistics Occupations

	Percentage of Job Listings in Transportation Industry	Other Major Industries Employing this Occupation
Logisticians	<44%	▪ Manufacturing (25%) ▪ Government (24%) ▪ Professional, Scientific, and Technical Services (17%)
Operations Research Analysts	<37%	▪ Finance and Insurance (25%) ▪ Professional, Scientific, and Technical Services (23%) ▪ Government (15%)
Laborers and Freight, Stock, and Material Movers, Hand	39%	▪ Administrative and Support Services (21%) ▪ Retail Trade (14%) ▪ Manufacturing

Employers of these professionals (particularly Logisticians and Operations Research Analysts) may include state DOTs, military installations, other state agencies (such as Department of Labor), and private sector companies such as FedEx, UPS, DHL, JB Hunt, and numerous trucking and logistics companies located within the Southeast Region.

Educational Requirements for Supply Chain and Logistics Occupations in the Southeast Region
Both Logisticians and Operations and Research Analysts require a minimum of a Bachelor's Degree. Programs in these fields at institutions of higher education are limited, which may also lead to fewer qualified individuals pursuing these degrees. The Laborers and Freight, Stock, and Material Movers, Hand occupation is the only occupation identified as a priority for the Southeast Region that does not require at least a high school diploma or equivalent. National average hourly wages for each occupation are provided in Table 33.

Table 33: Educational and Salary Data for Supply Chain and Logistics Occupations in the Southeast

SOC Code	Occupation Title	National Average Hourly Wage [a]	Typical Education Needed For Entry [a]
13-1081	Logisticians	$36.94	Bachelor's degree
15-2031	Operations Research Analysts	$39.88	Bachelor's degree
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	$13.07	Less than high school

Skills Needs for Key Occupations

Understanding the skill needs for priority occupations plays a major role in addressing gaps within the transportation workforce pipeline. It is important to clearly delineate job requirements as well as training, certification, or degrees needed for applicants to qualify for these positions so that applicants see a clear pathway into the occupation and employers can identify the point in the pipeline where recruitment and/or training program implementation should occur. This information may also help create public/private/education stakeholder partnerships to address gaps through recruiting and educational interventions.

The following job sites were used to obtain the most sought after skills and requirements for our key occupations: Monster.com, GlassCeiling.com, and Indeed.com. To further understand the unique skill sets required by each of the key occupations listed above, the national database O*NET, Occupational Information Network (National Center for O*NET Development n.d.), was used to define the overarching skill sets needed within each occupation. Table 34 outlines the key requirements based on job postings as well as unique skillsets highlighted in O*Net for each priority occupation in the Southeast Region.

Table 34: Skill Requirements for Southeast Regional Key Occupations		
Occupation	**Top Skills Highlighted in Job Postings**	**Additional Required Skills**
STEM Occupations		
Computer and information systems managers **(11-3021)**	• Review project plans to plan and coordinate project activity. • Manage backup, security and user help systems. • Develop and interpret organizational goals, policies, and procedures. • Develop computer information resources, providing for data security and control, strategic computing, and disaster recovery. • Consult with users, management, vendors, and technicians to assess computing needs and system requirements. • Stay abreast of advances in technology. • Meet with department heads, managers, supervisors, vendors, and others, to solicit cooperation and resolve problems. • Provide users with technical support for computer problems. • Recruit, hire, train and supervise staff, or participate in staffing decisions. • Evaluate data processing proposals to assess project feasibility and requirements. • Direct daily operations of department, analyzing workflow, establishing priorities, developing standards and setting deadlines. • Assign and review the work of systems analysts, programmers, and other computer-related workers. • Evaluate the organization's technology use and needs and recommend improvements, such as hardware and software upgrades.	• **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Instructing** — Teaching others how to do something. • **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Operations Analysis** — Analyzing needs and product requirements to create a design.

Civil engineers **(17-2051)**	• Design or prepare plans for new transportation systems or parts of systems, such as airports, commuter trains, highways, streets, bridges, drainage structures, or roadway lighting. • Investigate traffic problems and recommend methods to improve traffic flow or safety. • Check construction plans, design calculations, or cost estimations to ensure completeness, accuracy, or conformity to engineering standards or practices. • Prepare administrative, technical, or statistical reports on traffic-operation matters, such as accidents, safety measures, or pedestrian volume or practices. • Prepare project budgets, schedules, or specifications for labor or materials. • Evaluate traffic control devices or lighting systems to determine need for modification or expansion. • Evaluate transportation systems or traffic control devices or lighting systems to determine need for modification or expansion. • Estimate transportation project costs. • Model transportation scenarios to evaluate the impacts of activities such as new development or to identify possible solutions to transportation problems. • Plan alteration or modification of existing transportation structures to improve safety or function. • Participate in contract bidding, negotiation, or administration. • Review development plans to determine potential traffic impact. • Supervise the maintenance or repair of transportation systems or system components.	• **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one. • **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes. • **Mathematics** — Using mathematics to solve problems. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Operations Analysis** — Analyzing needs and product requirements to create a design

Network and Computer Systems Administrators **(15-1142)**	• Maintain and administer computer networks and related computing environments including computer hardware, systems software, applications software, and all configurations. • Perform data backups and disaster recovery operations. • Diagnose, troubleshoot, and resolve hardware, software, or other network and system problems, and replace defective components when necessary. • Plan, coordinate, and implement network security measures to protect data, software, and hardware. • Configure, monitor, and maintain email applications or virus protection software. • Operate master consoles to monitor the performance of computer systems and networks, and to coordinate computer network access and use. • Load computer tapes and disks, and install software and printer paper or forms. • Design, configure, and test computer hardware, networking software and operating system software. • Monitor network performance to determine whether adjustments need to be made, and to determine where changes will need to be made in the future. • Confer with network users about how to solve existing system problems. • Research new technologies by attending seminars, reading trade articles, or taking classes, and implement or recommend the implementation of new technologies. • Analyze equipment performance records to determine the need for repair or replacement. • Implement and provide technical support for voice services and equipment, such as private branch exchange, voice mail system, and telecom system. • Maintain an inventory of parts for emergency repairs. • Recommend changes to improve systems and network configurations, and determine hardware or software requirements related to such changes. • Gather data pertaining to customer needs, and use the information to identify, predict, interpret, and evaluate system and network requirements. • Train people in computer system use. • Coordinate with vendors and with company personnel to facilitate purchases. • Perform routine network startup and shutdown procedures, and maintain control records. • Maintain logs related to network functions, as well as maintenance and repair records.	• **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Programming** — Writing computer programs for various purposes. • **Troubleshooting** — Determining causes of operating errors and deciding what to do about it. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance. • **Operation and Control** — Controlling operations of equipment or systems. • **Operations Analysis** — Analyzing needs and product requirements to create a design.

Vocational or Technical Occupations		
Bus and truck mechanics and diesel engine specialists **(49-3031)**	• Inspect brake systems, steering mechanisms, wheel bearings, and other important parts to ensure that they are in proper operating condition. • Adjust and reline brakes, align wheels, tighten bolts and screws, and reassemble equipment. • Examine and adjust protective guards, loose bolts, and specified safety devices. • Test drive trucks and buses to diagnose malfunctions or to ensure that they are working properly. • Attach test instruments to equipment, and read dials and gauges to diagnose malfunctions. • Rebuild gas or diesel engines. • Inspect and verify dimensions and clearances of parts to ensure conformance to factory specifications. • Inspect, test, and listen to defective equipment to diagnose malfunctions, using test instruments • Recondition and replace parts, pistons, bearings, gears, and valves. • Specialize in repairing and maintaining parts of the engine • Inspect, repair, and maintain automotive and mechanical equipment and machinery • Disassemble and overhaul internal combustion engines, pumps, generators, transmissions, clutches, and differential units.	• **Repairing** — Repairing machines or systems using the needed tools. • **Troubleshooting** — Determining causes of operating errors and deciding what to do about it. • **Operation and Control** — Controlling operations of equipment or systems. • **Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed. • **Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance. • **Equipment Selection** — Determining the kind of tools and equipment needed to do a job. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Bus drivers, transit and intercity **(53-3021)**	• Drive vehicles over specified routes or to specified destinations according to time schedules, complying with traffic regulations to ensure that passengers have a smooth and safe ride. • Park vehicles at loading areas so that passengers can board. • Advise passengers to be seated and orderly while on vehicles. • Inspect vehicles and check gas, oil, and water levels prior to departure. • Assist passengers, such as elderly or disabled individuals, on and off bus, ensure they are seated properly, help carry baggage, and answer questions about bus schedules or routes. • Handle passenger emergencies or disruptions. • Record information, such as cash receipts and ticket fares, and maintain log book. • Collect tickets or cash fares from passengers. • Regulate heating, lighting, and ventilating systems for passenger comfort. • Report delays or accidents. • Maintain cleanliness of bus or motor coach. • Load and unload baggage in baggage compartments. • Make minor repairs to vehicle and change tires	• **Operation and Control** — Controlling operations of equipment or systems. • **Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly. • **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. • **Time Management** — Managing one's own time and the time of others. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Service Orientation** — Actively looking for ways to help people. • **Social Perceptiveness** — Being aware of others' reactions and understanding why they react as they do. • **Speaking** — Talking to others to convey information effectively.

Heavy and tractor-trailer drivers **(53-3032)**	• Check vehicles to ensure that mechanical, safety, and emergency equipment is in good working order. • Follow appropriate safety procedures for transporting dangerous goods. • Inspect loads to ensure that cargo is secure. • Maintain logs of working hours or of vehicle service or repair status, following applicable state and federal regulations. • Secure cargo for transport • Maneuver trucks into loading or unloading positions, following signals from loading crew and checking that vehicle and loading equipment are properly positioned. • Report vehicle defects, accidents, traffic violations, or damage to the vehicles. • Obtain receipts or signatures for delivered goods and collect payment for services when required. • Check all load-related documentation for completeness and accuracy. • Read bills of lading to determine assignment details. • Collect delivery instructions from appropriate sources, verifying instructions and routes. • Check conditions of trailers after contents have been unloaded to ensure that there has been no damage. • Perform basic vehicle maintenance tasks, such as adding oil, fuel, or radiator fluid or performing minor repairs. • Read and interpret maps to determine vehicle routes. • Operate equipment, such as truck cab computers, CB radios, phones, or global positioning systems (GPS) equipment to exchange necessary information with bases, supervisors, or other drivers. • Load or unload trucks or help others with loading or unloading, using special loading-related equipment or other equipment as necessary. • Follow special cargo-related procedures • Inventory and inspect goods to be moved to determine quantities and conditions. • Perform emergency roadside repairs, such as changing tires or installing light bulbs, tire chains, or spark plugs. • Give directions to laborers who are packing goods and moving them onto trailers.	• **Operation and Control** — Controlling operations of equipment or systems. • **Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly. • **Time Management** — Managing one's own time and the time of others. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents. • **Speaking** — Talking to others to convey information effectively. • **Troubleshooting** — Determining causes of operating errors and deciding what to do about it.

Operating engineers and other construction equipment operators **(47-2073)**	• Learn and follow safety regulations. • Take actions to avoid potential hazards or obstructions, such as utility lines, other equipment, other workers, or falling objects. • Locate underground services, such as pipes or wires, prior to beginning work. • Monitor operations to ensure that health and safety standards are met. • Adjust handwheels and depress pedals to control attachments, such as blades, buckets, scrapers, or swing booms. • Start engines, move throttles, switches, or levers, or depress pedals to operate machines, such as bulldozers, trench excavators, road graders, or backhoes. • Coordinate machine actions with other activities, positioning or moving loads in response to hand or audio signals from crew members. • Load and move dirt, rocks, equipment, or other materials, using trucks, crawler tractors, power cranes, shovels, graders, or related equipment. • Check fuel supplies at sites to ensure adequate availability. • Drive and maneuver equipment equipped with blades in successive passes over working areas to remove topsoil, vegetation, or rocks or to distribute and level earth or terrain. • Signal operators to guide movement of tractor-drawn machines. • Keep records of material or equipment usage or problems encountered. • Align machines, cutterheads, or depth gauge makers with reference stakes and guidelines or ground or position equipment, following hand signals of other workers. • Operate tractors or bulldozers to perform such tasks as clearing land, mixing sludge, trimming backfills, or building roadways or parking lots. • Repair and maintain equipment, making emergency adjustments or assisting with major repairs as necessary. • Connect hydraulic hoses, belts, mechanical linkages, or power takeoff shafts to tractors. • Operate equipment to demolish or remove debris or to remove snow from streets, roads, or parking lots. • Operate loaders to pull out stumps, rip asphalt or concrete, rough-grade properties, bury refuse, or perform general cleanup. • Select and fasten bulldozer blades or other attachments to tractors, using hitches. • Push other equipment when extra traction or assistance is required. • Test atmosphere for adequate oxygen or explosive conditions when working in confined spaces. • Talk to clients and study instructions, plans, or diagrams to establish work requirements. • Operate compactors, scrapers, or rollers to level, compact, or cover refuse at disposal grounds. • Operate road watering, oiling, or rolling equipment, or street sealing equipment, such as chip spreaders. • Turn valves to control air or water output of compressors or pumps. • Compile cost estimates for jobs.	• **Operation and Control** — Controlling operations of equipment or systems. • **Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Coordination** — Adjusting actions in relation to others' actions. • **Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed. • **Troubleshooting** — Determining causes of operating errors and deciding what to do about it.

Aircraft Structure, Surfaces, Rigging, and Systems Assemblers **(51-2011)**	• Assemble parts, fittings, or subassemblies on aircraft, using layout tools, hand tools, power tools, or fasteners, such as bolts, screws, rivets, or clamps. • Read blueprints, illustrations, or specifications to determine layouts, sequences of operations, or identities or relationships of parts. • Attach brackets, hinges, or clips to secure or support components or subassemblies, using bolts, screws, rivets, chemical bonding, or welding. • Inspect or test installed units, parts, systems, or assemblies for fit, alignment, performance, defects, or compliance with standards, using measuring instruments or test equipment. • Adjust, repair, rework, or replace parts or assemblies to ensure proper operation. • Cut, trim, file, bend, or smooth parts to ensure proper fit and clearance. • Fabricate parts needed for assembly or installation, using shop machinery or equipment. • Layout and mark reference points and locations for installation of parts or components, using jigs, templates, or measuring and marking instruments. • Assemble prefabricated parts to form subassemblies. • Set, align, adjust, or synchronize aircraft armament or rigging or control system components to established tolerances or requirements using sighting devices and hand tools. • Join structural assemblies, such as wings, tails, or fuselage. • Position and align subassemblies in jigs or fixtures, using measuring instruments and following blueprint lines and index points. • Assemble prototypes or integrated-technology demonstrators of new or emerging environmental technologies for aircraft. • Swage fittings onto cables, using swaging machines. • Manually install structural assemblies or signal crane operators to position assemblies for joining. • Align, fit, assemble, connect, or install system components, using jigs, fixtures, measuring instruments, hand tools, or power tools. • Set up or operate machines or systems to crimp, cut, bend, form, swage, flare, bead, burr, or straighten tubing, according to specifications. • Place and connect control cables to electronically controlled units, using hand tools, ring locks, cotter keys, threaded connectors, turnbuckles, or related devices. • Install mechanical linkages and actuators, using tensiometers • Clean aircraft structures, parts, or components, using aqueous, semi-aqueous, aliphatic hydrocarbon, or organic solvent cleaning products or techniques to reduce carbon or other harmful emissions. • Mark identifying information on tubing or cable assemblies, using etching devices, labels, rubber stamps, or other methods. • Capture or segregate waste material, such as aluminum swarf, machine cutting fluid, or solvents, for recycling or environmentally responsible disposal.	• **Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance. • **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed. • **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one. • **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents. • **Speaking** — Talking to others to convey information effectively. • **Time Management** — Managing one's own time and the time of others.

Laborer Occupations		
First-line supervisors of transportation and material-moving machine and vehicle operators **(53-1031)**	• Enforce safety rules and regulations. • Plan work assignments and equipment allocations to meet transportation, operations or production goals. • Direct workers in transportation or related services, such as pumping, moving, storing, or loading or unloading of materials or people. • Review orders, production schedules, blueprints, or shipping or receiving notices to determine work sequences and material shipping dates, types, volumes, or destinations. • Inspect or test materials, stock, vehicles, equipment, or facilities to ensure that they are safe, free of defects, and consistent with specifications. • Confer with customers, supervisors, contractors, or other personnel to exchange information or to resolve problems. • Monitor field work to ensure proper performance and use of materials • Dispatch personnel and vehicles in response to telephone or radio reports of emergencies. • Drive vehicles or operate machines or equipment to complete work assignments or to assist workers. • Plan and establish transportation routes. • Maintain or verify records of time, materials, expenditures, or crew activities. • Interpret transportation or tariff regulations, shipping orders, safety regulations, or company policies and procedures for workers. • Prepare, compile, and submit reports on work activities, operations, production, or work-related accidents. • Resolve worker problems or collaborate with employees to assist in problem resolution. • Recommend or implement personnel actions, such as employee selection, evaluation, rewards, or disciplinary actions. • Perform or schedule repairs or preventive maintenance of vehicles or other equipment. • Explain and demonstrate work tasks to new workers or assign training tasks to experienced workers. • Requisition needed personnel, supplies, equipment, parts, or repair services. • Recommend and implement measures to improve worker motivation, equipment performance, work methods, or customer services. • Examine, measure, or weigh cargo or materials to determine specific handling requirements. • Assist workers in tasks such as coupling railroad cars or loading vehicles. • Compute or estimate cash, payroll, transportation, personnel, or storage requirements.	• **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. • **Coordination** — Adjusting actions in relation to others' actions. • **Management of Personnel Resources** — Motivating, developing, and directing people as they work, identifying the best people for the job. • **Time Management** — Managing one's own time and others. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Speaking** — Talking to others to convey information effectively. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents. • **Social Perceptiveness** — Being aware of others' reactions and understanding why they react as they do. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one. • **Negotiation** — Bringing others together and reconcile differences. • **Writing** — Communicating effectively in writing as appropriate for the needs of the audience. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Persuasion** — Persuading others to change their minds or behavior. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Instructing** — Teaching others how to do something. • **Learning Strategies** — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.

Supply Chain and Logistics Occupations		
Logisticians **(13-1081)**	• Maintain and develop positive business relationships with a customer's key personnel involved in, or directly relevant to, a logistics activity. • Develop an understanding of customers' needs and take actions to ensure that such needs are met. • Direct availability and allocation of materials, supplies, and finished products. • Collaborate with other departments as necessary to meet customer requirements, to take advantage of sales opportunities or, in the case of shortages, to minimize negative impacts on a business. • Protect and control proprietary materials. • Review logistics performance with customers against targets, benchmarks, and service agreements. • Develop and implement technical project management tools, such as plans, schedules, and responsibility and compliance matrices. • Direct team activities, establishing task priorities, scheduling and tracking work assignments, providing guidance, and ensuring the availability of resources. • Report project plans, progress, and results. • Direct and support the compilation and analysis of technical source data necessary for product development. • Explain proposed solutions to customers, management, or other interested parties through written proposals and oral presentations. • Develop proposals that include documentation for estimates. • Plan, organize, and execute logistics support activities such as maintenance planning, repair analysis, and test equipment recommendations. • Provide project management services, including the provision and analysis of technical data. • Participate in the assessment and review of design alternatives and design change proposal impacts. • Support the development of training materials and technical manuals. • Stay informed of logistics technology advances and apply appropriate technology to improve logistics processes. • Redesign the movement of goods to maximize value and minimize costs. • Manage subcontractor activities, reviewing proposals, developing performance specifications, and serving as liaisons between subcontractors and organizations. • Manage the logistical aspects of product life cycles, including coordination or provisioning of samples, and the minimization of obsolescence. • Perform system lifecycle cost analysis and develop component studies.	• **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting when inappropriate. • **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents. • **Speaking** — Talking to others to convey information effectively. • **Time Management** — Managing one's own time and the time of others. • **Coordination** — Adjusting actions in relation to others' actions. • **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one. • **Service Orientation** — Actively looking for ways to help people. • **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Management of Personnel Resources** — Motivating, developing, and directing people as they work, identifying best people for job. • **Social Perceptiveness** — Being aware of others' reactions and understanding why they react as they do. • **Operations Analysis** — Analyzing needs and product requirements to create a design. • **Persuasion** — Persuading others to change their minds or behavior. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Writing** — Communicating effectively in writing as appropriate for the needs of the audience.

Operations Research Analysts **(15-2031)**	• Formulate mathematical or simulation models of problems, relating constants and variables, restrictions, alternatives, conflicting objectives, and their numerical parameters. • Collaborate with senior managers and decision makers to identify and solve a variety of problems and to clarify management objectives. • Collaborate with others in the organization to ensure successful implementation of chosen problem solutions. • Prepare management reports defining and evaluating problems and recommending solutions. • Study and analyze information about alternative courses of action to determine which plan will offer the best outcomes. • Specify manipulative or computational methods to be applied to models. • Perform validation and testing of models to ensure adequacy and reformulate models as necessary. • Define data requirements and gather and validate information, applying judgment and statistical tests. • Analyze information obtained from management to conceptualize and define operational problems. • Observe the current system in operation and gather and analyze information about each of the parts of component problems, using a variety of sources. • Design, conduct, and evaluate experimental operational models in cases where models cannot be developed from existing data. • Break systems into their component parts, assign numerical values to each component, and examine the mathematical relationships between them.	• **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • **Mathematics** — Using mathematics to solve problems. • **Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • **Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting when inappropriate. • **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one. • **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents. • **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • **Writing** — Communicating effectively in writing as appropriate for the needs of the audience. • **Operations Analysis** — Analyzing needs and product requirements to create a design. • **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes. • **Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making. • **Speaking** — Talking to others to convey information effectively. • **Time Management** — Managing one's own time and the time of others. • **Coordination** — Adjusting actions in relation to others' actions. • **Learning Strategies** — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things. • **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • **Science** — Using scientific rules and methods to solve problems.

Laborers and freight, stock, and material movers, hand **(53-7062)**	• Move freight, stock, or other materials to and from storage or production areas, loading docks, delivery vehicles, ships, or containers, by hand or using trucks, tractors, or other equipment. • Sort cargo before loading and unloading. • Attach identifying tags to containers or mark them with identifying information. • Read work orders or receive oral instructions to determine work assignments or material or equipment needs. • Stack cargo in locations such as transit sheds or in holds of ships as directed, using pallets or cargo boards. • Record numbers of units handled or moved, using daily production sheets or work tickets. • Install protective devices, such as bracing, padding, or strapping, to prevent shifting or damage to items being transported. • Direct spouts and position receptacles, such as bins, carts, or containers so they can be loaded. • Attach slings, hooks, or other devices to lift cargo and guide loads. • Maintain equipment storage areas to ensure that inventory is protected. • Adjust controls to guide, position, or move equipment, such as cranes, booms, or cameras. • Guide loads being lifted to prevent swinging. • Wash out cargo containers or storage areas. • Pack containers and re-pack damaged containers. • Carry needed tools or supplies from storage or trucks and return them after use. • Shovel material, such as gravel, ice, or spilled concrete, into containers or bins or onto conveyors. • Connect electrical equipment to power sources so that it can be tested before use. • Carry out general yard duties, such as performing shunting on railway lines. • Rig or dismantle props or equipment, such as frames, scaffolding, platforms, or backdrops, using hand tools.	• **Static Strength** — The ability to exert maximum muscle force to lift, push, pull, or carry objects. • **Multilimb Coordination** — The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion. • **Trunk Strength** — The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing. • **Control Precision** — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions. • **Manual Dexterity** — The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

Conclusion

This report documents current industry trends within each state/commonwealth in the Southeast Region, provides analysis of regional priority job occupations based upon existing data, industry publications, and stakeholder feedback, and outlines in detail the projections, education or training requirements, and unique skillsets needed for successful employment in these occupations. Key transportation-related industry jobs for the Southeast Region fall within the STEM, Vocational or Technical Occupations, Supply Chain and Logistics, and Laborers categories. A unique feature of the region is the heavy influence of aerospace or aviation industry as well as distribution and logistics. The regions' infrastructure also supports a strong distribution and logistics sector, with all modes represented in the region, and most within all states. The expansive coastline and port operations as well as extensive US interstate system and railroad infrastructure within the region set the stage for growth in intermodal operations. With freight volumes expected to increase significantly (along with intermodal interactions), this trend will create a lasting need for increased workers in the freight transportation arena.

The SETWC's focus areas of women in transportation, freight, and military transition to the workforce are well suited to the region's industry presence. With the presence of significant freight operations within the entire Southeast Region, this focus area is clearly one of extreme relevance for SETWC. The majority of industry stakeholders are either directly or tangentially related to freight operations, and there is strong interest in improving the ability to attract and retain workers in these jobs. Women are underrepresented in transportation occupations in general, but even more so in freight-related jobs and professions. Awareness initiatives and programs developed by SETWC have strong potential for impact, and industry and professional organization stakeholders are very interested in being engaged in work to improve progress toward diversity goals. Two primary examples of such partnerships are SETWC partnerships with Women in Trucking and Vaco Logistics. SETWC is working with Women in Trucking to develop a trucking industry index that will provide baseline statistics and enable measurement of progress in achieving greater representation of women in the trucking industry across all career paths (from drivers to the C-suite). The Vaco Logistics partnership includes creation of the Society of Female Transportation Professionals in the Memphis area and support for creating new programs to mentor young women considering transportation careers and expanding the Choosing Transportation Summit to a regional audience. These partnerships are exemplars for how relationships can be developed to truly move the needle on transportation workforce challenges.

The significant presence of military installations in the Southeast Region (including Air Force and Naval installations) as well as the newly established Veterans Resource Center at the University of Memphis provide the opportunity to leverage relationships to create a clear pipeline for military/veterans to enter the civilian workforce. Transportation occupations are well suited to these potential employees' skillsets, as the bulk of military jobs are transportation-related. These connections need to be made readily apparent for potential workers and pathways into certification programs and institutions of higher education need to be well aligned for easier transitions to occur. Additionally, many transitioning military workers have other needs in smoothing the path from military to civilian workforce, and programs such as the Veterans Resource Center can be extremely valuable and supportive in this process.

This report will be open for regional stakeholder review through January 2016, with the final draft incorporating additional stakeholder feedback to be released in March 2016 at the next Choosing Transportation Summit. Following the release of the final report, SETWC will begin the process of preparing the Phase 2 report, which will discuss potential workforce development programs to address skill needs as well as detailed action plans to address needs.

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