



Beyond Workforce Shortages: Challenges & Opportunities



October 2018
Construction Industry Resources, LLC





In This Report

2 Executive Summary

3 Automotive Manufacturing Regional Macro-Economy

Overview

Southeast Region Automotive Production Trends

Southeast Region Automotive-Related Construction Spending by State

6 Construction Labor Demand/Supply

Southeastern Total Construction Labor Demand/Supply Projection by Trade

Southeastern Construction Labor Demand/Supply Projection by State

Construction Labor Attrition

11 Manufacturing Labor Demand

Automotive Manufacturing Labor Demand Overview

Manufacturing Labor Demand Projection by State

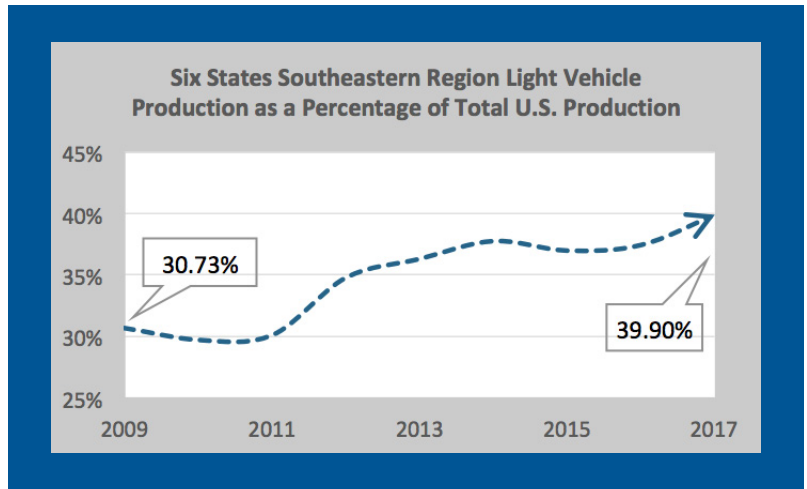
Manufacturing Job Specific Labor Demand

15 Conclusion & Actions Required

Executive Summary

After a period of rapid post-recession growth, U.S. automotive sales are beginning to slow. Year 2017 saw a decrease in light vehicle retail sales since 2010, with production following suit. Yet despite decreasing production and productivity improvements gained through model changes and robotics technology, vehicle manufacturers and their suppliers are at full employment and struggling to fill openings. At the same time, key disciplines such as market intelligence analysts and installation/repair workers (E.g. techs, millwrights, etc.) are expected to expand, creating lasting career opportunities.

The southeastern states of Alabama, Georgia, Kentucky, Mississippi, South Carolina and Tennessee are playing an increasingly important role in the United States automotive manufacturing industry. While overall U.S. consumer vehicle production increased by 101% from 2009 to 2017, production volume of these six southeastern states combined increased by 161% over the same period. These six states now produce nearly 40% of the total number of consumer vehicles in the U.S. and account for about 24% of the total U.S. automotive manufacturing direct employment.



To meet the need for a growing industry, construction spending related to transportation equipment manufacturing has increased in recent years for the six southeastern states and is expected to stay close to 10 billion dollars per year for the six states combined. Continuous spending in construction calls for a steady supply of trained craft workers, including but not limited to civil trade workers, electricians, machinists, operators, welders and helpers. While workers in these trades are already in short supply in the southeastern region, forecasted high attrition rates makes it even more challenging to keep a sufficient workforce to carry out scheduled construction activities.

As automotive sales and production begin to decrease, manufacturing labor demand is expected to follow the same general trend, although several factors may impact overall and job-specific demand. Improved fuel efficiency among most vehicle models, combined with lower gas prices since 2015, has benefitted sales of larger vehicles, which has resulted in a shift of production volume from smaller cars to larger models, including vans, pickups and SUVs, while overall production slightly decreases. The trend could potentially increase total manufacturing labor demand as larger vehicles take more labor hours to build. At the same time, new information management systems for manufacturing equipment made it possible to reduce the total number of workers required on the floor, but also raised new challenges for automotive manufacturers and suppliers to find trained workers to install, maintain and operate computerized equipment.

The likely outcomes of technology innovation are reduced demands in administrative positions and shortages in technical positions related to engineering, research, and production. Equally important to understand, is that over the next decade or so, the skilled labor challenge is less about unemployment and much more about a serious impediment to economic growth.

Automotive Manufacturing Regional Macro-Economy

Overview

The United States has one of the largest automotive markets in the world and is home to almost every major global vehicle manufacturer. The U.S. automotive industry made an impressive comeback from the depths of the recession, when annual production and sales dipped below 6 million units and 11 million units respectively in 2009. Since then, vehicle sales have steadily increased each year and reached a record 17.5 million units in 2016, while production more than doubled to 12.2 million.

The region addressed in this report includes the southeastern states of Alabama, Georgia, Kentucky, Mississippi, South Carolina and Tennessee. From an automotive industry perspective, these particular states represent a major percentage of the U.S. automotive manufacturing market. The broader southeastern region, which includes 13 states in total also contributes significantly to the automotive market as they are home to many of the Tier 1-4 supplier companies.

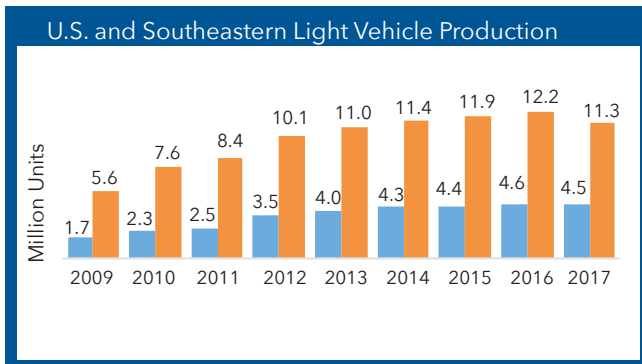
Economically speaking, the Southeast region of the U.S. has largely followed national trends, with healthy growth leading up to the Great Recession, followed by two years of decline, then a return to growth, yet at a slower rate than during the pre-recessionary years. However, while the overall trend has followed a similar path, the Southeast outperformed the U.S. in six of the last ten years (through 2017) and was on par in two, with higher growth during many of the up years and a softer decline during the downturn.

The start of 2018 was bright for the region also, and in the periods of growth, the Southeast benefited from a strengthening construction sector, particularly in the Gulf Coast states, where energy exploration and development drove construction of related facilities and infrastructure.

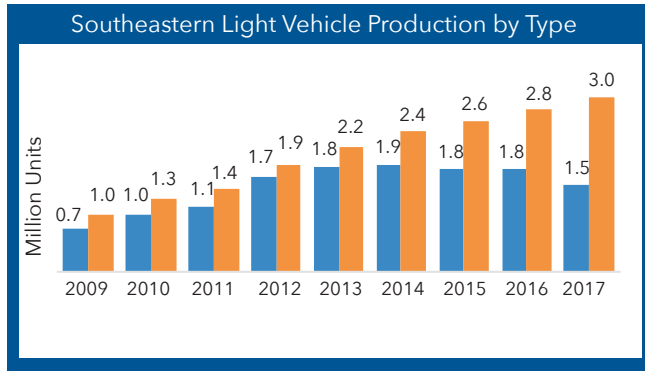
Such growth resulted in an improving labor market, with firms once again hiring after the downturn. However, when energy prices plummeted, there was a corresponding pullback in energy-related development, along with a slowdown in spending; and in the Southeast's energy-rich states, the state economies and construction job growth slowed markedly, as they did nationally. The decline in energy prices also led to a corresponding drop in production costs, which helped states with energy-intensive heavy manufacturers. On the other hand, backlog reports for the heavy industrial category suggest weakness in that category, attributable, in part, to lower auto sales and soft exports.

Overall, the Southeast outlook is promising, despite auto industry slowdowns, and projections call for about \$1.4 trillion in nonresidential construction activity to occur between 2018 and 2022 with gains in construction-related employment anticipated. Still, concerns of limitations in the availability of skilled craftsmen are valid, making the viability of many planned projects a challenge.

Southeast Region Automotive Production Trends



- SOUTHEAST REGION PRODUCTION**
 The six southeastern states' (AL, GA, KY, MS, SC, and TN) total light vehicle production has steadily increased each year since 2009 to reach a record 4.58 million units in 2016 and slightly dropped to 4.50 million units in 2017.
- % SOUTHEAST REGION OVER U.S. PRODUCTION**
 The southeast region produced 39.90% of the light vehicles produced in the U.S. in 2017 compared to 30.73% in 2009. The southeast region states are playing an increasingly important role in the U.S. automotive manufacturing industry.



▼ **SOUTHEAST REGION CAR PRODUCTION**
 ▲ **SOUTHEAST REGION LIGHT TRUCK PRODUCTION**
 Passenger car production in the southeast region saw a 20.17% decrease from 2014 to 2017 while light truck (including vans, pickups and SUVs) production increased each year since 2009. Three quarters of the light vehicles produced in the six southeastern states in 2017 were light trucks. Consumers continue to turn to the larger vehicles over cars. The trend toward larger vehicles is expected to continue as long as gas prices remain low. Since larger vehicles tend to require more labor hours to build, this trend could continue to increase manufacturing labor demand while an increase in production slows down.

Southeast

Per the North American Industry Classification System (NAICS), the motor vehicle manufacturing industry comprises three subsectors:

- 336100-Motor vehicle manufacturing (includes assembly and chassis manufacturing)
- 336200-Motor vehicle body and trailer manufacturing
- 336300-Motor vehicle parts manufacturing

Subsector	Employment
336100 - Vehicle Manufacturing	66,742*2
336200 - Vehicle Body & Trailer	22,932
336300 - Vehicle Parts	147,383
Combined	229,124

*1-BLS Data
 *2- Mississippi data was estimated using 2015 data and production change

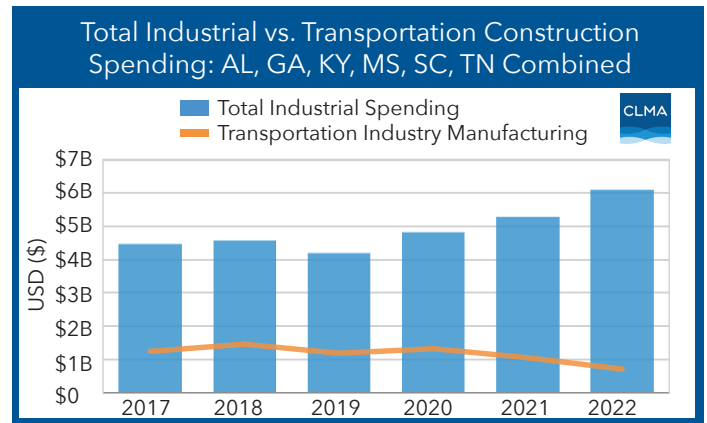
The six southeastern states discussed in this report directly employ nearly 230,000 workers in the motor vehicle manufacturing industry, which accounts for about 24% of total motor vehicle manufacturing employment throughout the U.S. Additionally, total construction spending ensures robust competition for the high-demand skilled labor needed to execute capital and maintenance projects.

Southeast Region Automotive-Related Construction Spending by State

To meet the needs of a fast growing industry, automotive-related construction spending has comprised a significant portion of total industrial construction spending among the six southeastern states. In 2017, transportation-related manufacturing construction spending, including capital construction, facility upgrade and maintenance, accounted for approximately 28% of total industrial construction spending.

This chart represents the total nonresidential construction spending activities in the selected southeastern states and provides perspective for total industrial construction spending versus transportation-related spending.

To understand the impact of construction spending on the skilled labor market, this report relies on data from the Construction Labor Market Analyzer®. The CLMA® provides labor market risk analytics and services based on capital and maintenance project information obtained directly from construction owners, via Dodge Data & Analytics and market research. The CLMA® contains over \$4 trillion of put-in-place project data 3-5 years out, representing hundreds of owners and about 4 million non-residential projects throughout the United States.

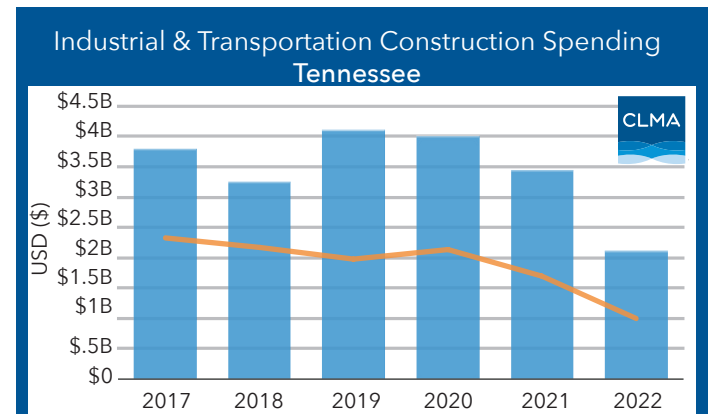
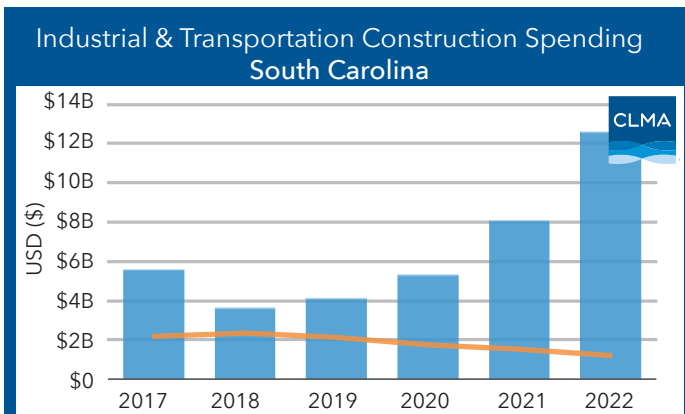
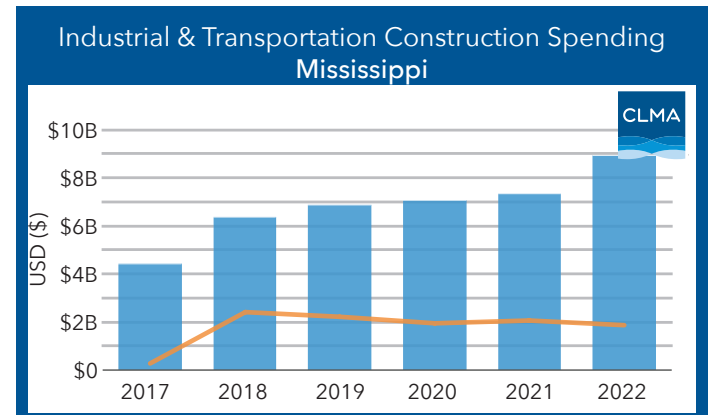
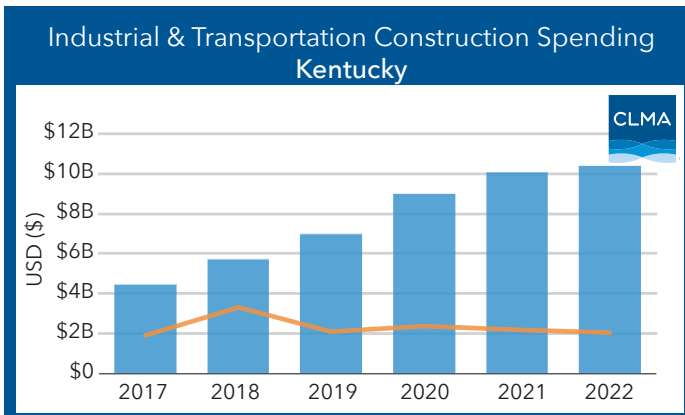
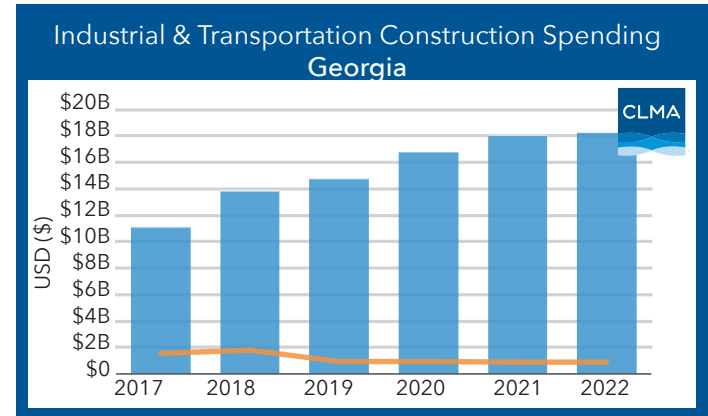
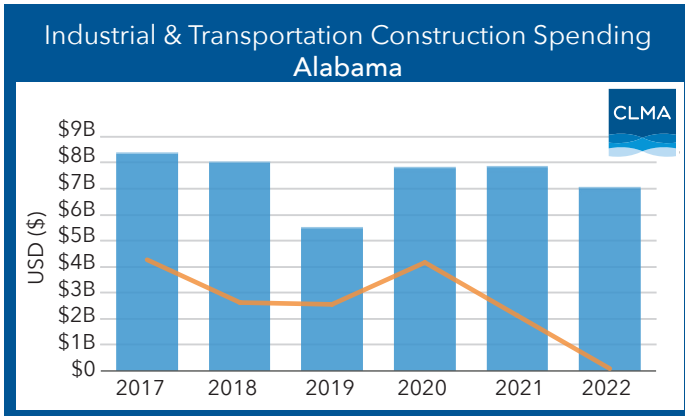


Total industrial construction spending for the six-state southeastern region is projected to remain slightly over \$40 billion USD per year for Years 2017-2019, and increase steadily for Years 2020-2022. The transportation equipment manufacturing industry is projected to account for an average of \$6.5 billion USD of construction spending each year for the next 5 years.

State-by-state industrial construction spending and transportation-related construction spending projections are shown in the next six charts. Overall, state-by-state transportation-related construction spending is expected to stay close to the current level with the existing facilities operating at capacity and performing regular maintenance activities.

Legend for charts on this page:

- Total Industrial Spending
- Transportation Industry Manufacturing



Toyota and Mazda have announced that the \$1.6 billion joint venture plant will be located in Huntsville, Alabama. Construction cost for this plant has been included in the spending projections.

Construction Labor Demand/Supply

Southeastern Total Construction Labor Demand/Supply Projection by Trade

Based on its robust project database, the CLMA® has projected the anticipated market demand, schedule and peak for transportation-related craft disciplines for capital and maintenance projects in the southeast report region. The vast majority of the labor demand is for capital construction projects, and maintenance and turnaround projects account for about 9% of the total labor demand in 2018.

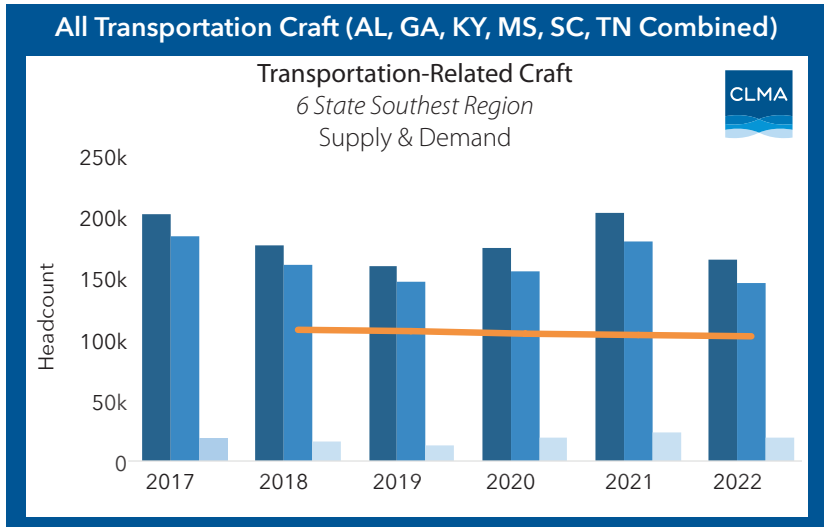
Supply for this report is provided by the U.S. Department of Labor, Bureau of Labor Statistics (BLS).

For further granularity, the 6 major trade groups identified as relevant to automotive manufacturing include the following. These trade groups are detailed by specific discipline in association with the charts below.

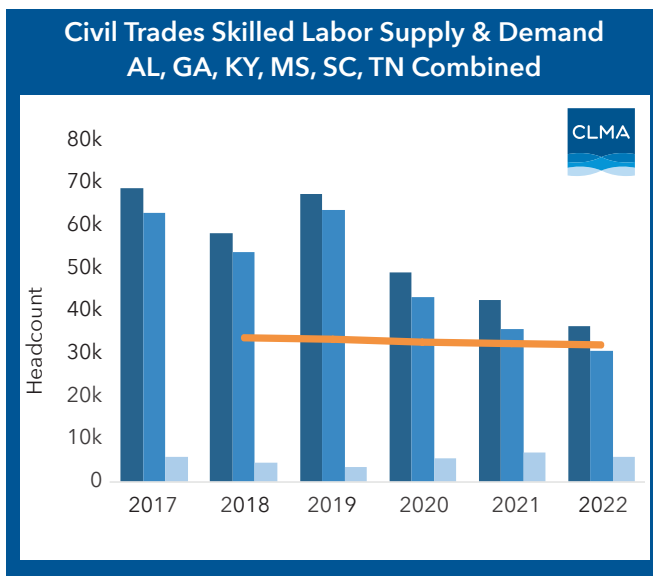
- Civil Trades
- Electrical Trades
- Mechanical Trades
- Operator Trades
- Welder Trades
- Other Trades

Legend for charts in this section:

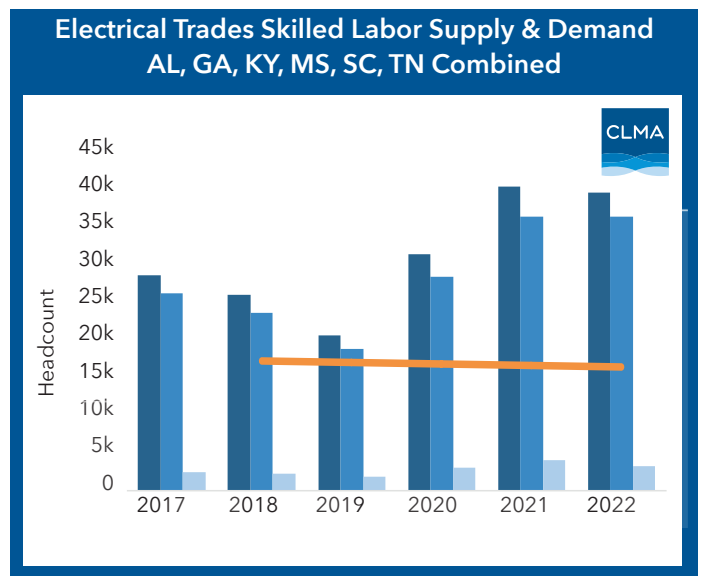
- All Industrial Demand
- Capital Project Demand
- Maintenance Projects Demand
- Current Industrial Supply Net of Attrition



As shown in the chart above, more than 170,000 craft workers are required to carry out all industrial construction projects related to transportation equipment manufacturing in 2018 demonstrating that transportation-related spending is a robust contributor to the southeastern construction economy and is likely to feel the pressure of the skilled labor imbalance. **Equally important to understand, is that over the next decade or so, the skilled labor challenge is less about unemployment and much more about a serious impediment to economic growth as workers rapidly retire and the industry becomes increasingly undersupplied by skilled craft professionals.**

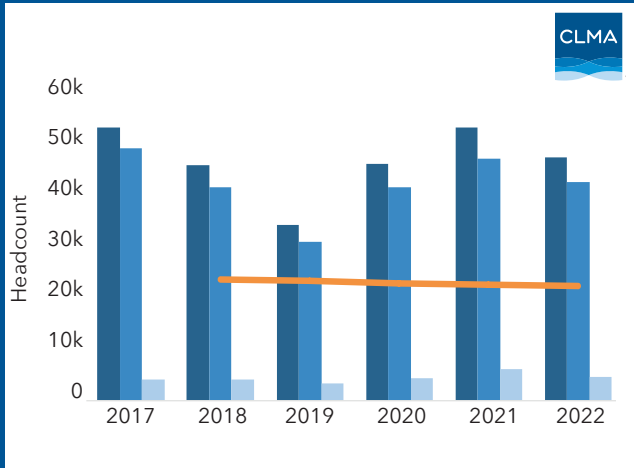


The civil trades include carpenters, concrete finishers, cement masons, laborers, painters and roofers.



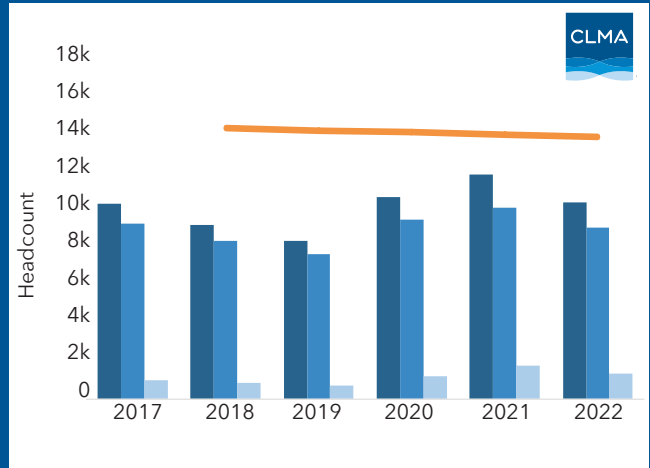
The electrical trades include instrumentation technicians and electricians.

Mechanical Trades Skilled Labor Supply & Demand AL, GA, KY, MS, SC, TN Combined



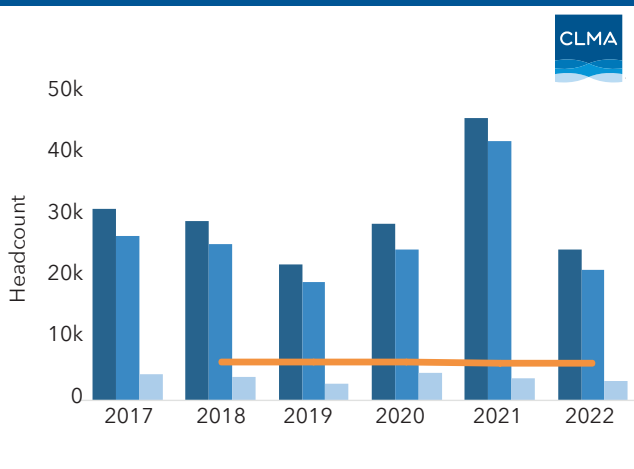
The mechanical trades include insulators, millwrights, pipefitters, and sheet metal workers. Millwrights in particular have significant growth opportunity for both construction and permanent direct-hire roles.

Operator Trades Skilled Labor Supply & Demand AL, GA, KY, MS, SC, TN Combined



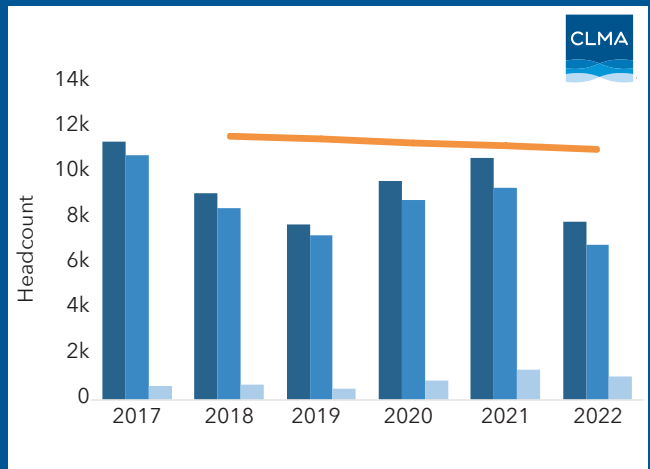
The operator trades include heavy crane operators and heavy equipment operators. Compared to the other trade groups, the supply of operators appears relatively sufficient looking forward.

Welder Trades Skilled Labor Supply & Demand AL, GA, KY, MS, SC, TN Combined



The welder trades include boilermakers, ironworkers, and combo welders. Welders are already in severe shortage and will be a major challenge for the coming years, with the shortage expected to be over 300,000 by 2020 across the U.S.

Other Trades Skilled Labor Supply & Demand AL, GA, KY, MS, SC, TN Combined



Other trades include craft helpers. This particular discipline applies to many of the other disciplines as well. Often, craft helper and apprentice titles are included with the craft discipline category.

In our experience, the BLS data is not the most ideal source of labor supply information, although it is the largest and most commonly used source. Therefore, it's important to consider the following when examining the supply/demand imbalance.

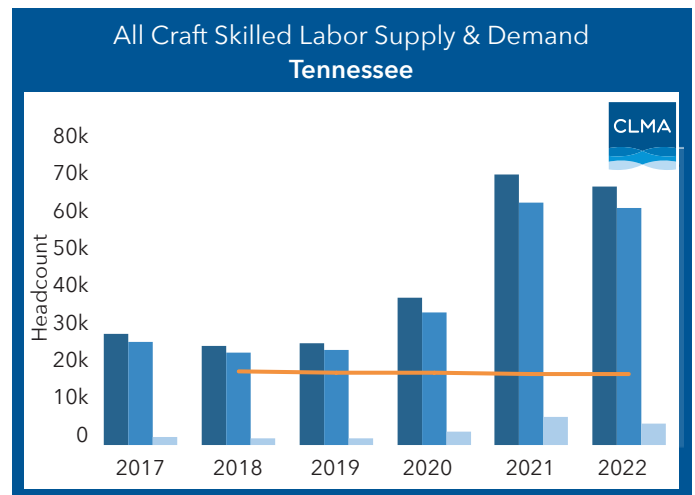
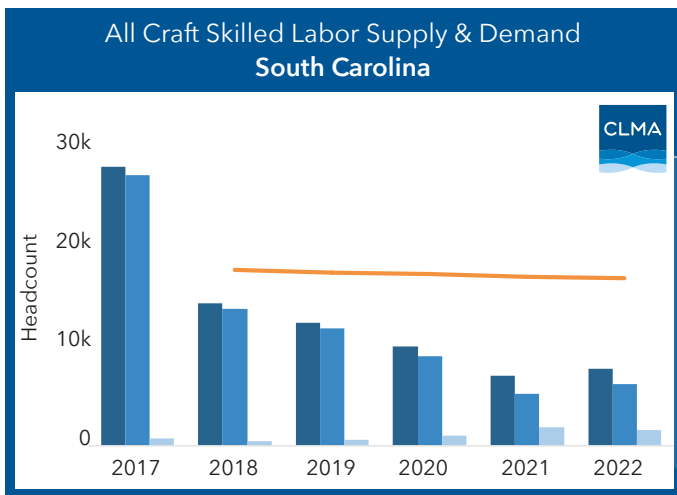
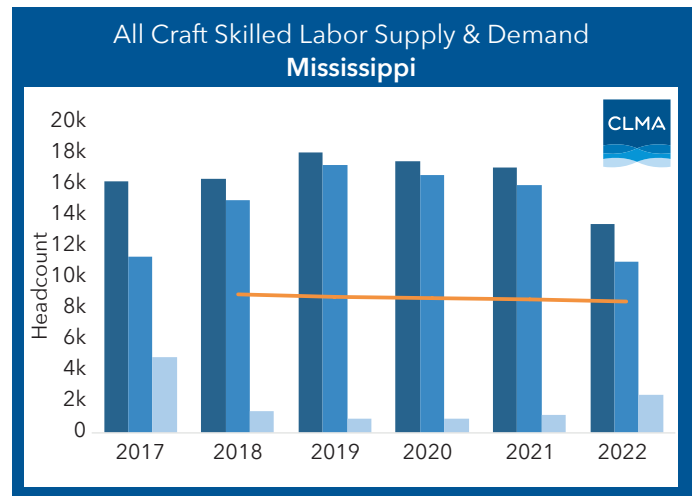
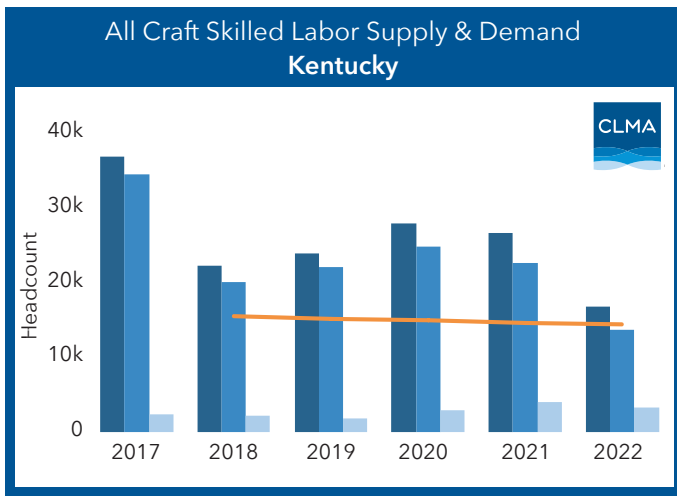
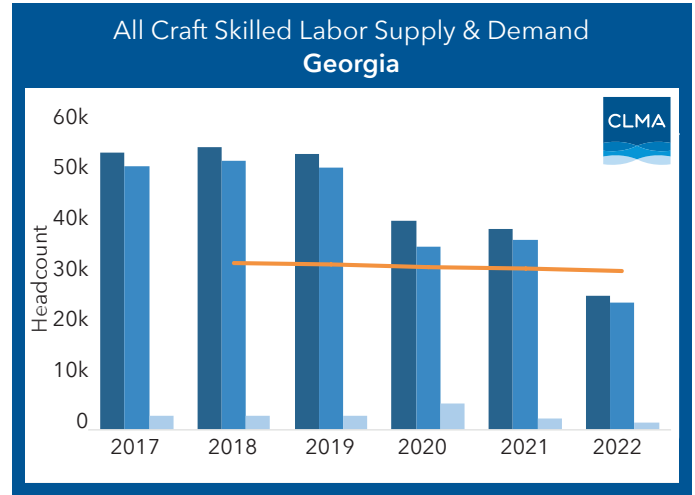
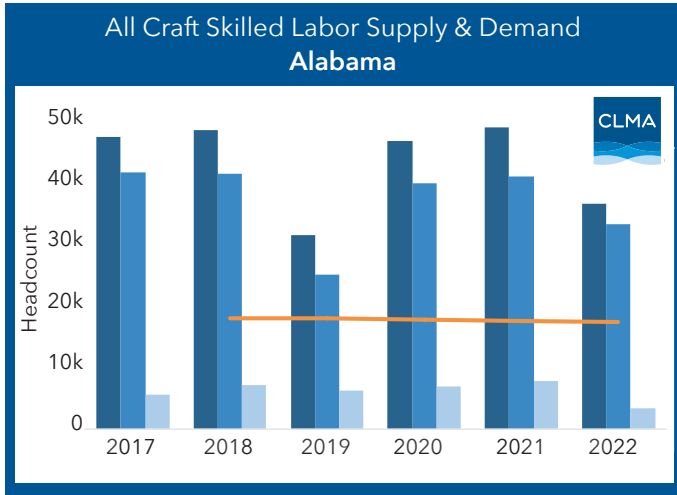
- BLS supply is overly inclusive, which tends to overstate supply for particular trades. For example, all electricians reported by BLS are not qualified to work in the industrial construction sector. The CLMA® makes adjustments to the data to accommodate this; however, knowledge of the local market should also be considered by the reader.
- An abundance of workers reported by BLS may indicate plenty of workers, but often they lack the requisite skills/capability needed to execute complex industrial projects.
- Mobility is not accounted for in BLS data, which may show available workers who have traveled outside the region.

Southeastern Construction Labor Demand/Supply Projection by State

All six southeastern states included in the report are currently experiencing skilled labor shortages in transportation related trades. Looking forward, Alabama, Georgia, Kentucky, Mississippi, and Tennessee in particular, are expected to face severe challenges.

Legend for charts on this page:

- All Industrial Demand
- Capital Project Demand
- Maintenance Projects Demand
- Current Industrial Supply Net of Attrition



Construction Labor Attrition

As the labor force ages, the skills shortage faced by the construction sector is becoming increasingly dire. While the construction industry is not alone in confronting an aging labor force, it is failing to replenish the supply with younger workers.

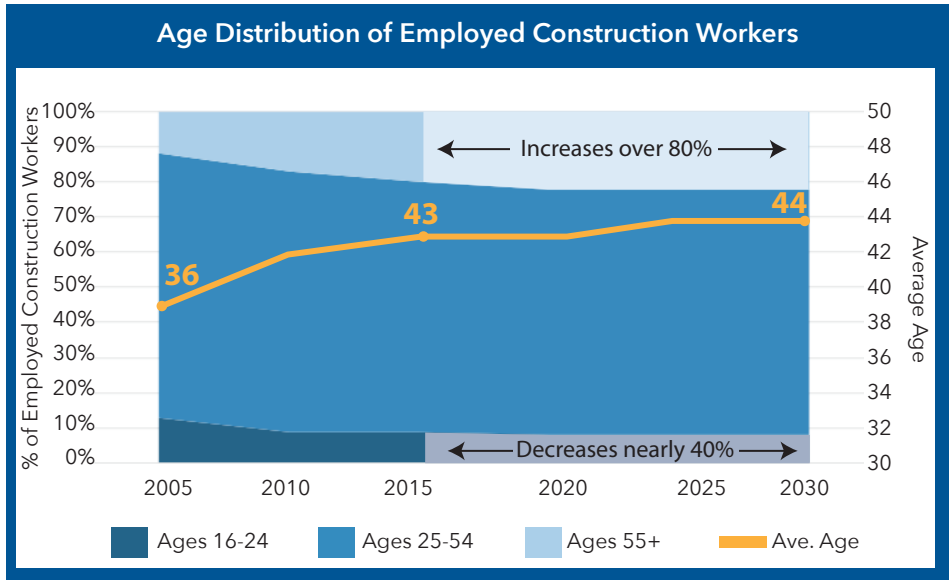
Based on 2017 data presented by the U.S. Bureau of Labor Statistics (BLS), 31.5% of those employed in construction (residential and nonresidential) were under the age of 35, which not only is down from 31.9% in 2012, but also compares to an overall rate of 35% for all industries. Construction's median age of 42.6 is higher than the all-industry median age of 42.2 and the gap is widening. With 68.5% of construction workers above the age of 34 and 21.1% over 54, the implications are that approximately 28.0% of construction workers will retire within the next ten years (up from about 26.3% in 2012) and that as many as 17.8% will leave within the next five (assuming an average retirement age of 62). Moreover, an alarming 39.6% will retire within the next 15 years.

The BLS reported the age group of 16 to 19 year-olds (i.e., the age group traditionally seen as entering the labor force) to be 2.9% of the workforce in 2002, while the share was just 1.8% in 2017. At the other end of the spectrum, the age group of workers 55 and older was only 11.0% in 2002, yet 21.1% in 2017.

From a different perspective, when we track new workforce entrants by combining the age groups comprised of 16 to 24 year-olds, we see a 32% reduction over the past decade. Correspondingly, there has been a 47% increase in the number of

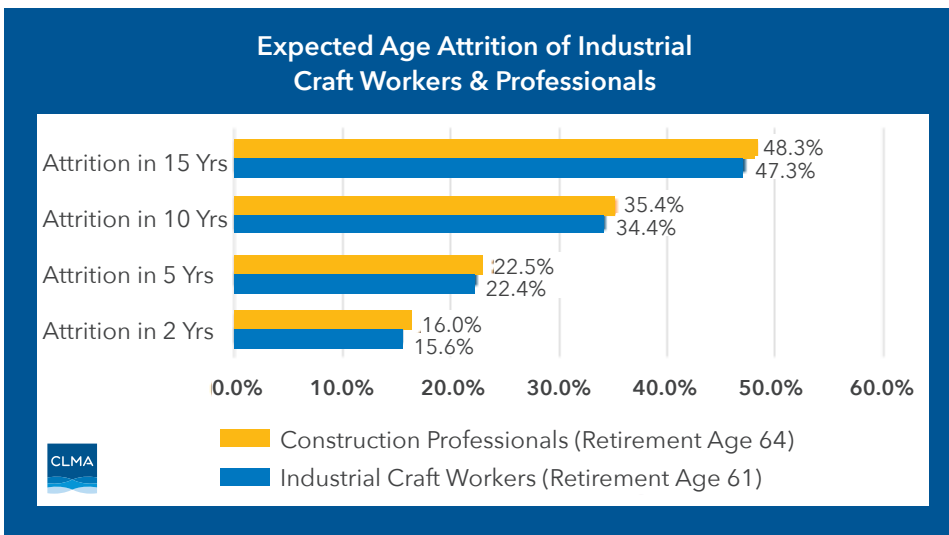
workers reaching 55 years of age and older. These trends over the past decade (and more) demonstrate an aging workforce and declining pipeline growth that is alarming to industry leaders who rely on these skills to build their projects.

As construction users continue to demand a skilled workforce, skill level, willingness to travel, and an aging workforce are expected to greatly affect project outcomes. To better understand these dynamics, the CLMA® collects and tracks supply



information directly from contractor and labor provider payroll information, which is refreshed every 90 days. This data set is growing rapidly and provides an excellent reference point for the industry, especially in the industrial market where the automotive manufacturing industry resides. Overall, the CLMA® supply information is trending in a very similar fashion to the overall construction workforce as presented by the BLS in its breakdown of employed construction workers by age.

When comparing CLMA® supply data (imported directly from contractor and labor provider payroll information) to BLS estimates, they follow the same trend, but provide significantly greater detail. Specifically, with an overall average retirement age of 59 years old for industrial craft disciplines (i.e., the most relevant to the automotive industry), the age attrition is expected to be 15.6% in two years, 22.4% in five, 34.4% in



ten, and 47.3% within 15 years. This projects a higher exodus of craft workers in the industrial market as compared to the overall construction industry.

This is important news as the overall all-industry labor participation rate for all age groups fell to 62.3% in September 2015, a 38-year low. And while the participation rate has since improved, hovering at or just below 63%, it continues to be well shy of the 66% pre-recession participation rate. Also concerning, new construction hires are far below numbers seen in the prior expansionary period, yet construction job openings are notably higher, suggesting a rise in the demand for construction labor and a decrease in the supply of suitably skilled craft to fill positions. Although new hires were up in 2017, so too, were openings and with the aging of the workforce, coupled with inadequate rates of labor force participation, a continued shortfall is anticipated.

If every skilled worker were positioned in the U.S. within close proximity to where projects demanded them, the workforce challenge could potentially be significantly mitigated. However, the willingness for

workers to travel has understandably declined over time as workers value time at home and with family over the difficulties of work-related commuting. On the other hand, based on their current travel behavior as gleaned from contractor and union based payroll data, a good number of skilled craft workers do still seem willing to relocate and/or travel to projects with the incentive of additional pay and/or per diem.

The CLMA® data displayed in the table below shows the average mobility by craft (calculated by measuring the distance between each worker's home zip code and the zip code of the project on which he or she is employed). The worker is then identified as a traveler based on a specified designation of how far he or she must work from home to be considered a traveler. On average, the data in this set suggest that 19% of the industrial construction workforce (8.6% of the overall construction workforce) is willing to relocate for a given project. In a labor shortage environment, this is an essential input in prudent project planning.

U.S. Age Demographics by Craft Discipline

Craft Title	Mobile %	Mobile Threshold	Average Age	Attrition in 2 yrs	Attrition in 5 yrs	Attrition in 10 yrs	Attrition in 15 yrs	Attrition Threshold
Boilermaker	54.8%	75 mi.	44	14.0%	21.2%	32.1%	45.2%	60 yrs
Boilermaker Welder	50.3%	75 mi.	40	6.7%	11.8%	18.5%	31.5%	60 yrs
Carpenter (Scaffold Builder)	30.4%	75 mi.	37	5.6%	9.7%	18.0%	27.6%	58 yrs
Concrete Finisher / Cement Mason	63.8%	50 mi.	45	20.0%	29.7%	41.6%	52.9%	58 yrs
Craft Helper	51.5%	75 mi.	35	5.2%	7.9%	13.8%	20.7%	60 yrs
Electrician	54.3%	50 mi.	43	4.7%	8.7%	19.5%	30.1%	65 yrs
Instrumentation Technician	61.7%	75 mi.	44	8.3%	12.6%	25.9%	35.9%	65 yrs
Insulator	46.5%	75 mi.	44	19.1%	25.2%	37.6%	49.3%	58 yrs
Ironworker (Reinforcing)	17.0%	75 mi.	43	15.2%	22.1%	35.3%	49.0%	58 yrs
Ironworker / Welder (Structural)	8.6%	75 mi.	44	19.3%	26.3%	38.4%	51.6%	58 yrs
Laborer	44.7%	25 mi.	41	11.3%	17.6%	27.8%	38.0%	60 yrs
Millwright	2.3%	75 mi.	45	12.6%	20.2%	33.3%	46.0%	62 yrs
Operator (Heavy Crane)	54.0%	75 mi.	48	10.5%	18.5%	35.0%	49.9%	65 yrs
Operator (Heavy Equipment)	49.5%	75 mi.	45	13.6%	21.0%	34.5%	46.0%	62 yrs
Painter	40.9%	50 mi.	44	14.2%	20.2%	32.2%	43.5%	60 yrs
Pipefitter	60.8%	75 mi.	43	14.6%	20.9%	31.3%	44.3%	60 yrs
Pipefitter / Combo Welder	45.8%	75 mi.	41	12.2%	17.1%	23.7%	36.1%	62 yrs
Sheet Metal Worker	18.7%	75 mi.	49	26.1%	32.4%	49.0%	59.8%	60 yrs
Total / Average	18.7%	73 mi.	43	15.8%	22.5%	34.4%	47.0%	59 yrs

Manufacturing Labor Demand

Automotive Manufacturing Labor Demand Overview

The U.S. automotive manufacturing industry has been applying the “lean manufacturing” principle that aims at reducing inventory at all levels of the supply chain. Automotive sales drives manufacturing, which drives overall labor demand to make just enough units to meet consumers’ needs.

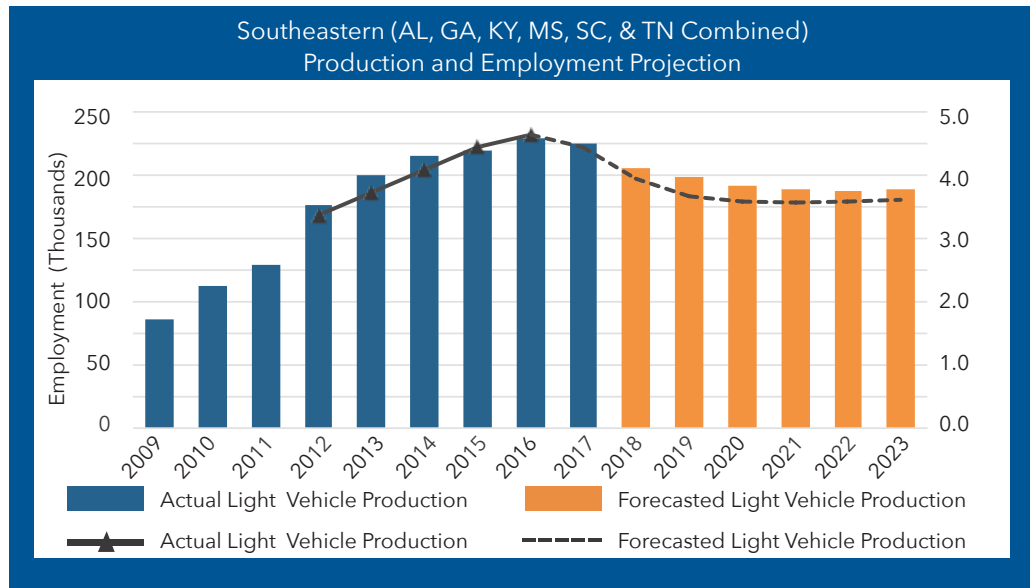
Coming out of the recession, the U.S. automotive industry made an impressive comeback; however, after a few years of rapid growth, automotive sales levelled off in Year 2017 and slightly decreased in Year 2018, and overall production has followed suit. A report published by the Center for Automotive Research (CARs) at the end of Year 2016 forecasted that U.S. automotive sales and production will slightly decrease in the coming years but will stay near the 2016 record level. The industry’s overall labor demand will likely follow the same trend.

Continuously high gas prices between 2011 and 2014 had automakers focus on fuel efficiency. Many newer models developed in recent years have much improved gas mileage compared to older models of similar sizes. Better fuel efficiency, combined with lower gas prices since 2015, has benefitted sales of larger vehicles.

In December 2017, light trucks including vans, pickups and SUVs accounted for three quarters of the total consumer vehicle sales. As long as gas prices remain low, consumers will keep choosing

larger vehicles over cars. Many manufacturers have already cut back car production and increased light truck production at their assembly plants, which could potentially increase total manufacturing labor demand since larger vehicles take more labor hours to build.

The recession also forced automakers to cut their labor cost to survive. As a result, many automakers invested in technologies that significantly improved labor productivity. New information management systems made it possible to reduce administrative positions at manufacturing facilities. Use of robotics and flexible assembly platforms reduced the total number of craft workers required on the floor, but also raised new challenges for automotive manufacturers and suppliers to find trained workers to operate computerized equipment.



Manufacturing Labor Demand Projection by State

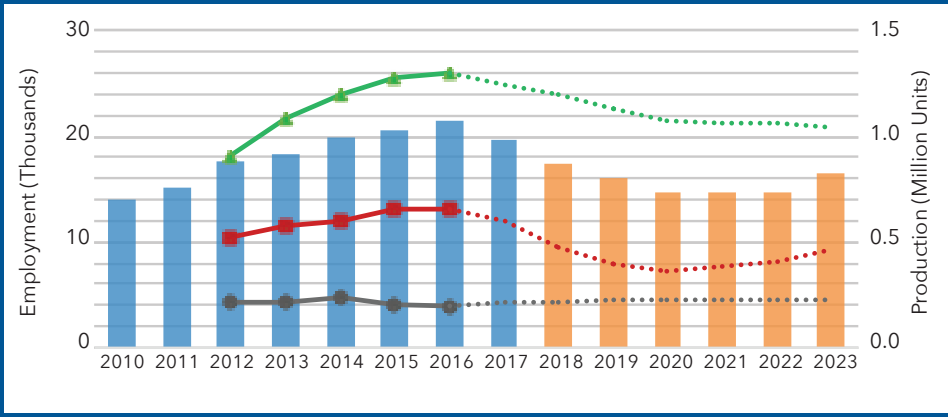
Relying on market research and stakeholder surveys, the CLMA team gathered historical production data and employment data for the six southeastern states in order to determine post-construction labor demand. The modeled demand accounts for sales trends, productivity change over time, and vehicle make and type. Employment in the three subsectors outlined earlier (NAICS 336100, 336200, and 336300)

are forecasted separately. The model-predicted demand was compared to actual historical demand to achieve confidence in the results. The projections include the Toyota-Mazda plant, which is expected to add an additional 1,400 construction jobs at its peak and roughly 4,000 manufacturing jobs when the plant goes into production in 2021 in Alabama.

Legend for the following charts:

- Actual Light Vehicle Production
- Vehicle Manufacturing Actual Employment
- Vehicle Body & Trailer Actual Employment
- Vehicle Parts Actual Employment
- Forecasted Light Vehicle Production
- Vehicle Manufacturing Forecasted Employment
- Vehicle Body & Trailer Forecasted Employment
- Vehicle Parts Forecasted Employment

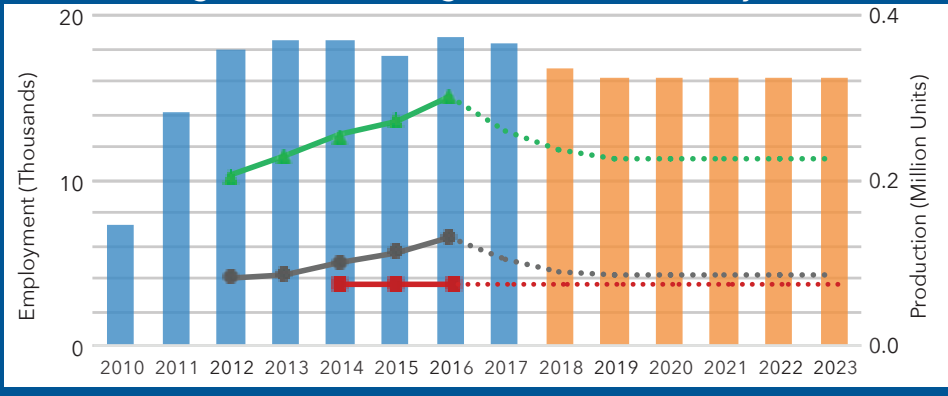
Alabama Manufacturing Labor Demand Projection



Factors impacting manufacturing labor demand in Alabama:

- Improving Labor Productivity over Time
- Honda and Mercedes-Benz Both Shifting Production from Cars to Light Trucks
- Toyota-Mazda Plant Going into Production Starting 2021

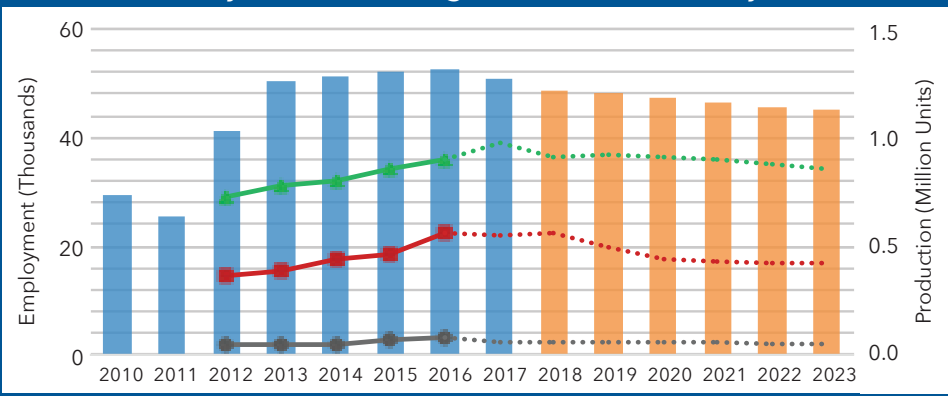
Georgia Manufacturing Labor Demand Projection



Factors impacting manufacturing labor demand in Georgia:

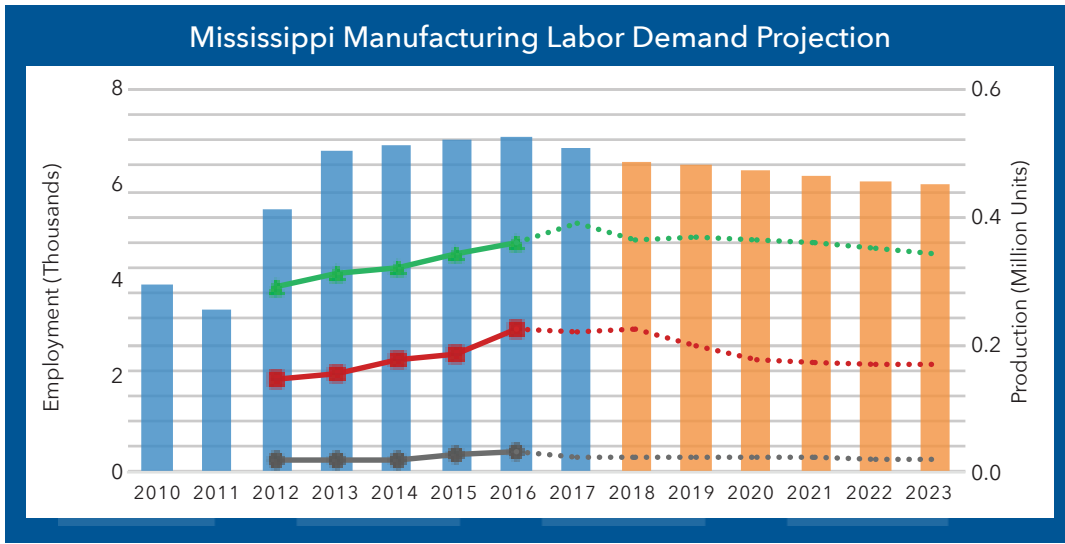
- Improving Labor Productivity over Time
- Kia Shifting Production from Cars to Light Trucks

Kentucky Manufacturing Labor Demand Projection



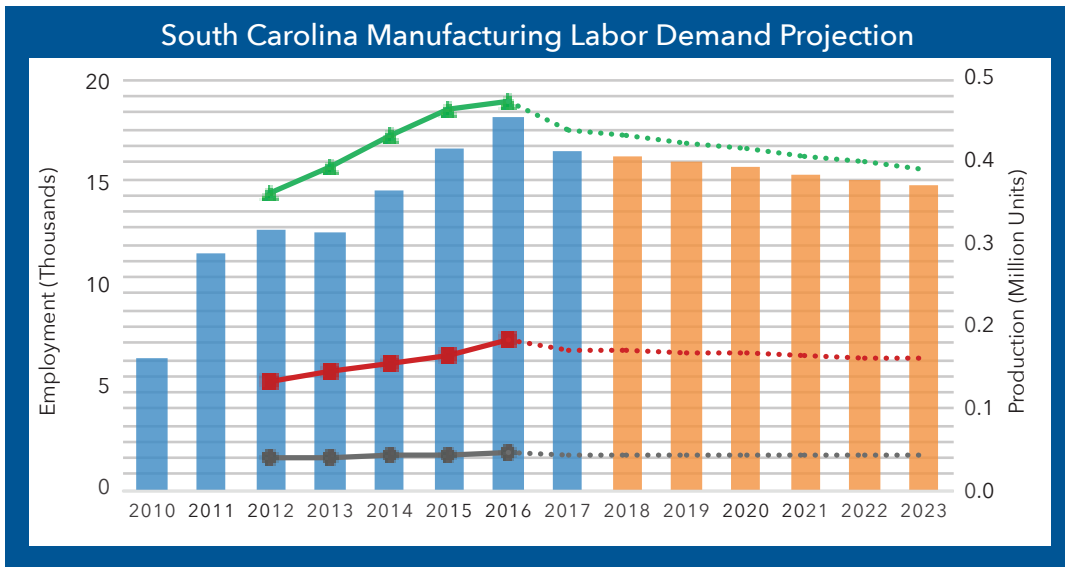
Factors impacting manufacturing labor demand in Kentucky:

- Improving Labor Productivity over Time
- Toyota Production Increasing



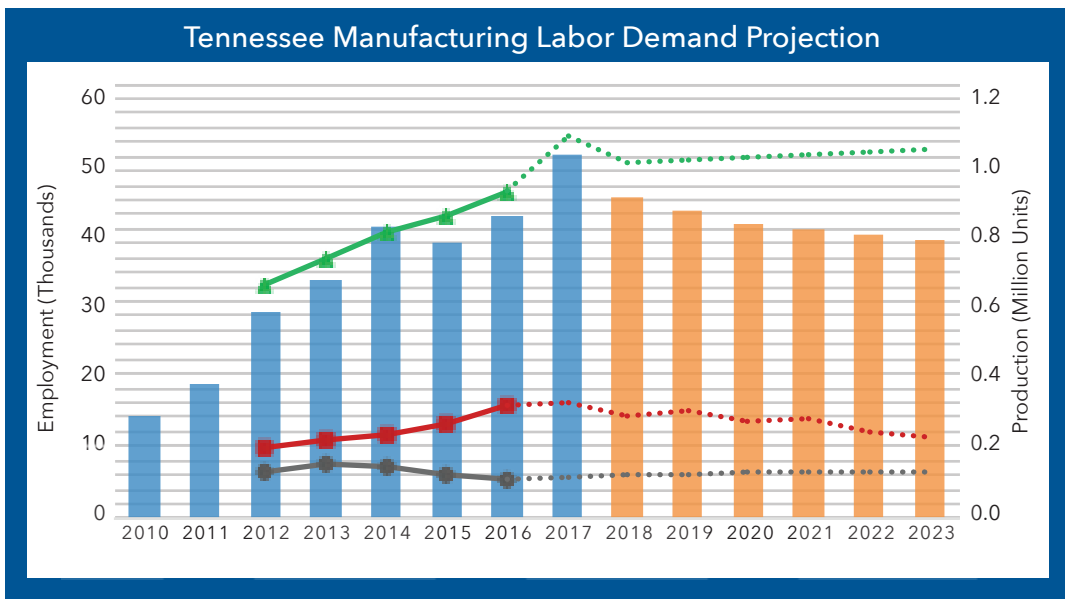
Factors impacting manufacturing labor demand in Mississippi:

- Improving Labor Productivity over Time
- Nissan Shifting Production from Cars to Light Trucks



Factors impacting manufacturing labor demand in South Carolina:

- Improving Labor Productivity over Time
- Mercedes-Benz Truck Production Increasing
- BMW Truck Production Increasing



Factors impacting manufacturing labor demand in Tennessee:

- Improving Labor Productivity over Time
- GM Plant to Reduce Production, Potentially Causing Lay-offs
- Volkswagen Plant Started to Build the Atlas Mid-Sized SUV

Manufacturing Job Specific Labor Demand

Technology is changing the structure of automotive manufacturing related employment. Due to new information and communication technologies, demand for administrative positions continues to decrease. Research and engineering positions are in high demand as automakers invest in R&D to keep their companies at the forefront of innovation. Increasing use of robotic and new manufacturing equipment calls for more well-trained installation, maintenance and repair workers as well as

computerized machine operators. The Bureau of Labor Statistics (BLS) projected these structural changes in automotive manufacturing labor demand by comparing actual employment in 2014 and forecasted employment in 2024. Automotive manufacturing related jobs are classified into 16 major categories, and the forecasted changes in employment between 2014 and 2024 are displayed in the following table.

OCC Code	Title	3361 % Change	3362 % Change	3363 % Change
00-0000	Total, all occupations	▼ -3.5	▼ -2.9	▼ -4.2
11-0000	Management occupations	▼ -3.2	▼ -2.2	▼ -3.9
13-0000	Business and financial operations occupations	▼ -3.5	▼ -1.9	▼ -3.8
15-0000	Computer and mathematical occupations	▲ 1.2	▲ 1.4	▲ 0.5
17-0000	Architecture and engineering occupations	▼ -3.3	▼ -3.7	▲ 2.2
19-0000	Life, physical, and social science occupations			▼ -3.5
23-0000	Legal occupations			▲ 6.0
27-0000	Arts, design, entertainment, sports, and media occupations	▼ -3.1	▼ -1.7	▼ -3.0
29-0000	Healthcare practitioners and technical occupations	▼ -3.2	▼ -1.7	▼ -3.5
33-0000	Protective service occupations		▼ -1.7	▼ -3.5
37-0000	Building and grounds cleaning and maintenance occupations	▼ -3.1	▼ -1.7	▼ -3.5
41-0000	Sales and related occupations	▼ -3.1	▼ -1.4	▼ -3.4
43-0000	Office and administrative support occupations	▼ -7	▼ -6.4	▼ -7.9
47-0000	Construction and extraction occupations	▼ -3.1	▼ -1.7	▼ -3.5
49-0000	Installation, maintenance, and repair occupations	▲ 6.4	▼ -4.3	▲ 3.4
51-0000	Production occupations	▼ -4.2	▼ -2.6	▼ -5.5
53-0000	Transportation and material moving occupations	▼ -3.1	▼ -1.7	▼ -3.5

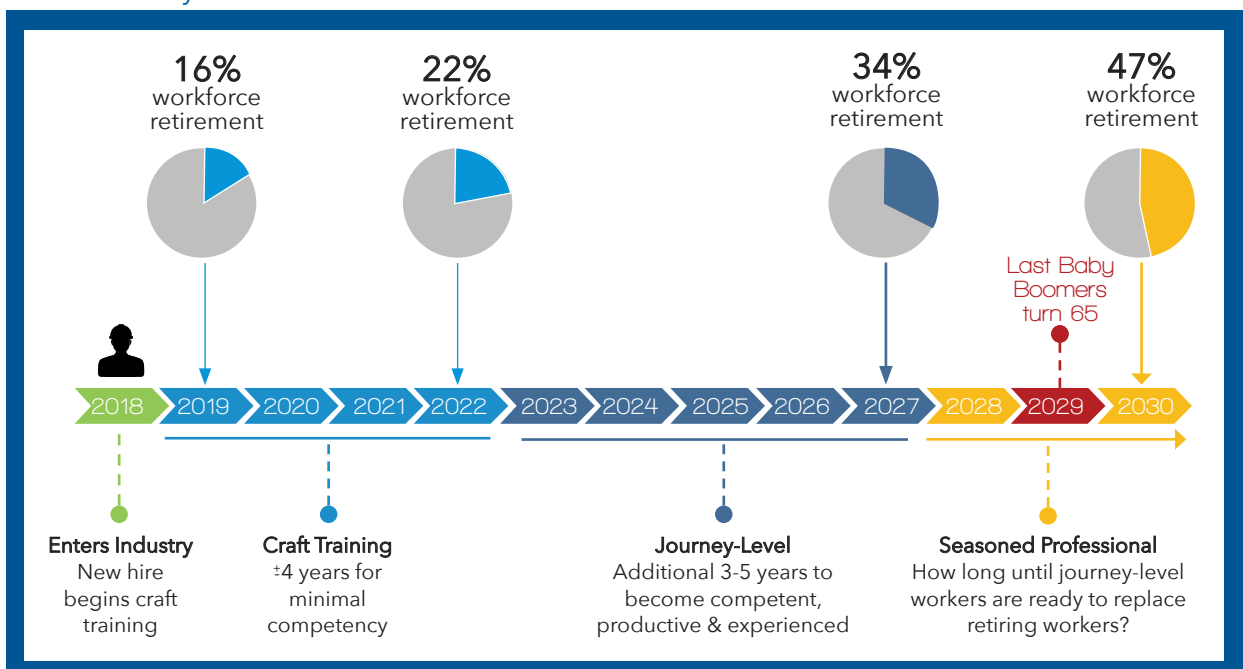
Among the many detailed jobs related to automotive manufacturing, 11 were identified by this research, as shown below, that are most likely to see increased demand.

OCC Code	Title	% of Vehicle Manufacturing Employment	% of Body and Trailer Employment	% of Vehicle Parts Employment	2022 6-State Region Projected Demand
13-1161	Market research analysts and marketing specialists	0.1	0.1	0.1	232
15-1121	Computer systems analysts	0.2	0.2	0.3	612
15-2031	Operations research analysts	0	0	0.1	148
17-2112	Industrial engineers	2.6	0.6	2.9	6073
17-2141	Mechanical engineers	1.1	0.8	2.5	4561
49-9041	Industrial machinery mechanics	2.8	0.7	1.6	4302
49-9043	Maintenance workers, machinery	0.2	0.3	0.7	1223
49-9044	Millwrights	0.8	0	0.3	956
51-4011	Computer-controlled machine tool operators, metal and plastic	0.1	0.9	3.7	5712
51-4012	Computer numerically controlled machine tool programmers, metal and plastic	0	0.3	0.1	209
51-4041	Machinists	1.6	0.7	4.1	7224

Conclusion & Actions Required

To keep pace with the rise in activity and labor attrition, the construction sector must put diligent effort into the attraction and retention of talent, especially in light of the aging labor force and rising attrition rates. Our workforce is aging, and within the next 10 years, 34% of our most highly skilled workforce will be retiring. Projecting out to 2030, a short 12 years away, 47% of our workforce will be retiring, partially because by that time Baby Boomers will be beyond 65 years of age. Unless we start doing something about it, the situation will continue to worsen.

Unlike other commodities like oil, materials, and capital resources, there is no strategic reserve of skilled craft workers sitting in the wings just waiting to enter the industry. While it takes a varying amount of time to develop a seasoned craft professional depending on the discipline and individual, overall it takes long enough that waiting is not a viable option. The challenge is real. As an industry, we need a workforce development system to provide the next generation of construction craft workers – and we must get started immediately.

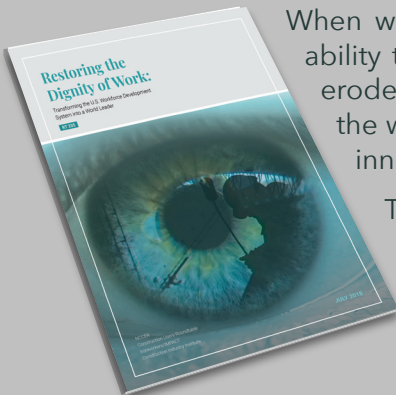


1. Effective Workforce Growth.

- Improving the image of the skilled trades industry is essential to attract workers.
- Construction users (owners) should contractually require workforce development for project bidding and award. The marketplace has shown overwhelming support for this, but the industry is slow to move. Owner engagement in this way could unleash ideas and creativity for workforce development improvement in the same way owner expectations forever changed the construction safety paradigm.
- Education spending must incent vocational training along with the traditional college education. While opportunity abounds, too many students are graduating with staggering debt and unemployable degrees. This is creating an oversupply of workers without employment.
- We must maximize the value of human capital in the construction industry, insuring the right skills are assigned to the right tasks to maximize outcomes with limited human resources. To ensure the right people are in the right place at the right time, labor suppliers should use reliable data to understand the market and then make effective investments that builds a robust, prepared workforce pipeline to meet projected needs.

- Welfare reform is essential. Overall and construction unemployment are on average well below “natural” unemployment, meaning there are ostensibly few employable workers in the pipeline. Meanwhile, 39 states pay benefits greater than minimum wage, and 26% of states pay benefits exceeding \$15/hour. We need to re-introduce work as honorable and government must rethink how we incent those who are able to work. Too many Americans are on the sidelines when they could be helping propel a robust economy. We need government to stop financing unemployment.

- 2. Productivity Improvement.** With only marginal productivity improvement over the past half century, a completely new paradigm for construction must be explored to be competitive. Economic growth demands it. Construction needs to follow the example set by the manufacturing sector and learn to do the same or more work with fewer workers. E.g. the use of lean construction principles promises up to 30% less time and 15% less cost; however, to be effective, lean construction demands collaboration and communication by and among all stakeholders, particularly owners.
- 3. Early Project Planning.** To be effective, this means, in part, having a better understanding of labor risk and how to plan for it. Owners need to more effectively engage all project stakeholders and in particular, involve contractors earlier in the planning process. Other options include new contracting models and design/build relationships.
- 4. Construction Design Optimization.** Prefabrication and modularization are increasingly viable options for effective construction with fewer workers and improved productivity; yet the construction industry has not fully adopted this. Design optimization can dramatically improve constructability and the entire construction process.
- 5. Embrace Technology & Data Utilization.** Many industries, including manufacturing are effectively employing technology to help address workforce challenges. However, the construction industry has realized sparse or nonexistent growth in the utilization of data and technology to improve project planning and outcomes.



[Click image to download report](#)

When will our nation invest the resources required to rebuild the workforce? Our ability to build and maintain what was once the greatest infrastructure system has eroded. We are still a world leader in developing technological innovations, but the workforce required to build, operate and maintain the facilities to support the innovations across their lifecycle is absent.

The United States’ workforce development system, which includes the recruitment, training, placement and retention of individuals in gainful employment opportunities, is in need of an overhaul.

Over the past three decades, we have seen a shortage of construction workforce emerge. The skills shortage has worsened to the point that it is not only hard to find qualified craft professionals, but it also impacts projects’ schedule, cost and safety. As a nation, we have a wealth of resources that can be used to reverse these challenges. If we choose to do nothing, the shortage of craft professionals will get worse and likely even accelerate in the next decade due to an aging construction workforce.

Revitalizing our nation’s workforce development system is a step on the path toward addressing not only the skilled shortage of construction craft professionals but the nation’s shortage across numerous other industries. The effort will require new approaches in how we communicate career opportunities, such as work-based learning and other initiatives, to youth in secondary and postsecondary education. To define this path forward, a series of seven policies have been developed that impact industry stakeholders and governmental agencies. Considering the relative benefits and costs associated with each policy, there are ones that we can begin implementing more quickly, in the short term (less than three years), and there are others that will require long-term, sustained efforts.

This report was commissioned and underwritten by the Southern States Automotive Contractors Association (SSACA) in collaboration with Construction Industry Resources (CIR). Its purpose is to inform key industry stakeholders about the challenges and opportunities in the automotive construction and manufacturing market sectors; and to motivate action toward ensuring a qualified skilled workforce pipeline prepared to take advantage of the opportunities in the years ahead.



For more information about SSACA,
visit www.SSACA.net



For more information about CIR, visit
www.ConstructionIndustryResources.com