Talent Study 2.0

ONESPARTANBURG INC.

Lightcast

Acknowledgements

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Lightcast is the world's leading authority on job skills, workforce talent, and labor market dynamics, providing expertise that empowers businesses, education providers, and governments to find the skills and talent they need and enabling workers to unlock new career opportunities. Headquartered in Boston, Massachusetts, and Moscow, Idaho, Lightcast is active in more than 30 countries and has offices in the United Kingdom, Italy, New Zealand, and India. The company is backed by global private equity leader KKR.

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Executive Summary

This report, commissioned by OneSpartanburg, Inc. and conducted by Lightcast, delivers a comprehensive, skills-based talent analysis with strategy suggestions for Spartanburg County by focusing on four core sectors: Manufacturing, Transportation & Warehousing, Health Care & Social Assistance, and Hospitality. Building on a 2022 study, the current analysis provides a deeper occupational and workforce pipeline review, addressing talent supply-demand dynamics and offering strategic recommendations to bolster the region's economic competitiveness.

Among the Plan's 15 key initiatives, the five initiatives under the Talent Focus Area apply directly to the labor market:

- **College Affordability** – The report supports aligning scholarship programs with labor market needs, reducing barriers to education while also fulfilling employer needs.
- **College & Career Connections** – This report advocates strongly for improving K-12 students' labor market exposure through work-based learning (WBL) campaign aimed at encouraging greater employer adoption, while also calling for a universal portal where high school and college students can connect with employers for internships or other WBL opportunities.
- **Adult Degree Completions** – Where supply shortages at the degree level occur, Re:Degree is an excellent initiative that can help fulfil talent gaps. In just its first few weeks, the initiative identified more than 200 people seeking re-enrollment assistance. This report outlines where talent gaps occur across critical occupations, which can help Re:Degree direct candidates towards career opportunities in the area.
- **Childcare & Early Education** – The reports outlines how critical labor force participation is when labor market shortages are felt. Childcare is a critical barrier to labor force participation, especially among women who are most often primary care givers.
- **Talent Marketing & Attraction** – While the report focuses on the existing labor shed, it outlines where supply gaps occur which can help direct targeted talent attraction efforts. Furthermore, Lightcast provided OneSpartanburg, Inc. with a Talent Migration Dashboard to bring deeper intelligence to marketing and attraction efforts.

Key Report Features

- **Core Sector Analysis**: Manufacturing remains Spartanburg's economic cornerstone, employing nearly 38,000 individuals and demonstrating strong employment concentration. Transportation & Warehousing supports this sector but has experienced recent job decline, possibly due to post-pandemic corrections. Health Care and Hospitality, despite lower-than-average national concentration, show strong local growth and employment demand.

- **Occupational Deep Dive**: The report identifies top occupations by the chosen four core sectors, outlines wage, education, and experience levels, and highlights demographic trends in workforce composition. Notably, occupations without degree requirements dominate job growth, but many still require moderate-term on-the-job training.
- **Supply & Demand Gaps**: A detailed analysis reveals alignment between education program completions and job openings at the aggregate level. However, critical gaps exist at both the sub-bachelor's and master's level – particularly for roles like truck drivers and machine operators – while oversupply is observed at the bachelor's level. Such supply at the bachelor's level is advantageous for multiple reasons:
    - Higher education enables further development of soft skills that are valued by employers.
    - Bachelor's degree talent can serve as a powerful business attraction message by demonstrating availability of talent for economic diversification efforts, a key goal of Vision Plan 2.0.
    - Bachelor's degree holders could be encouraged to continue towards achieving master's and professional degrees to make up for the talent supply gap at that level.
- **Talent Pathways**: Lightcast's pathway modeling helps identify possible job and skill transitions that can fill workforce shortages, particularly for positions that do not require a bachelor's degree. Career pathways are essential to expanding the talent pipeline and supporting a robust talent ecosystem.
- **Equity & Engagement**: Demographic data highlights labor force participation underrepresentation of certain groups – particularly Hispanics and women – in key occupations. High retirement risk across many roles and low labor force participation among youth and some racial groups further stress the need for inclusive workforce strategies. This is a national trend felt at the local level.

Action Plan Summary

The main actions of the plan are organized around key thematic areas focused on improving Spartanburg County's talent development and workforce pipeline, aligning with the Talent Focus Area of Vision Plan 2.0. Here is a concise summary of the main actions:

Address Industry-Specific Gaps

- Expand the Talent Pipeline by identifying skills-adjacent occupations (those with transferable skills).
- Improve alignment between education outputs and labor market needs, particularly by expanding or modifying short-term training programs. The report outlines programming and credentialing opportunities for each sector.
- Anticipate Technology Impacts on Labor Demand, particularly in the manufacturing sector which will be affected by automation, robotics, and AI. Embed AI digital skills alongside soft-skills development in K-12 and post-secondary curriculum. Re-skill people in

occupations impacted by AI/automation/robotics to help transition them to roles growing due to automation.

The future of work remains uncertain with the dawn of AI. Some experts predict entire swathes of occupations will become obsolete. Others predict a net increase in jobs because of new opportunities. While the future is difficult to predict, one can first expect employers to leverage AI and automation in order solve the labor shortage problem, particularly in the advanced manufacturing space.

This transition can already be seen in Spartanburg with an increase in occupations requiring advanced computer knowledge. Software Developers was the fastest growing occupation in Manufacturing from 2022 to 2024 – with roughly 92% growth, adding 66 jobs. Other occupations which have been traditionally smaller in volume are projected to have strong growth in Manufacturing:

- 15-1212 Information Security Analysts (17% projected growth)
- 17-2072 Electronics Engineers, Except Computer (17% project growth)
- 11-3021 Computer and Information Systems Managers (11% projected growth)

While some occupations may grow, others may decline. This will most likely occur in occupations that have highly repetitive tasks. Employers will prioritize automation where labor is difficult to find. Some occupations have declined in the region while Manufacturing employment grew overall:

- Shipping, Receiving, and Inventory Clerks
- Helpers--Production Workers
- Packers and Packagers, Hand

- Engage Disengaged Populations, such as unemployed youth, underrepresented minorities, veterans, new parents, and individuals with disabilities, to maximize workforce participation.

Increase Labor Market Flexibility

- Promote talent adaptability by emphasizing soft skills and lifelong learning.
- Encourage employers to invest in training and hire for company fit.
- Integrate workforce alignment into scholarship programs.
- Accommodate part-time workers, especially students and underrepresented groups. Address childcare and transportation barriers that inhibit labor force participation.

Expand and Deepen Labor Shed Connections

- Develop partnerships with Career and Technology Centers (CTEs) across the entire labor shed.
- Establish regular convenings with workforce boards to address pipeline gaps.

- Survey regional commuters to discover barriers and attractions to work in Spartanburg.

Improve K-12 Student Labor Market Exposure

- Launch a branded WBL campaign targeting separately high school and college talent and address employer liability concerns.
- Create a unified platform/portal for internships, work-based learning (WBL), and career exploration accessible for high school and college students locally.
- Educate educators and parents about local career opportunities through experiential programs.
- Increase funding and flexibility for CTE programs and advocate for integration with academic tracks.

These actions reinforce Vision Plan 2.0's initiative to "Connect every high school student to a postsecondary degree or training program or a career-track job within one year of graduation." The region has already taken steps to address this such as:

- STAR Fellowships deepening career development facilitator knowledge of area workforce needs, resulting in 198 total work-based learning placements
- Talent Council working with employers and institutions to expand work-based learning opportunities

Strengthen Soft Skills and Career Readiness

- Focus on underserved populations, including ESL students and those with disabilities. Align with Movement 2030 priority neighborhoods.
- Standardize a common language of essential skills across K-12, higher education, and employers. Use this language to translate how these skills are transferable between specific occupations and which skills are developed in curriculums to enable credit transferability/recognition and even stackable credits.

Improve Post-Secondary Success Metrics

- Encourage colleges and universities to adopt new metrics like employer satisfaction scores, job-education alignment rates, internship participation rates, and employer debriefs on intern performance. (See later references).

This report offers a foundation for data-driven decision-making that will inform talent development, and workforce training strategies in Spartanburg County. These actions are intended to foster an employer-aligned talent ecosystem in the region, ensuring long-term economic resilience and opportunity across sectors.

Contents

Introduction

OneSpartanburg, Inc. previously retained Lightcast to conduct a talent study in 2022. This report focused on the influence of demographics on the area's labor market, employment trends, and talent retention & attraction trends. However, it did not provide a focused look at key occupations in core industry sectors for the region.

This study is aimed at providing a talent strategy by offering a deep-dive into each core sector (Manufacturing, Transportation & Warehousing, Health Care & Social Assistance, and Hospitality), revealing occupational characteristics of target jobs, uncovering supply-demand gaps for these jobs, and identifying adjacent talent pools based on skills similarity to address these constraints. Note that each sector chapter follows the same structure so each can be read independently, while the Action Plan consolidates findings from sector data analysis and stakeholder engagement.

Methodology

Core Sectors

The project was scoped to analyze four (4) core sectors for the Spartanburg region so the largest sectors at the 2-digit NAICS level were considered. The sectors highlighted in the table below were chosen for this study. With the largest employment and highest employment concentration of all sectors, Manufacturing was clearly a core sector to be examined. Transportation & Warehousing has an employment concentration higher than the national average. It is also highly complementary to Spartanburg's manufacturing sector by enabling the efficient movement of goods and supplies.

While Accommodation & Food Services (referred to as Hospitality throughout the report) and Health Care & Social Assistance have employment concentrations lower than the national average, they are both the top five largest employers in the county and have grown double-digits since 2020.

Table 1 - Top Industries in Spartanburg County by Employment, 2024

NAICS	Description	2024 Jobs	Job Growth 2020-2024	Employment Concentration
31	Manufacturing	37,735	11%	2.83
90	Government	27,316	11%	1.09
44	Retail Trade	17,704	12%	1.08
72	Accommodation & Food Services	13,587	17%	0.94
62	Health Care & Social Assistance	12,759	12%	0.56
48	Transportation & Warehousing	10,093	(3%)	1.34
23	Construction	9,643	8%	0.97

Source: Lightcast

Target Occupations

The process of selecting the top target occupations for each core sector involved a combination of data analysis and subjective judgment. The primary method for determining these occupations was to focus on those that represented 80% of total employment in the sector or the top twenty occupations by employment, whichever was the larger group. For example, if only ten occupations accounted for 80% of employment, we would still select the top twenty occupations based on employment to have a diverse mix of occupations based on typical education level.

Additionally, the selection process included a second layer for occupations requiring a bachelor's degree or higher. If these higher education level occupations were not already represented within the top 80% of employment, the list of occupations would include the top 5 to 10 occupations requiring a bachelor's degree or higher. The exact number, whether it would be 5 or 10, was a judgement determination. For instance, in the Hospitality industry, where there is lower demand for bachelor's degree level talent, only 5 occupations were chosen, as opposed to the ten that might have been selected in other industries.

This process should be regarded as somewhat of an art than a science, requiring flexibility and context-specific judgment. For example, in Hospitality, the top ten occupations that accounted for 80% of employment were all concentrated in food services, rather than the accommodation side of the industry, which further influenced the selection approach. This nuanced approach ensured that the target occupations reflected both employment trends and the demand for higher education where it mattered most.

Supply & Demand

To assess the region's capacity to develop talent locally, this report includes a pipeline supply and demand analysis based on the output of education and training programs. The analysis was conducted for Spartanburg County and the broader seven-county labor shed. This model compares the number of program completers in relevant fields to estimated annual job openings, segmented by education level. It provides a view of how well the region's education and training systems are aligned with workforce demand.

Demand is estimated as the average number of annual job openings for each target occupation, adjusted to reflect the education levels most frequently requested in postings requiring limited to no prior experience (0–2 years). This approach is intended to approximate typical entry-level hiring expectations, drawing from job descriptions and the education profile of early-career workers.

On the supply side, the model includes all reported completions from programs aligned with target occupations at each education level. Completion data is sourced from the Integrated Postsecondary Education Data System (IPEDS) and supplemented with locally collected data on Career and Technical Education (CTE) completions, as well as training program completions reported by approved providers on the Eligible Training Provider List (ETPL). Program relevance is determined by using standard crosswalks that link instructional programs (CIP codes) to occupations (SOC codes), refined by identifying program areas frequently cited in recent job postings.

To account for the fact that multiple occupations often draw from the same education and training programs, the analysis estimates proportional completions. This metric reflects the share of graduates likely to enter each occupation, based on that occupation's share of openings at a given education level within the broader set of linked occupations.

A supply gap is identified when the number of proportional completions falls below the estimated number of openings for an occupation and education level. These gaps highlight areas where the current pipeline of trained individuals may not be sufficient to meet anticipated employer demand.

However, several limitations should be considered when interpreting results: Many occupations requiring only a high school diploma or no formal education do not rely on structured education or training pipelines and are typically filled through direct labor market entry. These roles may appear in the model due to crosswalk linkages, but any resulting oversupply or undersupply should not be interpreted as a direct training misalignment.

Additionally, general management occupations often map to a wide range of degree programs—including business, communications, and interdisciplinary studies—which can inflate the appearance of alignment between completions and job openings. While some completions at the bachelor's and above (BA+) level may represent candidates with prior experience, especially in

programs designed for working adults, the model does not differentiate between experienced and inexperienced graduates. As a result, alignment for these roles should be interpreted with caution.

Job openings across all occupations may also be filled by individuals re-entering the labor force, relocating to the region, or transitioning from other fields. The pipeline model is best understood as a directional tool for assessing long-term talent development capacity. It is most applicable to occupations where formal pre-employment preparation plays a significant role in workforce entry. When considered alongside other labor market indicators in this report, the pipeline model offers a valuable perspective on the region's overall workforce alignment.

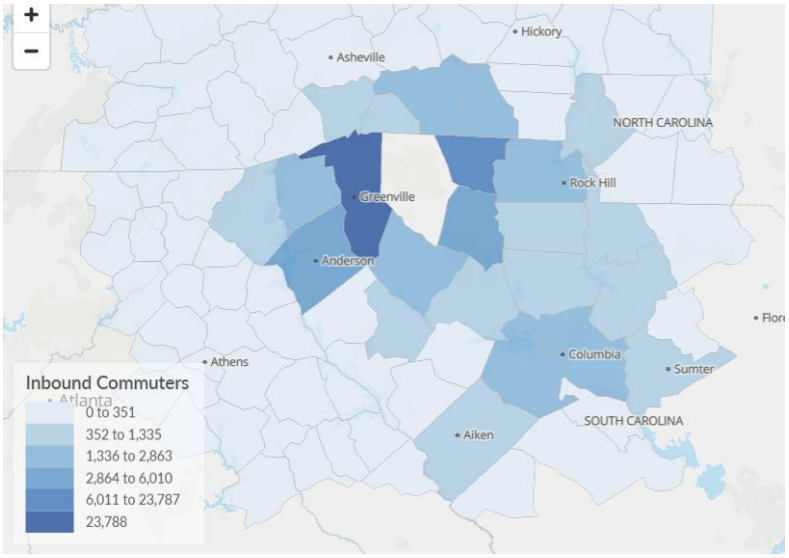
Labor Shed

A key component of supply and demand modeling is the determination of the geographic area of analysis. While Spartanburg is a part of its own two-county MSA, its proximity to the Greenville-Anderson-Greer MSA influences the area's commuting patterns and thus its labor shed. In other words, Spartanburg jobs pull talent from a much larger surrounding area.

In addition to looking at supply and demand for the Spartanburg MSA, Lightcast also analyzes labor shed data, which is primarily determined by commuting patterns. The goal is to focus on areas that represent realistic labor exchange. To narrow the focus, Lightcast finds that 73.5% of workers commute twenty-four miles or less. Another 11% commute 25-50 miles, which helps refine the geographic area under consideration. The recommended labor shed includes a broad range of counties, specifically:

- Spartanburg County, SC
- Greenville County, SC
- Union County, SC
- Cherokee County, SC
- Laurens County, SC
- Anderson County, SC
- Pickens County, SC

Figure 1 - Map of Inbound Commuters to Spartanburg County, 2023



Source: Lightcast

Peer Regions

OneSpartanburg, Inc. also requested that the study include some benchmarking against peer communities. To do so, Lightcast examines Combined Statistical Areas (CSAs) and Metropolitan Statistical Areas (MSAs) that have similar population levels to either the Spartanburg MSA or Greenville-Spartanburg-Anderson CSA. A filter are applied to consider areas with an above-average employment concentration in manufacturing to reflect the industrial nature of the Spartanburg economy. After filtering these cities, Lightcast gleans sector data on employment,

employment growth, employment concentration, and cost-of-living adjusted wages to determine which areas most closely reflect the Spartanburg economy.

A Common Theme: Engage the Unemployed, Underemployed, or Disengaged

Focusing on engaging the unemployed, underemployed, and disengaged connects directly with Vision Plan 2.0 goals of raising levels of prosperity, improving quality of life, and reducing equity gaps. Employment and labor force participation needs to improve for young people, so the initiative of the Vision Plan to connect every student to a postsecondary degree, training program or career-track job within one year of graduation rings true.

Demographic characteristics of the unemployed

In 2024, there were roughly 30,000 unemployed people in the labor shed with an unemployment rate of 4.0%. Greenville County accounted for 10,330 unemployed persons (over 30% of the unemployed in the Spartanburg labor shed), followed by Spartanburg itself (6,656, 22% unemployed persons). This means that at any given time, generally half of the unemployed in Spartanburg's labor shed can be found in these 2 counties alone.

Anderson County (3,757, 13%) and Pickens County (2,550, 9%) had the next highest number of unemployed, though their unemployment rates are just 3.9% and 4.2% respectively. Counties with the highest unemployment rates are Cherokee County (5.9%), Union County (5.2%), and Rutherford County (5.1%), though because of their size, this yields only another 3,170 unemployed person.

The unemployment rate for young people aged 16-19 is notably high in the Spartanburg MSA, reaching 13.0%, with Greenville MSA close behind. While this may seem concerning, it is a significant improvement from 15 years ago when the rate was around 20%. The reason for the lower unemployment rate is that industries are struggling with labor shortages in lower-skilled roles which young people are more likely to fill. However, this means that young job seekers are not as easily found among the unemployed but rather among the disengaged, those not actively seeking work. The Labor Force Participation Rate (LFPR) for young people is also at a low, with Spartanburg at 44.4% and Greenville MSA even lower at 41.7%. The region seeks to increase education attainment. Evidence shows that while postsecondary education delays entry into the labor market, those with higher levels of education attainment also have a higher labor force participation rate.

Another key insight is that while unemployment rates for the 20-24 age group in the Spartanburg MSA are at 8.1%, they only slightly improve to 7.1% for those aged 25-29. In contrast, the unemployment rate in Greenville drops significantly from 7.4% for 20-24-year-olds to 4.7% for 25-29-year-olds. This indicates that Spartanburg's labor market is not doing enough to connect

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The region is already addressing this concern, which should increase the employment rate and labor force participation of young people over time:

- Movement 2030* has set a goal to boost the percentage of Spartanburg County high school graduates enrolling in postsecondary education to 70% within a year.
- The SCC Goes Free tuition program at Spartanburg Community College has already driven a 54% rise in enrollment since 2020.
- The Re:Degree initiative is helping adult learners who have some college experience but no degree by reducing the financial burden of returning to school.
- The OneSpartanburg, Inc. Talent Council collaborates with employers and schools to broaden and promote opportunities for paid internships and other forms of work-based learning.
- The Spartanburg Talent and Retention (STAR) Fellowship, funded by a grant from SAM, has successfully placed 166 rising high school seniors in paid internships, contributing to a total of 198 work-based learning opportunities across the county.

In terms of gender, the unemployment rate for females in the labor shed and locally is 4.3%, while for males, it is slightly lower at 3.8%.

The unemployment figures are evenly split between White and Black individuals, with each group representing about half of the total unemployed population. However, there is a stark disparity in the unemployment *rates*: Black individuals face a significantly higher rate at 7.4%, which is more than double the White unemployment rate of 2.8%. The local unemployment rates for Black and White individuals mirror the broader labor shed rates. The unemployment rate for Hispanic individuals stands at 3.4%, consistent both locally and across the labor shed.

Improving Labor Force Participation Rates: Part-time work and Childcare

The White population has the lowest Labor Force Participation Rate (LFPR) across all racial and ethnic groups in Spartanburg with a population over 1,000 (59.6%). While one might initially attribute this to higher education levels (since students often delay entry into the workforce due to earning college degrees), this is not the case. When looking at LFPR by education level, it becomes clear that higher education attainment *increases* LFPR. While Asians have slightly lower education attainment than Whites, they have a significantly higher LFPR (65.7%). In other words, as the largest group with the lowest LFPR, the White population urgently needs to be more actively engaged in the labor market.

Table 2 – LFPR by Race/Ethnicity, Spartanburg MSA

Race/Ethnicity	MSA Population	LFPR
White alone	201,083	59.6%
Black or African American alone	58,977	63.8%
American Indian and Alaska Native alone	586	45.2%
Asian alone	6,622	65.7%
Native Hawaiian and Other Pacific Islander alone	67	43.3%
Some other race alone	7,452	71.1%
Two or more races	15,719	66.3%
Hispanic or Latino origin (of any race)	20,909	71.9%

Source: ACS 5-Year Survey 2023

Individuals with disabilities are among the lowest LFPR of any demographic, comparable to that of 16-19-year-olds. In the Spartanburg MSA, individuals with disabilities make up 15.6% of the population, higher than the national average of 12.9% and larger than the 13.7% seen in the Greenville MSA. This is likely due to the presence of McCarthy Teszler School, the Charles Lea Center, and the South Carolina School for the Deaf and Blind – all of which act as a regional draw for supporting individuals with special needs.

Full-time work presents significant barriers for those with disabilities, including the potential loss of Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI) benefits due to the "benefits cliff." On the other hand, part-time work allows individuals with disabilities to maintain these benefits since they are based on income, not hours worked.[1] In fact, individuals with disabilities are twice as likely to work part-time. In recent years, they have seen record employment gains as workplace flexibility has increased.[2] For this reason, encouraging the accommodation of part-time work, especially for students, childcare-burdened parents, and persons with disabilities, can help expand the labor pool to previously disengaged persons.

Improved access to childcare is a major factor for enabling women to participate in the labor force more fully.

According to Lightcast's Demographic Drought research, male labor force participation rate has been falling for decades, while female labor force participation rates have risen.[3] However, women still do not have as high an LFPR as men. One reason is that family childcare duties still traditionally fall to women. Therefore, access to childcare is a major factor for enabling women to participate in the labor force more fully.

For example, the LFPR for mothers is 20 percentage points lower than the LFPR for fathers (71.2% compared to 92.5%). This also depends on the age of the child: women with children between the ages of 6 and 17 have an LFPR that is 10 percentage points higher than those with children under 6.[4] Access to early childcare is critical. The region has already made gains towards its Vision Plan 2.0 initiative to ensure children have access to quality childcare and pre-K through its Project 100 investments, SAM's Hello Family effort, and the District Six Early Learning Center.

Employers can also be a part of the solution by investing in space for childcare if current availability is not enough. They can work with companies such as KinderCare to develop on-site childcare facilities, or pool resources among neighboring employers to establish near-site facilities.[5] Employers can also offer childcare tuition benefits to offset costs that fall on parents.

Transportation is also a barrier to full labor force participation. In 2022, a South Carolina Department of Employment and Workforce survey found that one in five people out of the labor force cites transportation as a barrier.[6] For people that do not own vehicles, getting to work can be a challenge. Spartanburg already has made innovative efforts towards addressing this challenge, such as the City's SWFT program which subsidizes commutes starting or ending in

[1] https://www.ssa.gov/pubs/EN-05-10095.pdf
[2] https://www.americanprogress.org/article/disabled-workers-saw-record-employment-gains-in-2023-but-gaps-remain/
[3] Lightcast, https://lightcast.io/resources/research/demographic-drought
[4] Bureau of Labor Statistics, https://www.bls.gov/opub/ted/2022/labor-force-participation-of-mothers-and-fathers-little-changed-in-2021-remains-lower-than-in-2019.htm
[5] KinderCare, https://www.kindercare.com/employer-sponsored-child-care
[6] Federal Reserve Bank of Richmond, https://www.richmondfed.org/publications/research/econ_focus/2023/q4_district_digest#:~:text=Lack%20of%20a%20car%20can,work%2C%20especially%20among%20welfare%20recipients.

the county. Companies can also sign up with United Way of the Piedmont, which subsidizes the cost of the Commute with Enterprise vanpools. Vision Plan 2.0's focus on countywide placemaking and gateways/corridors will increase road, sidewalk, and accessibility infrastructure over time. However, focus should be on introducing public transportation options that connect low-income communities to major employment centers. As of 2025, SPARTA fixed routes are limited to the city's immediate environs and not a larger regional footprint towards major employment centers along I-85.

A Note on Soft & Transferrable Skills

It can be tempting to assume that only hard skills specialized in an industry or occupation are valued by employers. Given the rapid onset of AI, it may seem as if digital skills are all that matter. This is not the case. Soft skills (also referred to as common skills or transferable skills) are still as relevant today as in the past, maybe even more so.

First, soft skills are difficult to teach. They are developed over time, often through socialization, experiences, and values, and are more difficult to teach exclusively in a classroom. When they are lacking, employers find it difficult to manage.

Second, when examining the presence of soft skills in job postings, they are often in as great demand as specialized or industry-specific skills. For instance, when analyzing the growth of skills demand nationally, six of the top 25 fastest growing skills are soft skills:

- Cross-functional collaboration – +375%
- Stakeholder engagement – +270%
- Growth mindset – +204%
- Risk appetite – 183%
- Strategic leadership – +173%
- Strategic decision making – +150%

The strength of employer demand for soft skills in Spartanburg is also evident. When examining the top 5 skills present in job postings across each of the core sectors, the majority are soft skills. Communication, problem solving, leadership, and customer service are more relevant than ever.

Table 3 - Top Skills Demand, Soft Skills highlighted in Purple, Job Postings May 2022 - May 2025

Sector	Skill	% Presence in Total Job Postings
Manufacturing	Communication	33%
	Problem Solving	23%
	Leadership	22%
	Continuous Improvement Process	18%
	Customer Service	17%
Transportation & Warehousing	Warehousing	23%
	Operations	22%
	Customer Service	21%
	Communication	19%
	Truck Driving	16%
Health Care & Social Assistance	Nursing	53%
	Communication	28%
	Leadership	25%
	Management	15%
	Customer Service	13%
Hospitality	Restaurant Operation	38%
	Communication	32%
	Customer Service	30%
	Management	25%
	Leadership	18%

Source: Lightcast

For this reason, Vision Plan 2.0's goal for greater education attainment is in line with labor market needs. While it is true that most labor supply gaps are for occupations that do not require a college degree, higher education attainment is critical to Spartanburg for three reasons:

1. College or university education requires students to engage in advanced communication, critical thinking, problem-solving, and collaboration. It encourages students to independently adapt to challenges, manage time and priorities, and interact with people from diverse backgrounds. Thus, higher education enables further development of soft skills that are valued by employers.
2. Bachelor's degree talent can serve as a powerful business attraction message by demonstrating availability of talent for economic diversification efforts, a key goal of Vision Plan 2.0.
3. Bachelor's degree holders could be encouraged to continue towards achieving even more advanced degrees to make up for the talent supply gap at that level, aligning with education attainment goals for the region.

Manufacturing

The selection of Manufacturing as a core sector is directly supported by the Vision Plan 2.0, which identifies Manufacturing & Logistics as a key initiative for sustaining Spartanburg's competitive advantage and job growth. The Plan calls for optimizing infrastructure, supporting workforce development, and staying ahead of industry trends—objectives that are reflected in the sector analysis and recommendations provided here.

In 2024, Manufacturing remained the largest sector in Spartanburg County, employing 34,474 individuals, representing a significant 4% growth with the addition of over 1,300 jobs since 2022. The county boasts a Manufacturing employment concentration of 2.86, nearly three times the national average, highlighting the sector's dominance in the local economy. Manufacturing stands as the county's most vital and competitive industry.

Occupations

Employment & Job Characteristics

Using the methodology described in the Target Occupations section, Lightcast identified fifty-three occupations accounting for 83.1% of total manufacturing employment. The largest occupation category is Miscellaneous Assemblers and Fabricators, which comprises over 10,000 jobs (or 28.5% of the manufacturing workforce) with an increase of 449 jobs since 2022. The fastest-growing occupation in the sector is Software Developers, which saw 91.9% growth, adding sixty-six jobs.

Other rapidly expanding roles include Stockers and Order Fillers (49.7%), Paper Goods Machine Setters, Operators, and Tenders (47.2%), and Coating, Painting, and Spraying Machine Setters, Operators, and Tenders (29.8%). However, some occupations experienced a decline, such as Helpers – Production Workers (-22.2%), Machinists, which saw a decrease of 18.5% (94 jobs), and Shipping, Receiving, and Inventory Clerks, which declined by 16.6% (104 jobs). Some of this decline could be a result of automation or roboticization. Shipping, Receiving, and Inventory Clerk contraction could be due to post-covid correction, though the initial employment growth for the occupation began in 2017 long before the pandemic accelerated demand.

Table 4 - Manufacturing Target Occupations

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Miscellaneous Assemblers and Fabricators	10,245	10,694	28.5%	449	4.4%
First-Line Supervisors of Production and Operating Workers	1,263	1,275	3.4%	12	1.0%
Inspectors, Testers, Sorters, Samplers, and Weighers	1,216	1,235	3.3%	19	1.6%
Laborers and Freight, Stock, and Material Movers, Hand	1,123	1,117	3.0%	-5	-0.5%
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	776	929	2.5%	153	19.8%

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	796	808	2.2%	12	1.5%
Industrial Machinery Mechanics	644	720	1.9%	77	11.9%
Welders, Cutters, Solderers, and Brazers	730	715	1.9%	-14	-2.0%
Industrial Engineers	668	672	1.8%	3	0.5%
Maintenance and Repair Workers, General	656	635	1.7%	-21	-3.2%
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	686	631	1.7%	-54	-7.9%
Industrial Production Managers	546	585	1.6%	39	7.1%
Shipping, Receiving, and Inventory Clerks	625	521	1.4%	-104	-16.6%
Tire Builders	429	484	1.3%	55	12.9%
Industrial Truck and Tractor Operators	395	473	1.3%	78	19.8%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	423	455	1.2%	32	7.5%
Chemical Equipment Operators and Tenders	516	451	1.2%	-65	-12.6%
Production, Planning, and Expediting Clerks	396	449	1.2%	53	13.3%
Machinists	509	415	1.1%	-94	-18.5%
Packaging and Filling Machine Operators and Tenders	448	414	1.1%	-34	-7.5%
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	314	408	1.1%	94	29.8%
General and Operations Managers	418	406	1.1%	-12	-2.9%
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	350	372	1.0%	22	6.4%
Mechanical Engineers	381	363	1.0%	-19	-4.9%
Production Workers, All Other	274	348	0.9%	75	27.3%
Paper Goods Machine Setters, Operators, and Tenders	234	344	0.9%	110	47.2%
Customer Service Representatives	339	343	0.9%	5	1.4%
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	340	306	0.8%	-34	-9.9%
Sewing Machine Operators	326	305	0.8%	-21	-6.5%
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	312	287	0.8%	-25	-8.0%
Mixing and Blending Machine Setters, Operators, and Tenders	294	270	0.7%	-25	-8.4%
Logisticians	239	269	0.7%	30	12.5%
Office Clerks, General	264	244	0.7%	-20	-7.6%
Helpers--Production Workers	311	242	0.6%	-69	-22.2%
Stockers and Order Fillers	153	229	0.6%	76	49.7%
Computer Numerically Controlled Tool Operators	201	218	0.6%	18	8.8%
Packers and Packagers, Hand	242	209	0.6%	-33	-13.5%
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	173	207	0.6%	34	19.7%
Heavy and Tractor-Trailer Truck Drivers	191	204	0.5%	12	6.5%
Industrial Engineering Technologists and Technicians	187	196	0.5%	10	5.2%
Buyers and Purchasing Agents	176	185	0.5%	9	5.2%
Molders, Shapers, and Casters, Except Metal and Plastic	217	184	0.5%	-33	-15.2%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	197	177	0.5%	-20	-10.3%
Accountants and Auditors	172	174	0.5%	2	1.1%

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Human Resources Specialists	145	163	0.4%	18	12.4%
Software Developers	72	138	0.4%	66	91.9%
Managers, All Other	107	116	0.3%	9	8.1%
Project Management Specialists	82	106	0.3%	24	29.4%
Architectural and Engineering Managers	119	105	0.3%	-13	-11.3%
Sales Managers	93	101	0.3%	7	7.9%
Financial Managers	80	91	0.2%	12	14.5%
Market Research Analysts and Marketing Specialists	84	87	0.2%	3	3.9%
Electrical Engineers	76	75	0.2%	-1	-1.9%

Source: Lightcast

Among the fifty-three target occupations in Spartanburg County's Manufacturing sector, sixteen require a bachelor's degree or higher, typically offering higher pay but fewer job opportunities compared to positions that require less education. A significant portion, 31 occupations, only require a high school diploma or GED, while four jobs—Laborers and Freight, Stock, and Material Movers, Hand; Industrial Truck and Tractor Operators; Sewing Machine Operators; and Packers and Packagers, Hand—do not require any formal education credential.

However, among occupations that typically lack postsecondary education requirements, there is wide variation in training expectations and the relevance of formal preparation. Some roles, such as Welders, CNC Operators, Machinists, and Maintenance Technicians, require moderate to long-term on-the-job training and benefit from structured pre-employment preparation through Career and Technical Education or short-term workforce training. These occupations are appropriate targets for continued alignment between education providers and employers to ensure foundational skills match current job demands. In contrast, roles such as Laborers, Packers, and Sewing Machine Operators are workplace-specific and best addressed through direct, employer-led training. Differentiating between training-relevant and workplace-specific roles helps ensure that resources are allocated effectively and that employer expectations remain aligned with the role of the education system.

Table 5 - Manufacturing Target Occupation Characteristics

Occupation	Median Hourly Wage	Typical Education Level[7]	Typical Experience Level[8]	Typical Training Level[9]
Architectural and Engineering Managers	$65.37	Bachelor's degree	5 years or more	None
Sales Managers	$62.04	Bachelor's degree	Less than 5 years	None
Financial Managers	$61.84	Bachelor's degree	5 years or more	None
Industrial Production Managers	$60.54	Bachelor's degree	5 years or more	None
Software Developers	$53.08	Bachelor's degree	None	None
Mechanical Engineers	$46.24	Bachelor's degree	None	None
Electrical Engineers	$46.04	Bachelor's degree	None	None
General and Operations Managers	$44.47	Bachelor's degree	5 years or more	None

[7] Represents the education level most often needed to enter an occupation.
[8] Indicates if work experience in a related occupation is commonly considered necessary by employers for entry into the occupation, or is a commonly accepted substitute for formal types of training.
[9] Indicates the on-the-job training most often needed to attain competency in the occupation.

Occupation	Median Hourly Wage	Typical Education Level[7]	Typical Experience Level[8]	Typical Training Level[9]
Industrial Engineers	$43.31	Bachelor's degree	None	None
Project Management Specialists	$40.23	Bachelor's degree	None	None
Logisticians	$39.15	Bachelor's degree	None	None
Accountants and Auditors	$32.86	Bachelor's degree	None	None
Buyers and Purchasing Agents	$31.60	Bachelor's degree	None	Moderate-term on-the-job training
Market Research Analysts and Marketing Specialists	$31.24	Bachelor's degree	None	None
Human Resources Specialists	$30.95	Bachelor's degree	None	None
Managers, All Other	$30.62	Bachelor's degree	Less than 5 years	None
Industrial Engineering Technologists and Technicians	$29.86	Associate's degree	None	None
Heavy and Tractor-Trailer Truck Drivers	$24.02	Postsecondary nondegree award	None	Short-term on-the-job training
First-Line Supervisors of Production and Operating Workers	$36.38	High school diploma or equivalent	Less than 5 years	None
Tire Builders	$34.68	High school diploma or equivalent	None	Moderate-term on-the-job training
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$30.43	High school diploma or equivalent	None	Moderate-term on-the-job training
Industrial Machinery Mechanics	$28.38	High school diploma or equivalent	None	Long-term on-the-job training
Computer Numerically Controlled Tool Operators	$25.92	High school diploma or equivalent	None	Moderate-term on-the-job training
Chemical Equipment Operators and Tenders	$25.79	High school diploma or equivalent	None	Moderate-term on-the-job training
Production, Planning, and Expediting Clerks	$25.18	High school diploma or equivalent	None	Moderate-term on-the-job training
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$24.37	High school diploma or equivalent	None	Moderate-term on-the-job training
Machinists	$24.02	High school diploma or equivalent	None	Long-term on-the-job training
Welders, Cutters, Solderers, and Brazers	$23.94	High school diploma or equivalent	None	Moderate-term on-the-job training
Miscellaneous Assemblers and Fabricators	$23.34	High school diploma or equivalent	None	Moderate-term on-the-job training
Mixing and Blending Machine Setters, Operators, and Tenders	$23.09	High school diploma or equivalent	None	Moderate-term on-the-job training
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$22.87	High school diploma or equivalent	None	Moderate-term on-the-job training
Paper Goods Machine Setters, Operators, and Tenders	$22.31	High school diploma or equivalent	None	Moderate-term on-the-job training
Inspectors, Testers, Sorters, Samplers, and Weighers	$22.28	High school diploma or equivalent	None	Moderate-term on-the-job training
Maintenance and Repair Workers, General	$22.18	High school diploma or equivalent	None	Moderate-term on-the-job training

Occupation	Median Hourly Wage	Typical Education Level[7]	Typical Experience Level[8]	Typical Training Level[9]
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	$21.37	High school diploma or equivalent	None	Moderate-term on-the-job training
Molders, Shapers, and Casters, Except Metal and Plastic	$20.18	High school diploma or equivalent	None	Long-term on-the-job training
Shipping, Receiving, and Inventory Clerks	$20.14	High school diploma or equivalent	None	Short-term on-the-job training
Helpers--Production Workers	$19.23	High school diploma or equivalent	None	Short-term on-the-job training
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$18.66	High school diploma or equivalent	None	Moderate-term on-the-job training
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	$18.64	High school diploma or equivalent	None	Short-term on-the-job training
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	$18.61	High school diploma or equivalent	None	Moderate-term on-the-job training
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	$18.28	High school diploma or equivalent	None	Short-term on-the-job training
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.22	High school diploma or equivalent	None	Moderate-term on-the-job training
Customer Service Representatives	$17.91	High school diploma or equivalent	None	Short-term on-the-job training
Packaging and Filling Machine Operators and Tenders	$17.78	High school diploma or equivalent	None	Moderate-term on-the-job training
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	$17.53	High school diploma or equivalent	None	Moderate-term on-the-job training
Stockers and Order Fillers	$17.44	High school diploma or equivalent	None	Short-term on-the-job training
Production Workers, All Other	$17.06	High school diploma or equivalent	None	Moderate-term on-the-job training
Office Clerks, General	$16.63	High school diploma or equivalent	None	Short-term on-the-job training
Industrial Truck and Tractor Operators	$19.25	No formal educational credential	None	Short-term on-the-job training
Sewing Machine Operators	$18.06	No formal educational credential	None	Short-term on-the-job training
Laborers and Freight, Stock, and Material Movers, Hand	$17.64	No formal educational credential	None	Short-term on-the-job training
Packers and Packagers, Hand	$15.03	No formal educational credential	None	Short-term on-the-job training

Source: Lightcast

The table below demonstrates the top common and specialized skills relevant to the occupations in the Manufacturing sector, extracted from regional job postings data. Common skills are defined as “skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. “Communication” or “Microsoft Excel”). Also known as

soft skills, human skills, and competencies."[10] Specialized skills are "skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. "NumPy" or "Hotel Management"). Also known as technical skills or hard skills."[11]

As one would expect, common skills tend to be in demand across occupational job postings. For instance, for office roles, skills such as communication and management are frequently mentioned in job postings. For production-oriented occupations, lifting ability, problem solving, loading & unloading, and mathematics are common. Some specialized skills are also mentioned across occupations, such as continuous process improvement, project management, or knowledge/comfort with machinery.

Table 6 - Manufacturing Target Occupation Skills Characteristics

Occupation	Top Common Skills	Top Specialized Skills
Accountants & Auditors	• Management • Communication • Microsoft Excel	• Accounting • Finance • Auditing
Architectural and Engineering Managers	• Leadership • Communication • Management	• Project Management • Continuous Improvement Process • Engineering Management
Buyers and Purchasing Agents	• Management • Negotiation • Communication	• Purchasing • Supply Chain • Procurement
Chemical Equipment Operators and Tenders	• Operations • Problem Solving • Management	• SAP Applications • Housekeeping • Distributed Control Systems
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	• English Language • Operations • Packaging & Labeling	• Safety Procedures • Painting • Warehousing
Computer Numerically Controlled Tool Operators	• Mathematics • Operations • Management	• Computer Numerical Control Machining • Blueprinting • Lathes
Customer Service Representatives	• Customer Service • Sales • Communication	• None Listed
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	• Operations • Problem Solving • Mathematics	• Press Brake • SAP Applications • Housekeeping
Electrical Engineers	• Communication • Problem Solving • Management	• Electrical Engineering • Programmable Logic Controllers • Human Machine Interfaces
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	• Problem Solving • Organizational Skills • Computer Literacy	• Hand Tools • Electrical Wiring • Blueprinting
Financial Managers	• Management • Leadership • Forecasting	• Finance • Accounting • Financial Statements

[10] Lightcast Knowledgebase, https://kb.lightcast.io/en/articles/7934140-skills
[11] Lightcast Knowledgebase, https://kb.lightcast.io/en/articles/7934140-skills

Occupation	Top Common Skills	Top Specialized Skills
First-Line Supervisors of Production and Operating Workers	• Leadership • Operations • Communications	• Continuous Improvement Process • Lean Manufacturing • Housekeeping
General and Operations Managers	• Leadership • Operations • Management	• Continuous Improvement Process • Operations Management
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	• Operations • Mathematics • Loading & Unloading	• Grinding Machine • Tooling • Machining
Heavy and Tractor-Trailer Truck Drivers	• Loading & Unloading • Customer Service • Lifting Ability	• Pre-Trip And Post-Trip Vehicle Inspections • Truck Driving • Invoicing
Helpers—Production Workers	• Lifting Ability • Management • Mathematics	• Data Entry • General Mathematics • Food Safety & Sanitation
Human Resources Specialists	• Communication • Microsoft Excel • Management	• Human Resources Information System (HRIS) • Employee Relations
Industrial Engineering Technologists and Technicians	• Problem Solving • Communication • Operations	• Continuous Improvement Process • Machinery
Industrial Engineers	• Problem Solving • Communication • Operations	• Continuous Improvement Process • Manufacturing Processes • Lean Manufacturing
Industrial Machinery Mechanics	• Problem Solving • Operations • Communication	• None Listed
Industrial Production Managers	• Leadership • Management • Operations	• Continuous Improvement Process • Lean Manufacturing • Auditing
Industrial Truck and Tractor Operators	• Loading & Unloading • Operations • Packaging & Labeling	• Forklift Truck • Warehousing • Palletizing
Inspectors, Testers, Sorters, Samplers, and Weighers	• Communication • Management • Operations	• Auditing
Laborers and Freight, Stock, and Material Movers, Hand	• Lifting Ability • Loading & Unloading • Packaging & Labeling	• Warehousing • Forklift Truck • Palletizing
Logisticians	• Communication • Planning • Management	• Supply Chain • SAP Applications
Machinists	• Operations • Mathematics	• Machining • Lathes • Mills

Occupation	Top Common Skills	Top Specialized Skills
Maintenance and Repair Workers, General	• Problem Solving • Operations • Communications	• Machinery • Preventive Maintenance • Hydraulics
Managers, All Other	• Leadership • Management • Communication	• Project Management
Market Research Analysts and Marketing Specialists	• Communication • Sales • Writing	• Marketing • Project Management
Mechanical Engineers	• Communication • Problem Solving • Leaderhip	• Mechanical Engineering • SolidWorks (CAD) • Project Management
Miscellaneous Assemblers and Fabricators	• Operations • Communication • Packaging & Labeling	• Housekeeping • Production Equipment • SAP Applications
Mixing and Blending Machine Setters, Operators, and Tenders	• Customer Service • Sales • Loading & Unloading	• Warehousing • Wholesaling • Equipment Repair
Molders, Shapers, and Casters, Except Metal and Plastic	• Communication • Lifting Ability • Problem Solving	• Molding (Manufacturing Process) • Grinding • Housekeeping
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	• Operations • Mathematics • Arithmetic	• Machine Operation • Lamination • Palletizing
Office Clerks, General	• Planning	• Support Services • Time Off Management
Packaging and Filling Machine Operators and Tenders	• Packaging & Labeling • Communication • Operations	• Good Manufacturing Practices • Process Improvement
Packers and Packagers, Hand	• Packaging & Labeling • Lifting Ability • Communication	• Palletizing • Warehousing • Forklift Truck
Production Workers, All Other	• Operations • Communication • Packaging & Labeling	• Machine Operation • Housekeeping • Machinery
Production, Planning, and Expediting Clerks	• Communication • Operations • Management	• Continuous Improvement Process • Manufacturing Processes • SAP Applications
Project Management Specialists	• Communication • Management • Leadership	• Project Management
Sales Managers	• Sales • Communication • Customer Service	• Marketing • Selling Techniques • Sales Management
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	• Sales • Communication • Customer Service	• Marketing • Selling Techniques • Sales Prospecting
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	• Microsoft Excel • Communication • Management	• Administrative Support

Occupation	Top Common Skills	Top Specialized Skills
Sewing Machine Operators	• Operations	• Housekeeping • Machine Operation • Mold Setting
Shipping, Receiving, and Inventory Clerks	• Communication • Management • Operations	• Shipping & Receiving • Warehousing • Cycle Counting
Software Developers	• Communication • Leadership • Management	• Computer Science • Software Engineering • Software Development
Stockers and Order Fillers	• Management • Customer Service • Interpersonal Communications	• Merchandising • Point of Sale
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	• Teamwork • Adaptability • Loading & Unloading	• Textiles • Weaving • Forklift Truck
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	• Self-Motivation • Computer Literacy	• Extrusion • Grinding Machine • Housekeeping
Tire Builders	• Problem Solving • Operations • Lifting Ability	• Injection Molding • Molding (Manufacturing Process) • Environmental Management Systems
Welders, Cutters, Solderers, and Brazers	• Operations • Communication • Mathematics	• Welding • Metal Inert Gas (MIG) Welding • Gas Tungsten Arc Welding

Source: Lightcast

Occupation Demographics

The table below depicts the share of occupational employment for each race or ethnicity. The highlighted colors indicate that the race or ethnicity is overrepresented based on its share of Spartanburg's population: overrepresented groups are 1.25x more concentrated or 5 percentage points more densely represented in the occupation (whichever is less) than in Spartanburg overall.[12]

In general, we see overrepresentation of White and Asian workers in occupations requiring at least a bachelor's degree, particularly Manager roles and Business and Finance roles. The Black population is more frequently overrepresented in Production roles. In fact, the Black population represents 27% of the total Manufacturing workforce while accounting for just 20.1% of the population.

Hispanic workers are overrepresented across fewer target occupations compared to other racial or ethnic groups. However, Hispanic representation in Manufacturing has steadily increased along

[12] For instance, the Hispanic population accounts for 20.1% of Spartanburg County population. For an occupation to have an overrepresentation of Hispanic workers relative to the overall population, the Hispanic worker share in the occupation would need to reach the lesser of 1.25x 9.9% = 12.4% or 5% + 9.9% = 14.9%. The lesser of these options is 12.4%.

with its population share increase. For instance, in 2015 the average share of Hispanic employment across target occupations was just 5.2%. By 2024, that number had risen to 8.5%.

Table 7 - Manufacturing Target Occupation Demographic Representation – Race/Ethnicity

Occupation Name	White (74.2%)	Black (20.1%)	Hispanic (All Races) (9.9%)	Asian (2.7%)	Two or More Races (2.5%)
Accountants and Auditors	78.40%	14.20%	3.60%	5.20%	2.10%
Architectural and Engineering Managers	85.00%	5.90%	3.80%	7.50%	1.40%
Buyers and Purchasing Agents	80.00%	14.20%	5.20%	3.40%	2.10%
Chemical Equipment Operators and Tenders	76.10%	21.10%	3.10%	1.60%	1.00%
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	70.90%	24.20%	13.20%	1.60%	2.60%
Computer Numerically Controlled Tool Operators	80.00%	13.20%	7.20%	4.80%	1.50%
Customer Service Representatives	64.40%	31.00%	6.80%	1.90%	2.30%
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	65.40%	30.60%	10.40%	2.10%	1.30%
Electrical Engineers	78.40%	9.40%	3.70%	10.20%	1.70%
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	56.90%	30.80%	8.40%	10.40%	1.30%
Financial Managers	80.40%	14.00%	4.30%	3.60%	1.70%
First-Line Supervisors of Production and Operating Workers	73.00%	22.70%	8.00%	2.50%	1.40%
General and Operations Managers	85.20%	10.50%	4.30%	2.40%	1.60%
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	71.30%	23.40%	9.30%	3.60%	1.20%
Heavy and Tractor-Trailer Truck Drivers	61.80%	32.60%	7.50%	1.20%	3.90%
Helpers--Production Workers	64.80%	26.50%	20.70%	5.00%	2.80%
Human Resources Specialists	69.00%	25.60%	6.10%	2.20%	2.90%
Industrial Engineering Technologists and Technicians	70.50%	21.30%	6.80%	6.00%	1.70%
Industrial Engineers	79.10%	11.10%	5.10%	7.90%	1.50%
Industrial Machinery Mechanics	81.50%	14.80%	6.70%	1.90%	1.40%
Industrial Production Managers	84.40%	9.90%	5.90%	4.10%	1.30%
Industrial Truck and Tractor Operators	50.30%	45.90%	11.30%	1.30%	1.90%
Inspectors, Testers, Sorters, Samplers, and Weighers	63.80%	29.50%	9.20%	4.50%	1.60%
Laborers and Freight, Stock, and Material Movers, Hand	57.70%	37.50%	9.20%	1.80%	2.30%
Logisticians	63.50%	28.80%	6.70%	3.80%	3.60%
Machinists	81.60%	12.70%	6.00%	3.90%	1.30%
Maintenance and Repair Workers, General	75.10%	19.80%	7.20%	1.80%	2.70%
Managers, All Other	74.30%	11.40%	10.20%	1.90%	11.90%
Market Research Analysts and Marketing Specialists	82.30%	10.40%	4.50%	4.50%	2.50%
Mechanical Engineers	81.10%	8.10%	4.20%	9.00%	1.50%
Miscellaneous Assemblers and Fabricators	55.70%	38.80%	9.20%	3.70%	1.30%
Mixing and Blending Machine Setters, Operators, and Tenders	70.80%	25.20%	10.30%	2.30%	1.10%
Molders, Shapers, and Casters, Except Metal and Plastic	82.60%	11.70%	20.60%	1.60%	1.90%
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	66.00%	28.90%	10.20%	3.30%	1.30%
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	56.20%	36.80%	12.80%	5.10%	1.40%
Office Clerks, General	72.10%	22.10%	6.70%	2.60%	2.80%
Packaging and Filling Machine Operators and Tenders	51.40%	41.40%	18.50%	4.70%	1.80%
Packers and Packagers, Hand	52.10%	39.80%	20.70%	4.40%	2.80%
Paper Goods Machine Setters, Operators, and Tenders	62.70%	35.40%	13.00%	1.00%	0.50%
Production Workers, All Other	58.50%	34.70%	12.10%	3.10%	2.80%
Production, Planning, and Expediting Clerks	75.30%	19.20%	5.60%	3.10%	1.90%
Project Management Specialists	79.30%	14.00%	4.60%	3.90%	2.50%
Sales Managers	86.40%	8.60%	4.30%	3.10%	1.60%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	87.10%	8.40%	5.20%	3.00%	1.30%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	80.70%	15.50%	4.60%	1.20%	2.20%
Sewing Machine Operators	68.30%	21.50%	19.90%	7.00%	2.50%
Shipping, Receiving, and Inventory Clerks	64.50%	30.10%	10.90%	2.70%	2.00%

Occupation Name	White (74.2%)	Black (20.1%)	Hispanic (All Races) (9.9%)	Asian (2.7%)	Two or More Races (2.5%)
Software Developers	71.40%	9.50%	3.40%	16.70%	2.30%
Stockers and Order Fillers	62.90%	31.80%	7.60%	2.30%	2.40%
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	60.30%	34.20%	9.00%	4.10%	1.00%
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	57.60%	33.60%	9.80%	7.30%	1.20%
Tire Builders	64.90%	33.10%	2.50%	0.90%	0.70%
Welders, Cutters, Solderers, and Brazers	76.50%	18.70%	11.40%	1.80%	2.10%

Source: Lightcast

Regarding gender, women are underrepresented across Manufacturing target occupations while representing 51.3% of the population. They are only overrepresented in twelve occupations:

- Secretaries and Administrative Assistants, Except Legal, Medical, and Executive – 96.3%
- Office Clerks, General – 86.5%
- Human Resources Specialists – 76.8%
- Customer Service Representatives – 73.7%
- Sewing Machine Operators – 73.6%
- Accountants and Auditors – 64.6%
- Market Research Analysts and Marketing Specialists – 63.6%
- Packers and Packagers, Hand – 63.3%
- Financial Managers – 59.5%
- Production, Planning, and Expediting Clerks – 56.7%
- Packaging and Filling Machine Operators and Tenders – 56.4%
- Buyers and Purchasing Agents – 55.0%

Women only account for 33.5% of Miscellaneous Fabricators and Assemblers, the largest target occupation. Their representation is noticeably low for the next three largest target occupations:

- First-Line Supervisors of Production and Operating Workers – 19.8%
- Inspectors, Testers, Sorters, Samplers, and Weighers – 42.5%
- Laborers and Freight, Stock, and Material Movers, Hand – 25.0%

Considering age demographics, most target occupations are exposed to retirement risks which is a nationwide trend. Lightcast examined the share of occupational employment of 55–64-year-olds, or those nearing retirement age, to determine this risk. **Of the fifty-three target occupations, only two (2) have a below-average retirement risk, i.e. 55–64-year-olds representing less than 12.3% (the county's population share).** Both occupations are non-production roles: Software Developers and Market Research Analysts.

The textile subsector faces the most retirement risk, as the top three occupations by share of 55-64-year-olds are Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders (31.8%), Textile Knitting and Weaving Machine Setters, Operators, and Tenders ((30.6%), and Sewing Machine Operators (28.6%).

Miscellaneous Fabricators and Assemblers (17.5%) and Inspectors, Testers, Sorters, Samplers, and Weighers (22.9%) have heightened retirement risk. The second largest occupation - First-Line Supervisors of Production and Operating Workers – also faces a heightened retirement risk (22.7%), though this is intuitive as this role requires more experience.

Supply & Demand

Demand Met from the Regional Education System

The regional education system conferred 11,522 workforce-ready awards from programs that map to manufacturing-aligned occupations. Within the region, there were 12,048 entry-level openings[13] from these occupations. In aggregate, the volume of awards conferred aligns well with the volume of entry-level openings in relevant occupations. However, reviewing the conferrals by award level, there are more bachelor's degree completions than there are openings, while there is an undersupply of sub-bachelor's awards and advanced degree completions.

This is an opportunity that aligns with Vision Plan 2.0: having a surplus of bachelor's degree talent can serve as a powerful business attraction message by demonstrating availability of talent for economic diversification efforts. Second, bachelor's degree holders could be encouraged to continue towards achieving even more advanced degrees to make up for the talent supply gap at that level, aligning with education attainment goals for Vision Plan 2.0.

Table 8 - Manufacturing Supply & Demand by Award Level

Award Level	Demand (Entry-Level Openings)	Supply (Aligned Completions)
Sub-BA	7,816	6,642
BA	3,359	4,110
BA+	873	770
Grand Total	**12,048**	**11,522**

Source: Lightcast

Further, the apparent oversupply of bachelor's degrees must be interpreted in the context of graduate mobility. Lightcast analysis of alumni profiles shows that approximately 60 percent of bachelor's degree graduates from regional institutions between 2022 and 2024 are now employed outside the labor shed. This suggests that much of the region's bachelor's-level output supports external labor markets. As a result, the numerical surplus reflects export-oriented degree production rather than a true oversupply of talent. In contrast, sub-bachelor's graduates are more likely to remain in the region and enter the workforce directly, making supply gaps at that level more directly indicative of local training shortfalls.

Because of these dynamics, the supply-demand model applies differentiated thresholds by education level. Gaps at the sub-bachelor's level must exceed 100 completions to be flagged, reflecting the fact that many occupations at this level do not formally require a credential and that most graduates are likely to remain in the region. By contrast, for bachelor's and advanced degree occupations, a lower threshold of 50 completions is used. Even modest deficits at these levels may signal strategic risk, particularly in high-skill roles where national demand is strong and competition for talent is high.

The supply and demand model results, shown in Table 9, suggest that manufacturing employers may face hiring challenges for several credentialed occupations. At the bachelor's level, Accountants and Auditors show a significant shortfall of 233 completions, pointing to a clear pipeline gap. Other roles such as Project Management Specialists (–51 BA, –46 BA+), Financial

[13] Defined by requiring 0-2 years' experience

Managers (–63 BA), Industrial Engineers (–84 BA), Software Developers (–34 BA, –9 BA+), and Mechanical Engineers (–27 BA) also fall short of demand. While these deficits are below the formal threshold, they reflect strategically important positions that support advanced manufacturing and require formal degrees.

At the sub-bachelor's level, several occupations present shortfalls exceeding the 100-completion threshold, including Stockers and Order Fillers (–731), Office Clerks, General (–489), Shipping, Receiving, and Inventory Clerks (–169), Inspectors, Testers, Sorters, Samplers, and Weighers (–166), and Secretaries and Administrative Assistants (–145). However, these roles typically do not require postsecondary credentials and are often filled through informal labor channels or non-credit training programs not captured in completion data. As a result, their apparent gaps are unlikely to reflect educational misalignment and should not prompt new program development.

Instead, education and training efforts should focus on credentialed or regulated sub-bachelor's roles with smaller but meaningful gaps. These include Chemical Equipment Operators and Tenders (–55), Molding, Coremaking, and Casting Machine Operators (–46), and Heavy and Tractor-Trailer Truck Drivers (–30), where program expansion could strengthen the region's certified workforce.

Table 9 – Manufacturing-Aligned Occupations with Over/Under-supply by Education Level

Occupation Name*	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
*Stockers and Order Fillers**	-731			844			113		
*Office Clerks, General**	-489			749			260		
Accountants and Auditors		-233	20		332	166		99	186
*Shipping, Receiving, and Inventory Clerks**	-169			181			12		
*Inspectors, Testers, Sorters, Samplers, and Weighers**	-166			196			30		
*Secretaries and Administrative Assistants, Except Legal, Medical, and Executive**	-145			650			505		
*Production, Planning, and Expediting Clerks**	-103			106			3		
Financial Managers	-14	-63	-15	79	154	54	65	91	39
Industrial Engineers		-87	-4		221	60		134	56
*Laborers and Freight, Stock, and Material Movers, Hand**	-63			541			478		
Project Management Specialists	36	-51	-46	39	276	79	75	225	33
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products*	-58			458			400		
*First-Line Supervisors of Production and Operating Workers**	-57			86			29		
Chemical Equipment Operators and Tenders*	-55			56			1		
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic*	-46			47			1		
General and Operations Managers	26	-39	-32	491	587	150	517	548	118
Software Developers	0	-34	-9	0	288	36	0	254	27

Occupation Name*	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
Heavy and Tractor-Trailer Truck Drivers	-30			493			463		
*Customer Service Representatives**	-26			934			908		
Mechanical Engineers	0	-27	1	0	131	35	0	104	36
Logisticians	-26	-24	27	31	45	22	5	21	49
*Industrial Truck and Tractor Operators**	-14			115			101		
Electrical Engineers		-13	-1		44	19		31	18
*Coating, Painting, and Spraying Machine Setters, Operators, and Tenders**	-10			30			20		
Buyers and Purchasing Agents	-25	14	6	57	126	10	32	140	16
*Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic**	0			21			21		
Industrial Production Managers	24	-20	-3	65	130	29	89	110	26
Machinists*	2			143			145		
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic*	2			83			85		
Welders, Cutters, Solderers, and Brazers*	3			153			156		
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic*	3			77			80		
Sales Managers	30	18	-12	66	157	28	96	175	16
Industrial Engineering Technologists and Technicians	56	-15		41	20		97	5	
Industrial Machinery Mechanics*	69			223			292		
Market Research Analysts and Marketing Specialists		110	-26		323	73		433	47
Human Resources Specialists	-14	129	-22	77	265	66	63	394	44
Computer Numerically Controlled Tool Operators*	99			56			155		
*Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers**	109			120			229		
Architectural and Engineering Managers	4	447	14	0	56	27	4	503	41
*Maintenance and Repair Workers, General**	493			410			903		
Managers, All Other	111	639	-1	98	204	19	209	843	18

Source: Lightcast

Occupations marked with an asterisk typically require a high school diploma or no formal education. Despite mapping to one or more CIP codes, many of these roles are commonly filled by individuals without postsecondary credentials. As a result, apparent oversupply at the sub-BA level may not reflect true misalignment. Italicized occupations indicate roles that are not strong candidates for expanded education or training programs.

Determining Peer Benchmarks

The Manufacturing sector in the Spartanburg MSA boasts 40,179 jobs and an employment base that has grown 3.9% between 2022 and 2024. The region also has a very high Manufacturing location quotient in Manufacturing – 2.9. This location quotient means that this sector is 2.9 times more concentrated in the Spartanburg MSA than in the typical U.S. community. In the Spartanburg MSA, the Manufacturing sector comprises 18.0% of all jobs. Notably, the region has both a high

location quotient and above-average growth, meaning that the region is increasing its already-significant Manufacturing specialization.

In the Manufacturing sector, the average earnings per worker are $91,006. Given that the cost of living in the Spartanburg MSA is 98.7% of the average U.S. community, average local earnings in this sector increase to a relative purchasing power of $92,205.

Lightcast established parameters to identify peer benchmark regions for the Manufacturing sector. The parameters include both region-level parameters and industry-level parameters. The region-level parameters control for the distinguishing characteristics of the Spartanburg MSA, such as the fact that the Spartanburg MSA is part of a larger labor shed that also includes Greenville, SC and Anderson, SC, the overall size of the Spartanburg economy, and the cost of living in Spartanburg. The industry-level parameters control for the performance of the sector in the region, and these metrics include location quotient (LQ), job growth, and earnings per worker. The parameters are summarized below.

Table 10 - Parameters for Identifying Benchmark MSAs for the Manufacturing Sector

	Metric	Range
Regional Parameters	MSA share of the CSA (i.e., the region's share of the full labor shed)	15% to 50% (Spartanburg MSA is 23.7% of the Greenville-Spartanburg-Anderson, SC CSA)
	Overall size of the economy (measured as job total job count)	Job count between 0.25x and 5x the Spartanburg MSA (Spartanburg MSA has 223,358 jobs, so the range is 55,840 to 1,116,790)
	Manufacturing LQ (applied to all sectors, even non-mfg sectors)	At least 1.20x the U.S. average (Spartanburg MSA has a LQ of 2.93x)
Industry Parameters	LQ of the industry is more concentrated than the U.S. or Spartanburg MSA	At least 1.20x the U.S. average *or* at least 75% of the Spartanburg MSA (Spartanburg MSA has a LQ of 2.93, so the low end is 1.20x)
	Industry job growth within the region (between 2022-2024)	Within +/- 5% of sector growth in the Spartanburg MSA, minimum -0.10% (Spartanburg MSA growth is 18.0%, so the range is 13.0% to 23.0%)
	Cost-of-living-index (COLI) adjusted annual earnings in the sector	Between 75% and 125% of COLI-adjusted earnings (Spartanburg MSA is $92,205, so the range is $69,154 to $115,256)

Source: Lightcast

These ranges produced the benchmark communities in the table below.

Table 11 - Peer Benchmark Communities for the Manufacturing Sector

	Regional Parameters			Industry Parameters					
MSA Name	Total Jobs	Share of Labor Shed	COLI	Jobs	Share	LQ	Growth	Avg. Earnings	Avg. Earnings (COLI Adjusted)
Akron, OH	440,249	18.53%	0.94	39,143	8.89%	1.45	-0.67%	$82,603	$87,813
Ogden, UT	390,615	18.69%	1.06	35,562	9.10%	1.49	7.22%	$95,746	$90,259
York-Hanover, PA	250,845	31.01%	1.02	34,020	13.56%	2.21	0.84%	$85,781	$84,092
Oshkosh-Neenah, WI	118,015	41.93%	1.00	21,616	18.32%	2.99	-1.00%	$95,815	$96,252
Johnson City, TN	116,310	36.51%	0.92	8,899	7.65%	1.25	-0.90%	$81,621	$88,834
Warner Robins, GA	115,131	44.18%	0.95	9,318	8.09%	1.32	6.87%	$76,556	$80,934
Auburn-Opelika, AL	108,124	34.16%	0.93	8,028	7.43%	1.21	6.98%	$75,079	$80,643
Jefferson City, MO	104,973	37.60%	0.93	7,818	7.45%	1.22	2.09%	$78,753	$84,323
Staunton-Stuarts Draft, VA	70,980	44.15%	0.99	8,766	12.35%	2.01	0.61%	$85,837	$87,123
Battle Creek, MI	69,573	26.70%	0.89	10,516	15.11%	2.47	-0.07%	$89,271	$99,886

Source: Lightcast

Talent Strategy

Anticipate Technology Impacts on Labor Demand

Plan ahead for the workforce demands created by the ongoing shift to advanced manufacturing. As automation, robotics, and artificial intelligence continue to evolve, certain professional and

technical roles are expected to see significant growth through 2030. Although these positions are fewer in number compared to front-line jobs, they will require targeted local and regional investments in education and training programs to meet future labor market needs.

- 51-9162 Computer Numerically Controlled Tool Programmers (39% projected growth)
- 15-1252 Software Developers (20% projected growth)
- 17-2071 Electrical Engineers (20% projected growth)
- 15-1212 Information Security Analysts (17% projected growth)
- 17-2072 Electronics Engineers, Except Computer (17% project growth)
- 51-2028 Electrical, Electronic, and Electromechanical Assemblers (14% projected growth)
- 49-9041 Industrial Machinery Mechanics (12% projected growth)
- 11-3021 Computer and Information Systems Managers (11% projected growth)
- 17-2112 Industrial Engineers (11% projected growth)
- 17-2141 Mechanical Engineers (10% projected growth)

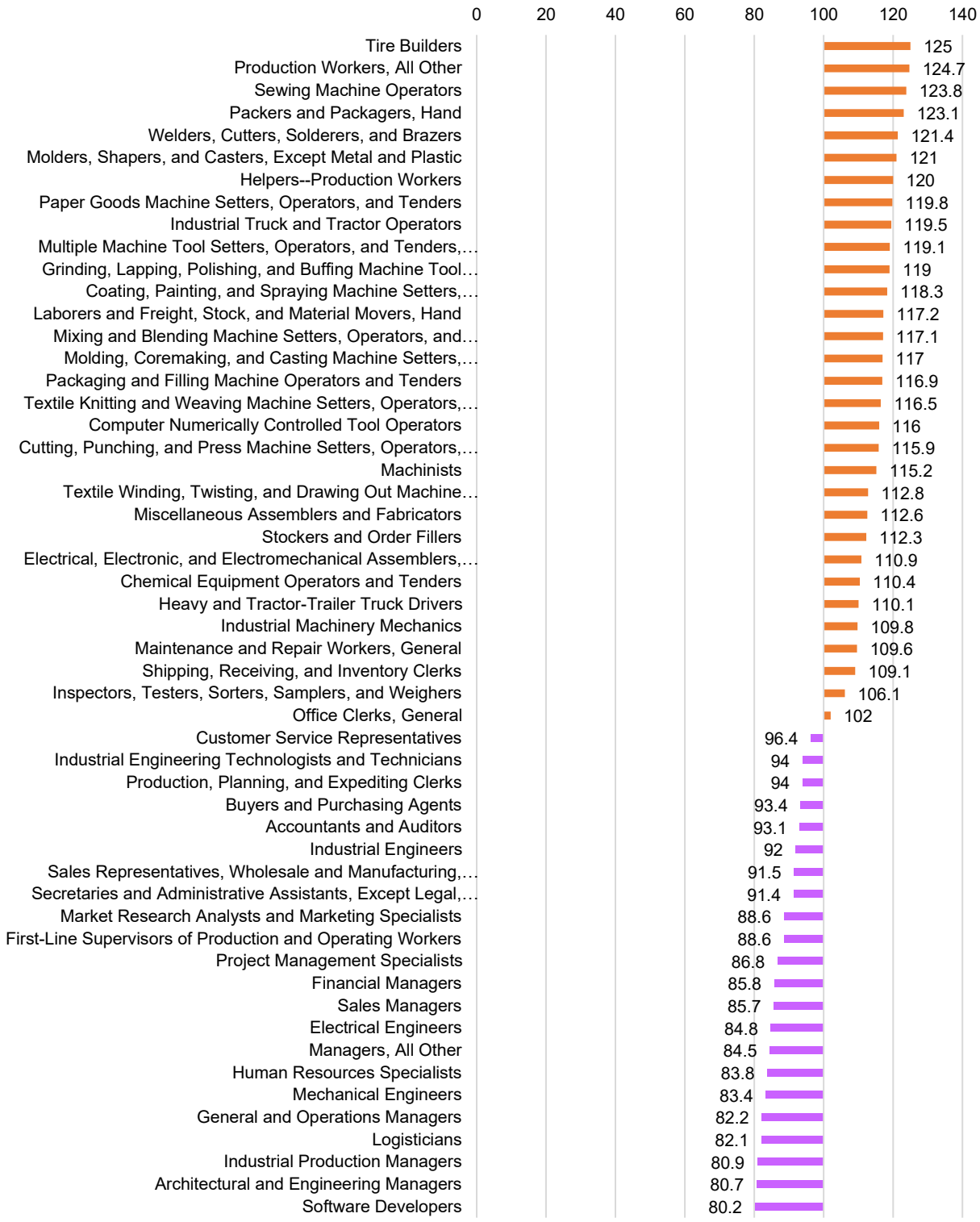
It is also important to anticipate which jobs may be negatively impacted by automation. Lightcast's U.S. Automation Index measures how susceptible different occupations are to automation by analyzing the specific tasks involved in each job, using data from ONET work activities. It combines this analysis with research from Frey and Osborne to pinpoint which tasks are vulnerable to automation and which are more secure.[14] The index also factors in the concentration of these occupations in industries likely to be disrupted, as well as whether workers' skills are transferable to other roles that may also be at risk. The index is scaled to 100, with scores above 100 indicating a higher-than-average risk of automation and scores below 100 indicating a lower-than-average risk.

Over half of the Manufacturing target occupations have an index score above 100, indicating that many jobs could be impacted by automation in some way. Jobs with highly repetitive tasks are the most susceptible to being automated. However, other jobs may only be partially impacted – having some tasks augmented by computer assistance while leaving other more complicated tasks for human labor. Tire Builders, Production Workers, Sewing Machine Operators, and Packers & Packagers have the highest automation scores.

It should be noted that the methodology for the automation index pre-dates the dawn of widely available generative AI and large language models (LLMs). Thus, it does not anticipate how AI could impact creative and highly skilled occupations. For instance, because LLMs can produce code from prompts, a new trend called "vibe coding" has emerged where developers rely on AI tools to produce code. It still requires human quality control and debugging, but it has the potential to greatly increase the productivity of software developers.

[14] Frey and Osborne, "The future of employment: How susceptible are jobs to computerisation?", https://www.sciencedirect.com/science/article/abs/pii/S0040162516302244

Figure 2 - Automation Index of Manufacturing Target Occupations



Source: Lightcast

Lightcast also reviewed AI-related job postings using its Artificial Intelligence sector in job postings. The Lightcast Artificial Intelligence sector is built from work done to develop the Stanford AI Index. Primarily based on skills, this sector helps users understand the growth of AI-related skills across the labor market. This sector includes skills related to AI, Autonomous Driving, Natural Language Processing, Neural Networks, Machine Learning, Robotics, and Visual Image Recognition.

Using the Artificial Intelligence sector, we examined how AI skills are impacting the Manufacturing jobs in Spartanburg.

Table 12 - Top In-Demand AI Specialized Skills in Manufacturing Job Postings, April 2022-April 2025

Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Data Analysis	59	48%	178	2%	25.8%	Rapidly Growing
Artificial Intelligence	55	44%	0	0%	12.4%	Growing
Process Improvement	52	42%	929	9%	27.0%	Rapidly Growing
Automation	41	33%	287	3%	30.5%	Rapidly Growing
Computer Science	41	33%	16	0%	26.8%	Rapidly Growing
Python (Programming Language)	37	30%	30	0%	24.5%	Rapidly Growing
Continuous Improvement Process	35	28%	1,321	13%	23.4%	Rapidly Growing
Project Management	34	27%	845	8%	19.8%	Rapidly Growing
SQL (Programming Language)	34	27%	89	1%	6.4%	Stable
Statistics	34	27%	37	0%	22.7%	Rapidly Growing

Source: Lightcast

Table 13 - Top In-Demand AI Software Skills in Manufacturing Job Postings, April 2022-April 2025

Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Python (Programming Language)	38	31%	30	0%	24.5%	Rapidly Growing
SQL (Programming Language)	35	28%	89	1%	6.4%	Stable
Atlassian Confluence	27	22%	1	0%	14.6%	Growing
JIRA	27	22%	11	0%	24.1%	Rapidly Growing
Microsoft Office	25	20%	1,182	11%	18.5%	Growing
Power BI	25	20%	24	0%	20.4%	Rapidly Growing
Microsoft Excel	24	19%	978	9%	17.7%	Growing
Tableau (Business Intelligence Software)	24	19%	19	0%	20.8%	Rapidly Growing
Amazon Web Services	21	17%	8	0%	24.0%	Rapidly Growing
SAP Applications	20	16%	500	5%	21.6%	Rapidly Growing

Source: Lightcast

Expand Talent Pipeline

Conventionally, employers use two sources of talent pipelines: First, they find either employed people in the same occupation seeking a new employer, or unemployed people with relevant occupation experience. Second, they find entry-level talent by leveraging the education pipeline - those exiting relevant education levels and programs. While these two pools of talent have typically satisfied labor demands, it is no longer enough. The tight labor market demands an expansion of labor pools to pull from.

The need to add more talent pipelines from other pathways is evident. By seeking talent outside the same occupation by considering those with relevant experience in different - but *similar* - occupations, employers can tap into alternative labor pools of qualified talent.

Lightcast primarily identifies relevant occupations for pathways using its similarity scores. A similarity score is a Lightcast calculation based on how closely aligned the skills are between the two occupations. The higher the score, the more related the two occupations are, making them a better fit for job transitions between the two. Occupation transitions can be chained together, creating multi-step pathways. This helps employers identify skills-similar talent at multiple levels while helping talent visualize career progression opportunities.

Pathways for Manufacturing target occupations were broken into two maps - one for occupations requiring at least bachelor's level education at the entry level and another for occupations without bachelor's education entry-level requirements. For Figures 2 and 3, the following criteria were used to identify pathways:

- Only pathways between target occupations are presented
- Occupations must have a minimum similarity score of 0.50
- Each step must have at least a 5% wage increase
- Each step must either be classified as "advancement"[15] or "lateral advancement"[16]
- Occupational steps with large level or educational differences are not presented
- Only multi-step pathways are presented. In other words, if a target occupation maps to just one other target occupation without further steps, it is not included. Therefore, not ALL manufacturing target occupations are presented in this pathways map.

In the Manufacturing sector, Industrial Engineers make up the largest group of BA+ professionals, followed by Industrial Production Managers. While there is a strong skills overlap between these two roles, the salary difference, with Industrial Production Managers earning less on average, makes transitions between them less common. However, in some cases, Industrial Production Managers may earn more than Industrial Engineers, making this pathway a possibility.

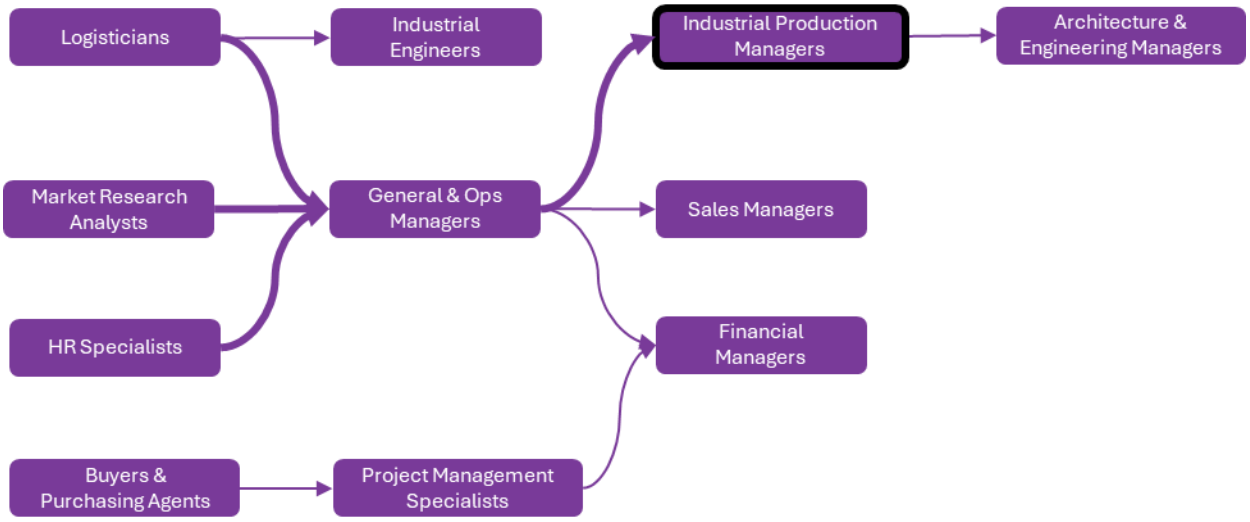
Industrial Engineers, like other engineering occupations, require specialized education, and therefore lack many feeder occupations. For this reason, pathway mapping from adjacent/overlapping occupations will largely be fruitless and have not been included in this analysis.

[15] Advancement - Jobs that pay more AND are within the same occupation group as the focus occupation.

[16] Lateral Advancement - Jobs that pay more BUT require transition to a new occupational group as opposed to the focus occupation.

On the other hand, Industrial Production Managers, being the second most common BA+ role in Manufacturing, have a wide range of potential feeder occupations. Logisticians, Market Research Analysts, and HR Specialists are some examples of professionals who can eventually move into Industrial Production Management roles. Fortunately, there is no projected shortage of candidates for entry-level positions in any of the BA+ target occupations, which alleviates some of the pressure on the critical pathways within these fields.

Figure 3 - Pathway map of BA+ target occupations



The situation is quite different for occupations that require less than a bachelor's degree. Among these, Miscellaneous Assemblers and Fabricators stand out as the largest occupation by job count, but they could face a potential pipeline gap. However, since this role requires less formal education and training, the typical educational pipeline is not as relevant here. The best feeder occupation for this role among other target occupations is Textile Knitting and Weaving Machine Operators, but with only 306 jobs compared to over 10,000 in the Miscellaneous Assemblers and Fabricators category, it would offer a small pipeline. Other possible feeder roles include Helpers and Production Workers, although the pay increase is minimal – less than 5%. Still, even small wage increases can motivate people to switch jobs, making it a feasible option.

However, the key factor is that Miscellaneous Assemblers and Fabricators typically require only a high school diploma, short-term training, and no prior experience. Because of the lower skill level needed for the job, feeder occupations are less critical since it is possible to hire candidates without any prior experience. Similarly, Laborers and Packers & Packagers also face potential pipeline gaps, but since these are some of the lowest-skilled and lowest-paying occupations, feeder occupations are less significant here as well.

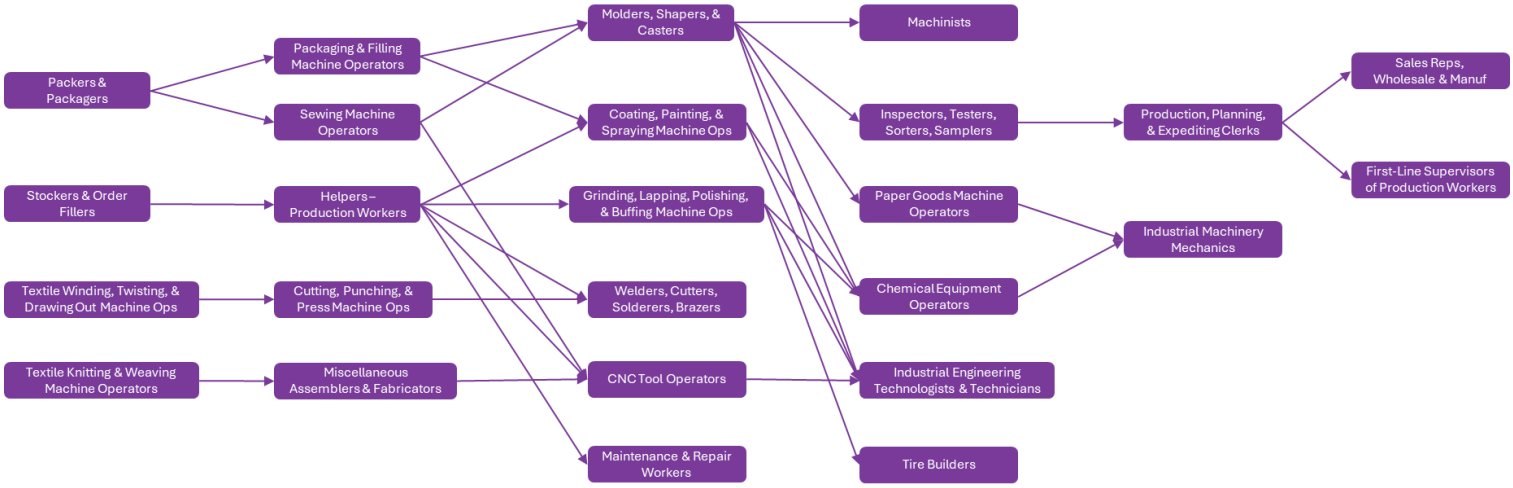
Helpers are the most flexible role, with potential to transition into various other target occupations. Although Miscellaneous Assemblers and Fabricators share similarities with other roles, they do not meet the necessary criteria of at least a 0.5 similarity score or a significant wage advancement, which is why they are not as strongly linked to other positions.

Chemical Equipment Operators, however, are a target occupation that could greatly benefit from having clear pathways in place. This role faces a pipeline gap, as seen in Table 8, but it can be

filled by several feeder occupations. Molders, Shapers, and Casters could serve as a feeder role, but they too have their own pipeline gap. On the other hand, Coating, Painting, and Spraying Machine Operators, as well as Grinding, Lapping, Polishing, and Buffing Machine Operators, both have pipeline surpluses and could effectively serve as feeder occupations.

Roles such as Heavy & Tractor Trailer Truck Drivers have a pipeline gap – but require school and licensing to perform the roles and therefore cannot rely on pathways.

Figure 4 - Pathway map of non-BA+ target occupations



More detailed pathway information for each target occupation can be found in the appendix. The appendix shows the top 3 feeder occupations and top 3 next step occupations for each target occupation based on similarity scores and wage advancement. It does not necessarily represent the same pathway options as the figure above which has more criteria. The table demonstrates the wage differential between steps, the type of transition, and even the skills gaps between occupations which, if addressed, would facilitate easier transitions. The table below shows an example of what can be found in the appendix.

Table 14 – Feeder and Next Step Examples for CNC Operators

Feeder	Characteristics		Target Occupation	Characteristics		Next Step
Molders, Shapers, and Casters, Except Metal and Plastic	Transition Type	Similar	Computer Numerically Controlled Tool Operators $53,922	Transition Type	Advancement	Computer Numerically Controlled Tool Programmers
	Skills Gaps	Computer Numerical Control (CNC); CNC Machining; Mills		Skills Gaps	CNC Programming; Computer-Aided Manufacturing; Mastercam (CAD/CAM Software)	
	Wage Difference	+$11,949		Wage Difference	+$11,447	
Drilling and Boring Machine	Transition Type	Lateral Advancement		Transition Type	Lateral Advancement	Tool and Die Makers

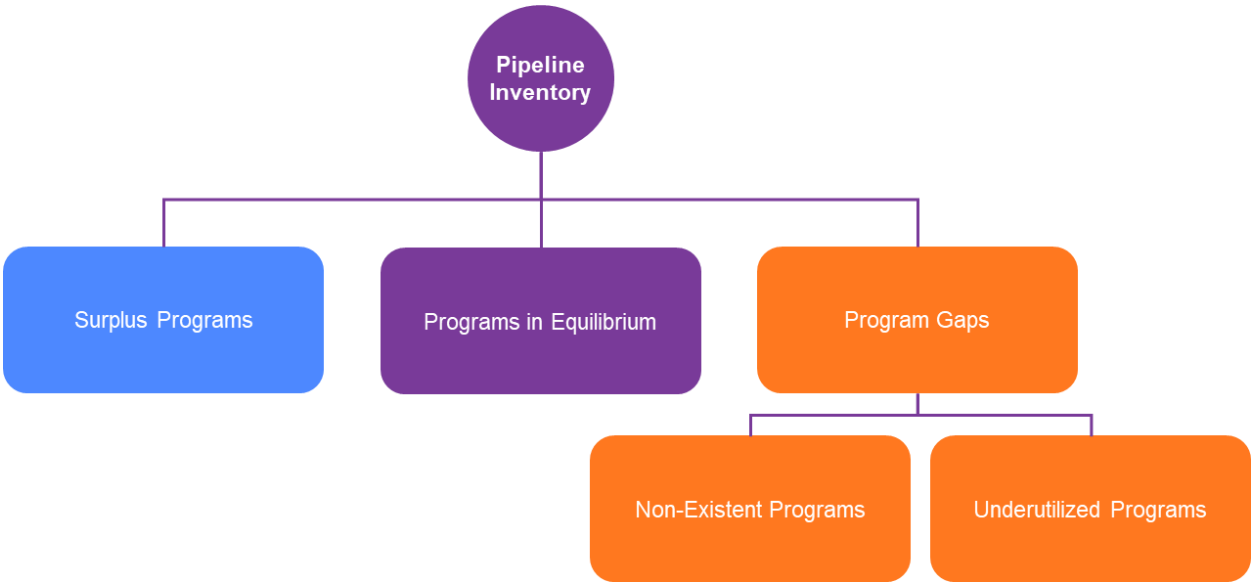
Feeder	Characteristics		Target Occupation	Characteristics		Next Step
Tool Setters, Operators, and Tenders, Metal and Plastic	Skills Gaps	Computer Numerical Control (CNC); CNC Machining; Lathes		Skills Gaps	Stamping (Metalworking); Toolroom; Fabrication	
	Wage Difference	+$4,946		Wage Difference	+$9,759	
Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	Transition Type	Lateral Advancement		Transition Type	Lateral Advancement	Maintenance Workers, Machinery
	Skills Gaps	Computer Numerical Control (CNC); CNC Machining; Lathes		Skills Gaps	Hydraulics; Preventive Maintenance; Mechanics	
	Wage Difference	+$7,383		Wage Difference	+$5,529	

Source: Lightcast

Improve Alignment

The education pipeline is another way of addressing talent shortages. Misalignment between education output and job demand exacerbates labor shortages. This is made even more challenging when student demand for programs does not match job demand (noting that student tuition funds institutions), forcing institutions to make the difficult decision between offering programs (and capacity) based on student demand *or* based on job demand.

Figure 5 - Pipeline Inventory Framework



Source: Lightcast

There are hypothetical scenarios where some programs produce a surplus of talent. That is, the number of completions relevant to an occupation exceeds the number of jobs available for that occupation. In this scenario, the best solution is to scale back capacity in surplus programs to encourage students to select other programs where a gap exists between completions and job demand. However, many of the occupations experiencing a surplus of completions are at the

bachelor's level and it is unlikely higher education would scale back programming solely due to local labor market conditions. Since higher education often brings greater geographic mobility of alumni in search of jobs, *local* labor market employment is not a defining success criterion for these institutions, merely employment after graduation.

When labor shortages persist, it is essential to identify where education pipeline gaps occur. These may occur for two reasons:

- Programs exist to produce talent for the relevant occupation(s), but they are underutilized. In this case, efforts should be made to increase enrollment and completions in these programs by expanding capacity or better marketing career opportunities connected to these existing programs.
- Programs for occupations experiencing shortages do not exist at all. In this case, stakeholders in economic development, workforce development, and education institutions must work to identify an appropriate provider and establish new programs to serve labor market needs.

Several manufacturing-aligned occupations merit focused programmatic attention due to their operational relevance and credentialing requirements, regardless of the size of their current supply gaps. For example, Heavy and Tractor-Trailer Truck Drivers are integral to regional logistics and production systems and require a commercial driver's license (CDL), which must be earned through formal postsecondary training.

Table 15 - Supply Gap Occupations with Deficit of Program Completions

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Heavy and Tractor-Trailer Truck Drivers	49.0205 Truck and Bus Driver/Commercial Vehicle Operator and Instructor.	Postsecondary nondegree award	Short-term on-the-job training	High – a commercial driver's license is needed and requires driving school.
Accountants and Auditors	52.0201 Business Administration and Management, General. 52.0301 Accounting. 52.0299 Business Administration, Management and Operations, Other. 52.0305 Accounting and Business/Management. 52.0304 Accounting and Finance.	Bachelor's degree	None	High – strong subregional demand and consistent deficits suggest the need for targeted enrollment efforts.
Financial Managers	52.0299 Business Administration, Management and Operations, Other. 24.0101 Liberal Arts and Sciences/Liberal	Bachelor's degree	None	Medium – below-threshold gap, but strategic importance for

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	Studies. 52.0304 Accounting and Finance. 52.0301 Accounting. 52.0305 Accounting and Business/Management. 52.0201 Business Administration and Management, General. 52.1304 Actuarial Science. 52.0213 Organizational Leadership. 52.0801 Finance, General. 24.0102 General Studies. 30.0000 Multi-/Interdisciplinary Studies, General.			cost management in advanced manufacturing.
Industrial Engineers	14.0101 Engineering, General. 14.3501 Industrial Engineering. 15.1503 Packaging Science. 15.1501 Engineering/Industrial Management. 50.0404 Industrial and Product Design.	Bachelor's degree	None	High – core manufacturing role with consistent undersupply; critical for process optimization.
Project Management Specialists	11.1005 Information Technology Project Management 15.0599 Environmental Control Technologies/Technicians, Other 52.0211 Project Management 52.0205 Operations Management and Supervision 52.0201 Business Administration and Management, General 52.0299 Business Administration, Management and Operations, Other 52.0101 Business/Commerce, General 52.0216 Science/Technology Management 52.0305 Accounting and Business/Management 52.0701 Entrepreneurship/Entrepreneurial Studies 52.0208 E-Commerce/Electronic Commerce 52.0399 Accounting and Related Services,	Bachelor's degree	None	High – supports execution of capital projects, modernization, and production coordination.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	Othe 52.9999 Business, Management, Marketing, and Related Support Services, Other. 52.0703 Small Business Administration/Management 52.1101 International Business/Trade/Commerce			
General and Operations Managers	11.1005 Information Technology Project Management 15.0599 Environmental Control Technologies/Technicians, Other 15.0613 Manufacturing Engineering Technology/Technician 52.0101 Business/Commerce, General 52.0201 Business Administration and Management, General 52.0205 Operations Management and Supervision 52.0208 E-Commerce/Electronic Commerce 52.0211 Project Management 52.0213 Organizational Leadership 52.0299 Business Administration, Management and Operations, Other 52.0305 Accounting and Business/Management 52.0399 Accounting and Related Services, Other 52.0701 Entrepreneurship/Entrepreneurial Studies 52.0703 Small Business Administration/Management 52.0799 Entrepreneurial and Small Business Operations, Other 52.0801 Finance, General 52.1101 International Business/Trade/Commerce 52.1301 Management Science 52.1399 Management Sciences and Quantitative Methods, Other 52.9999 Business, Management, Marketing,	Bachelor's degree	None	High – essential for overseeing production, logistics, and staffing in manufacturing operations.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	and Related Support Services, Other			
Software Developers	11.0101 Computer and Information Sciences, General. 11.0102 Artificial Intelligence. 11.0103 Information Technology. 11.0104 Informatics. 11.0199 Computer and Information Sciences, Other. 11.0201 Computer Programming/Programmer, General. 11.0202 Computer Programming, Specific Applications. 11.0203 Computer Programming, Vendor/Product Certification. 11.0204 Computer Game Programming. 11.0205 Computer Programming, Specific Platforms. 11.0299 Computer Programming, Other. 11.0401 Information Science/Studies. 11.0501 Computer Systems Analysis/Analyst. 11.0701 Computer Science. 11.0804 Modeling, Virtual Environments and Simulation. 11.0899 Computer Software and Media Applications, Other. 11.0902 Cloud Computing. 11.1099 Computer/Information Technology Services Administration and Management, Other. 11.9999 Computer and Information Sciences and Support Services, Other. 14.0901 Computer Engineering, General. 14.0903 Computer Software Engineering. 14.2701 Systems Engineering. 15.1204 Computer Software Technology/Technician. 15.1299 Computer Engineering Technologies/Technicians, Other.	Bachelor's degree	None	Medium – digital systems and automation require this talent; regional shortfalls suggest retention and training strategies may be needed.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	26.1103 Bioinformatics. 30.0601 Systems Science and Theory. 30.0801 Mathematics and Computer Science. 30.3901 Economics and Computer Science. 30.4801 Linguistics and Computer Science. 30.7001 Data Science, General. 50.0411 Game and Interactive Media Design. 51.2706 Medical Informatics. 51.2799 Medical Illustration and Informatics, Other. 52.0208 E-Commerce/Electronic Commerce.			
Mechanical Engineers	14.0101 Engineering, General. 14.0102 Pre-Engineering. 14.0201 Aerospace, Aeronautical, and Astronautical/Space Engineering, General. 14.1101 Engineering Mechanics. 14.1901 Mechanical Engineering. 14.4101 Electromechanical Engineering. 15.0613 Manufacturing Engineering Technology/Technician.	Bachelor's degree	None	High – foundational to machinery design, maintenance, and production systems engineering.
Logisticians	52.0201 Business Administration and Management, General. 52.0202 Purchasing, Procurement/Acquisitions and Contracts Management. 52.0203 Logistics, Materials, and Supply Chain Management. 52.0205 Operations Management and Supervision. 52.0209 Transportation/Mobility Management. 52.0211 Project Management. 52.0409 Parts, Warehousing, and Inventory Management Operations.	Bachelor's degree	None	Medium – important to address with coordinated supply chain curriculum expansion or better awareness of existing pathways.
Electrical Engineers	14.0101 Engineering, General. 14.0102 Pre-Engineering. 14.0901 Computer Engineering, General.	Bachelor's degree	None	High – in-demand technical occupation tied to plant operations, control systems,

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	14.0902 Computer Hardware Engineering. 14.1001 Electrical and Electronics Engineering. 14.1099 Electrical, Electronics, and Communications Engineering, Other. 14.4101 Electromechanical Engineering. 14.4701 Electrical and Computer Engineering.			and infrastructure.

Source: Lightcast

It is important to note that for some occupations, the education and training requirements are so low that there are no education programs (CIP codes) mapped to them. For this reason, the supply gap estimation is not applicable These occupations include:

- Helpers--Production Workers
- Miscellaneous Assemblers and Fabricators
- Mixing and Blending Machine Setters, Operators, and Tenders
- Molders, Shapers, and Casters, Except Metal and Plastic
- Packaging and Filling Machine Operators and Tenders
- Packers and Packagers, Hand
- Paper Goods Machine Setters, Operators, and Tenders
- Tire Builders

The table below highlights manufacturing occupations that show supply gaps and lack associated program completions within the labor shed. It is unclear whether these gaps reflect the absence of formal programs or the presence of non-credit offerings that are not captured in available data. Regardless, these occupations, such as Chemical Equipment Operators and Tenders or Molding and Casting Machine Operators, involve specialized production processes that benefit from targeted technical instruction. Developing or formalizing short-term or certificate-based programs aligned to these roles would help support manufacturing sector stability by strengthening the local talent pipeline. For occupations that typically require only a high school diploma and moderate-term on-the-job training, some of that training could feasibly be delivered through short-term education programs.

Table 16 - Supply Gap Occupations with Missing Programs in Labor Shed

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
Chemical Equipment Operators and Tenders	41.0301 Chemical Technology/Technician. 41.0303 Chemical	High School	Moderate-term on-the-job training	Medium - Gap exists and requires moderate-term training. It is possible some could be front-loaded in a short-term

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
	Process Technology. 15.0615 Chemical Engineering Technology/Technician			education program.
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	15.0607 Plastics and Polymer Engineering Technology/Technician 15.0611 Metallurgical Technology/Technician.	High School	Moderate-term on-the-job training	Medium – Gap exists and requires moderate-term training. It is possible some could be front-loaded in a short-term education program.

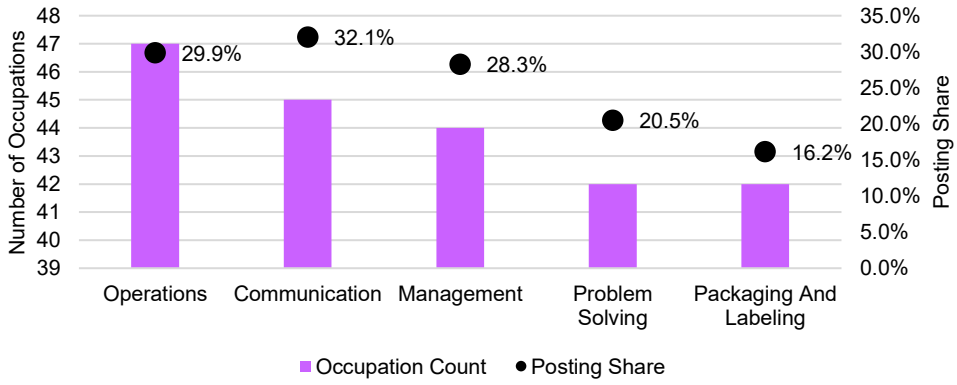
Source: Lightcast

Engage the Unemployed, Underemployed, or Disengaged

As of October 2024, people in Production occupations make up 21% of unemployed people (1,632) despite Production occupations making up 16% of employment in Spartanburg County. This is good news for manufacturers, as it means there is an outsized percentage of unemployed with production/manufacturing experience in Spartanburg. On a regional level (across the two MSAs), 15% of unemployed people (over 4,400 people) were in production roles despite representing only 11% of employment.

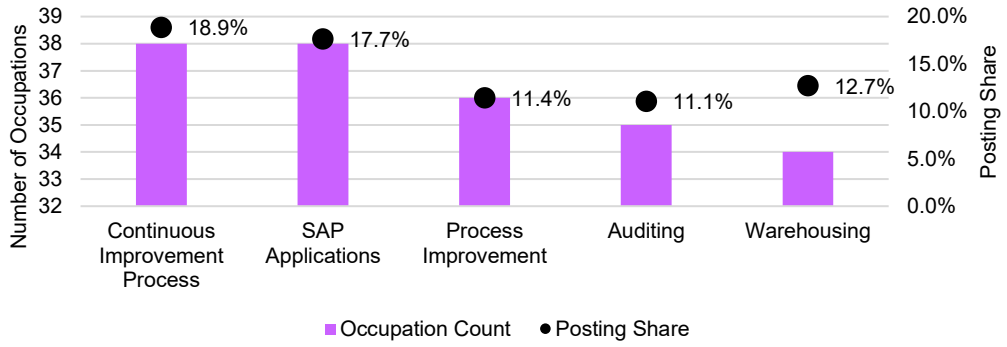
One way to facilitate the disengaged and unemployed populations find employment is to address critical skills which are common across occupations in a sector. By embedding these skills within job training for the unemployed, it can increase their success rates in finding – and keeping – a job. Cross-cutting skills in the Manufacturing sector are presented below both in terms of the number of occupations which feature these skills in job postings as well as the share of job postings they are found in:

Figure 6 - Top baseline/common skills across Manufacturing occupations



Source: Lightcast

Figure 7 - Top specialized skills across Manufacturing occupations



Source: Lightcast

Transportation & Warehousing

The selection of Transportation and Warehousing as a core sector is directly supported by the Vision Plan 2.0, which identifies Manufacturing & Logistics as a key initiative for sustaining Spartanburg's competitive advantage and job growth.

In 2024, Transportation and Warehousing was the sixth largest sector in Spartanburg County, employing 10,093 individuals, representing a 9% decline with the loss of over 943 jobs since 2022. For reference, national employment in this sector has grown over the same period. The county boasts an employment concentration of 1.34, much higher than the national average, highlighting the sector's importance to the local economy. Transportation and Warehousing is also complementary to the area's heavy Manufacturing presence.

Occupations

Employment & Job Characteristics

Using the methodology described in the Target Occupations section, Lightcast identified 25 occupations accounting for 87.6% of total Transportation and Warehousing employment. The largest occupation category is Heavy and Tractor-Trailer Truck Drivers, which comprises over 3,000 jobs (or 31.5% of the Transportation and Warehousing workforce) with an increase of 92 jobs since 2022. The fastest-growing occupation in the sector is Driver/Sales Workers, which saw a 54.3% growth, adding 35 jobs.

Other rapidly expanding roles include Logisticians (28.2%), Taxi Drivers (23.3%), and Cargo/Freight Agents (21.1%). However, 17 of the 25 occupations experienced a decline, reflecting the overall trend of job losses in this sector since 2022. Some of the most rapidly declining occupations in terms of employment have been Packers and Packagers (-50.4%), Shipping, Receiving, and Inventory Clerks (-48.8%), Industrial Truck and Tractor Operators (-26.4%), and Laborers and Freight, Stock, and Material Movers (also the second largest occupation, with a loss of 17.9%).

Table 17 - Transportation & Warehousing Target Occupations

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Heavy and Tractor-Trailer Truck Drivers	3042	3134	31.5%	92	3.0%
Laborers and Freight, Stock, and Material Movers, Hand	2099	1724	17.3%	-375	-17.9%
Light Truck Drivers	866	834	8.4%	-33	-3.8%
Stockers and Order Fillers	552	462	4.6%	-90	-16.3%
Industrial Truck and Tractor Operators	557	410	4.1%	-147	-26.4%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	273	237	2.4%	-36	-13.2%
Bus and Truck Mechanics and Diesel Engine Specialists	214	175	1.8%	-39	-18.2%

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Dispatchers, Except Police, Fire, and Ambulance	146	155	1.6%	9	6.1%
Couriers and Messengers	148	150	1.5%	3	2.0%
Office Clerks, General	165	146	1.5%	-20	-11.9%
General and Operations Managers	169	144	1.5%	-25	-14.6%
Customer Service Representatives	169	136	1.4%	-33	-19.7%
Cargo and Freight Agents	110	133	1.3%	23	21.1%
Shipping, Receiving, and Inventory Clerks	246	126	1.3%	-120	-48.8%
Transportation, Storage, and Distribution Managers	110	105	1.1%	-5	-4.9%
Driver/Sales Workers	64	99	1.0%	35	54.3%
Taxi Drivers	76	94	0.9%	18	23.3%
Aircraft Mechanics and Service Technicians	88	93	0.9%	5	5.9%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	95	86	0.9%	-8	-8.9%
Packers and Packagers, Hand	163	81	0.8%	-82	-50.4%
Logisticians	53	68	0.7%	15	28.2%
Managers, All Other	56	61	0.6%	5	9.7%
Human Resources Specialists	32	28	0.3%	-4	-12.5%
Training and Development Specialists	28	22	0.2%	-6	-21.6%
Accountants and Auditors	21	18	0.2%	-3	-16.1%

Source: Lightcast

Among the 25 target occupations in Spartanburg County's Transportation and Warehousing sector, only 6 require a bachelor's degree or higher, typically offering higher pay but fewer job opportunities compared to positions that require less education. The second highest paying occupation, General and Operations Managers, is also the largest bachelor's level occupation by employment. About half of the target occupations only require a high school diploma or GED, while four jobs—Laborers and Freight, Stock, and Material Movers, Hand; Industrial Truck and Tractor Operators; Taxi Drivers; and Packers and Packagers, Hand—do not require any formal education credential. Heavy and Tractor-Trailer Truck Drivers and Aircraft Mechanics require a post-secondary nondegree award.

Despite limited formal education requirements, many of these jobs rely on regulated credentials or moderate-to-long-term training. For example, Heavy and Tractor-Trailer Truck Drivers require a commercial driver's license (CDL), and Bus, Truck, and Diesel Engine Mechanics often require extensive hands-on experience. These training requirements can create workforce bottlenecks, even if degree attainment is not a barrier.

To support sector growth, workforce partners should prioritize short-term training and certificate programs that help workers meet regulatory requirements and employer expectations. This includes expanding access to CDL training, diesel mechanic upskilling, and other job-specific programs that reduce time-to-hire and employer training burdens without requiring full degree pathways. Spartanburg Community College and area career centers have already been making such efforts.

Table 18 – Transportation & Warehousing Target Occupation Characteristics

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
General and Operations Managers	$44.47	Bachelor's degree	5 years or more	None
Logisticians	$39.15	Bachelor's degree	None	None
Accountants and Auditors	$32.86	Bachelor's degree	None	None
Human Resources Specialists	$30.95	Bachelor's degree	None	None
Managers, All Other	$30.62	Bachelor's degree	Less than 5 years	None
Training and Development Specialists	$29.75	Bachelor's degree	Less than 5 years	None
Heavy and Tractor-Trailer Truck Drivers	$24.02	Postsecondary nondegree award	None	Short-term on-the-job training
Aircraft Mechanics and Service Technicians	$22.27	Postsecondary nondegree award	None	None
Transportation, Storage, and Distribution Managers	$49.97	High school diploma or equivalent	5 years or more	None
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	$29.78	High school diploma or equivalent	Less than 5 years	None
Bus and Truck Mechanics and Diesel Engine Specialists	$22.86	High school diploma or equivalent	None	Long-term on-the-job training
Cargo and Freight Agents	$21.90	High school diploma or equivalent	None	Short-term on-the-job training
Dispatchers, Except Police, Fire, and Ambulance	$20.66	High school diploma or equivalent	None	Moderate-term on-the-job training
Shipping, Receiving, and Inventory Clerks	$20.14	High school diploma or equivalent	None	Short-term on-the-job training
Industrial Truck and Tractor Operators	$19.25	No formal educational credential	None	Short-term on-the-job training
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	$18.64	High school diploma or equivalent	None	Short-term on-the-job training
Customer Service Representatives	$17.91	High school diploma or equivalent	None	Short-term on-the-job training
Laborers and Freight, Stock, and Material Movers, Hand	$17.64	No formal educational credential	None	Short-term on-the-job training
Stockers and Order Fillers	$17.44	High school diploma or equivalent	None	Short-term on-the-job training
Couriers and Messengers	$17.40	High school diploma or equivalent	None	Short-term on-the-job training
Office Clerks, General	$16.63	High school diploma or equivalent	None	Short-term on-the-job training
Taxi Drivers	$16.32	No formal educational credential	None	Short-term on-the-job training
Packers and Packagers, Hand	$15.03	No formal educational credential	None	Short-term on-the-job training
Light Truck Drivers	$14.36	High school diploma or equivalent	None	Short-term on-the-job training

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
Driver/Sales Workers	$13.31	High school diploma or equivalent	None	Short-term on-the-job training

Source: Lightcast

The table below demonstrates the top common and specialized skills relevant to the occupations in the Transportation and Warehousing sector, extracted from regional job postings data. Common skills are defined as “skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. “Communication” or “Microsoft Excel”). Also known as soft skills, human skills, and competencies.” Specialized skills are “skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. “NumPy” or “Hotel Management”). Also known as technical skills or hard skills.”

As with the case in Manufacturing, common skills tend to be in demand across occupational job postings. For instance, for office roles, skills such as operations, communication and management are frequently mentioned in job postings. For manual labor related occupations, lifting ability, and loading & unloading are common. Some specialized skills are also mentioned across occupations, such as continuous process improvement, warehousing, inventorying, and familiarity with OSHA.

While occupations such as Couriers and Messengers and Driver/Sales Workers require a valid driver’s license, Heavy and Tractor-Trailer Truck Drivers and Light Truck Drivers require the Commercial Driver’s License (CDL) as a credential. Aircraft Mechanics and Service Technicians require an Airframe & Powerplant (A&P) Certificate.

Table 19 – Transportation & Warehousing Target Occupation Skills Characteristics

Occupation	Top Common Skills	Top Specialized Skills
Accountants and Auditors	• Management • Operations • Communication	• Auditing • Warehousing • Physical Inventory
Aircraft Mechanics and Service Technicians	• English Language • Troubleshooting (Problem Solving) • Operations	• Federal Aviation Regulations • Aircraft Maintenance • Federal Aviation Administration
Bus and Truck Mechanics and Diesel Engine Specialists	• Computer Literacy • Customer Service • Communication	• Diesel Engines • Vehicle Maintenance • Electrical Systems
Cargo and Freight Agents	• Operations • Sales • Communication	• Supply Chain • Occupational Safety and Health Administration (OSHA)
Couriers and Messengers	• Lifting Ability • Customer Service • Verbal Communication Skills	• Human Relations Movement
Customer Service Representatives	• Customer Service • Communication • Computer Literacy	• Data Entry • Vehicle Maintenance • Invoicing
Dispatchers, Except Police, Fire, and Ambulance	• Communication • Operations • Microsoft Office	• None Listed
Driver/Sales Workers	• Lifting Ability • Customer Service	• Human Relations Movement • Warehousing

Occupation	Top Common Skills	Top Specialized Skills
	• Good Driving Record	
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	• Operations • Leadership • Management	• Warehousing
General and Operations Managers	• Operations • Management • Communication	• Operations Management • Logistics • Continuous Improvement Process
Heavy and Tractor-Trailer Truck Drivers	• Good Driving Record • Loading And Unloading • Operations	• Truck Driving • Flatbed Truck Operation • Dry Van Truck Operation
Human Resources Specialists	• Customer Service • Communication • Management	• Human Resources Information System (HRIS) • Auditing • Performance Review
Industrial Truck and Tractor Operators	• Loading And Unloading • Lifting Ability • Detail Oriented	• Forklift Truck • Warehousing • Pallet Jacks
Laborers and Freight, Stock, and Material Movers, Hand	• Loading And Unloading • Lifting Ability • Sorting	• Warehousing • Forklift Truck • Palletizing
Light Truck Drivers	• Good Driving Record • Customer Service • Communication	• Warehousing
Logisticians	• Communication • Operations • Management	• Logistics • SAP Applications • Warehousing
Managers, All Other	• Customer Service • Program Management • Accountability	• Project Management • Process Improvement • Change Management
Office Clerks, General	• Customer Service • Communication • Administrative Functions	• Administrative Support • Two-Way Radios • Occupational Safety And Health
Packers and Packagers, Hand	• Loading And Unloading • Sorting • Packaging And Labeling	• Warehousing • Physical Inventory • Material Handling Equipment
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	• Operations • Clerical Works • Customer Service	• Data Entry
Shipping, Receiving, and Inventory Clerks	• Clerical Works • Management • Communication	• Inventory Control • Warehousing • Forklift Truck
Stockers and Order Fillers	• Customer Service • Writing • Operations	• Merchandising • Sensors
Taxi Drivers	• Management • Leadership • Visual Acuity	• Occupational Safety And Health • Housekeeping • Auditing
Training and Development Specialists	• Operations • Coaching	• Auditing • Continuous Improvement Process

Occupation	Top Common Skills	Top Specialized Skills
	• Management	• Process Training
Transportation, Storage, and Distribution Managers	• Operations • Leadership • Management	• Warehousing • Continuous Improvement Process • Supply Chain

Source: Lightcast

Occupation Demographics

The table below depicts the share of occupational employment for each race or ethnicity. The highlighted colors indicate that the race or ethnicity is overrepresented based on its share of Spartanburg's population: overrepresented groups are 1.25x more concentrated or 5 percentage points more densely represented in the occupation (whichever is less) than in Spartanburg overall.[17]

In general, many more target occupations in Transportation and Warehousing evince overrepresentation of Black workers relative to any other race or ethnicity group. In fact, Black workers represent 36% of the total Transportation and Warehousing workforce while accounting for just 20.1% of the population. Of the twenty-five target roles in Transportation and Warehousing, fifteen demonstrate overrepresentation of Black workers relative to the Spartanburg population. For White, Hispanic, and Asian workers, only three occupations each demonstrate overrepresentation.

Hispanic representation in Transportation and Warehousing has steadily increased along with its population share increase. For instance, in 2015 the average share of Hispanic employment across target occupations was just 5.3%. By 2024, that number had risen to 8.2%.

Table 20 – Transportation & Warehousing Target Occupation Demographic Representation – Race/Ethnicity

Occupation Name	White (74.2%)	Black (20.1%)	Hispanic (All Races) (9.9%)	Asian (2.7%)	Two or More Races (2.5%)
Accountants and Auditors	78.40%	14.20%	3.60%	5.20%	2.10%
Aircraft Mechanics and Service Technicians	73.50%	16.10%	12.90%	2.60%	7.30%
Bus and Truck Mechanics and Diesel Engine Specialists	81.70%	14.40%	6.00%	0.80%	2.60%
Cargo and Freight Agents	61.50%	32.70%	8.30%	3.10%	2.30%
Couriers and Messengers	59.00%	36.30%	2.80%	0.70%	3.70%
Customer Service Representatives	64.40%	31.00%	6.80%	1.90%	2.30%
Dispatchers, Except Police, Fire, and Ambulance	71.90%	23.80%	6.40%	1.20%	2.60%
Driver/Sales Workers	69.20%	26.00%	7.50%	1.70%	2.60%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	69.60%	26.50%	6.40%	1.60%	1.90%
General and Operations Managers	85.20%	10.50%	4.30%	2.40%	1.60%
Heavy and Tractor-Trailer Truck Drivers	61.80%	32.60%	7.50%	1.20%	3.90%
Human Resources Specialists	69.00%	25.60%	6.10%	2.20%	2.90%
Industrial Truck and Tractor Operators	50.30%	45.90%	11.30%	1.30%	1.90%
Laborers and Freight, Stock, and Material Movers, Hand	57.70%	37.50%	9.20%	1.80%	2.30%
Light Truck Drivers	68.10%	28.10%	6.50%	1.10%	2.30%
Logisticians	63.50%	28.80%	6.70%	3.80%	3.60%
Managers, All Other	74.30%	11.40%	10.20%	1.90%	11.90%
Office Clerks, General	72.10%	22.10%	6.70%	2.60%	2.80%

[17] For instance, the Hispanic population accounts for 20.1% of Spartanburg County population. For an occupation to have an overrepresentation of Hispanic workers relative to the overall population, the Hispanic worker share in the occupation would need to reach the lesser of 1.25x 9.9% = 12.4% or 5% + 9.9% = 14.9%. The lesser of these options is 12.4%.

Packers and Packagers, Hand	52.10%	39.80%	20.70%	4.40%	2.80%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	80.70%	15.50%	4.60%	1.20%	2.20%
Shipping, Receiving, and Inventory Clerks	64.50%	30.10%	10.90%	2.70%	2.00%
Stockers and Order Fillers	62.90%	31.80%	7.60%	2.30%	2.40%
Taxi Drivers	64.10%	7.00%	21.60%	2.80%	26.10%
Training and Development Specialists	68.80%	26.30%	4.90%	1.90%	2.50%
Transportation, Storage, and Distribution Managers	74.30%	20.60%	6.30%	2.40%	2.30%

Source: Lightcast

Regarding gender, women (51.3% of the population) are generally underrepresented across Transportation and Warehousing target occupations. They are only overrepresented in 8 occupations:

- Secretaries and Administrative Assistants, Except Legal, Medical, and Executive – 96.3%
- Office Clerks, General – 86.5%
- Human Resources Specialists – 76.8%
- Customer Service Representatives – 73.7%
- Accountants and Auditors – 64.6%
- Training and Development Specialists – 64.1%
- Packers and Packagers, Hand – 63.3%
- Dispatchers, Except Police, Fire, and Ambulance – 55.6%

Women only account for 6.3% of Heavy and Tractor-Trailer Truck Drivers, the largest target occupation. Their representation is noticeably low for the next three largest target occupations:

- Laborers and Freight, Stock, and Material Movers, Hand – 25.0%
- Light Truck Drivers – 11.7%
- Stockers and Order Fillers – 43.4%

Considering age demographics, most target occupations are exposed to retirement risks. Lightcast examined the share of occupational employment of 55–64-year-olds, or those nearing retirement age, to determine this risk. **Of the 25 target occupations, only one has a retirement risk on par with the area population, i.e. 55–64-year-olds representing 12.3% (the county's population share):** Couriers and Messengers (12.4%)

Concerningly, the largest occupation by employment also faces the highest retirement risk of target occupations: 23.3% of Heavy and Tractor-Trailer Truck Drivers are aged 55-64. The second largest occupation – Laborers and Freight, Stock, and Material Movers – is only marginally above the area population's average (13.6% compared to 12.3%).

Supply & Demand

Demand Met from the Regional Education System

The regional education system conferred 7,155 workforce-aligned awards for occupations in the Transportation and Warehousing sector, compared to approximately 8,581 entry-level openings. In aggregate, supply falls short of demand, with most of the gap concentrated at the sub-bachelor's level, where 4,330 completions fall short of 6,088 openings. However, many of these openings are in occupations that do not typically require formal postsecondary education, such as Stockers, Laborers, and Truck Operators. While completions modestly exceed demand at the bachelor's level, addressing gaps in these credentialed occupations remains a priority due to their

stronger alignment with sector advancement goals and the increased geographic mobility of graduates.

Table 21 – Transportation & Warehousing Supply & Demand by Award Level

Award Level	Demand (Entry-Level Openings)	Supply (Aligned Completions)
Sub-BA	6,088	4,330
BA	1,936	2,302
BA+	557	523
Grand Total	**8,581**	**7,155**

Source: Lightcast

Further, the apparent oversupply of bachelor's degrees must be interpreted in the context of graduate mobility. Lightcast analysis of alumni profiles shows that approximately 60 percent of bachelor's degree graduates from regional institutions between 2022 and 2024 are now employed outside the labor shed. This suggests that much of the region's bachelor's-level output supports external labor markets. As a result, the numerical surplus reflects export-oriented degree production rather than a true oversupply of talent. In contrast, sub-bachelor's graduates are more likely to remain in the region and enter the workforce directly, making supply gaps at that level more directly indicative of local training shortfalls.

Because of these dynamics, the supply-demand model applies differentiated thresholds by education level. Gaps at the sub-bachelor's level must exceed 100 completions to be flagged, reflecting the fact that many occupations at this level do not formally require a credential and that most graduates are likely to remain in the region. By contrast, for bachelor's and advanced degree occupations, a lower threshold of 50 completions is used. Even modest deficits at these levels may signal strategic risk, particularly in high-skill roles where national demand is strong and competition for talent is high.

The supply and demand model results, shown in Table 22, suggest that employers hiring for bachelor's-level roles may already be experiencing shortages. Accountants and Auditors are undersupplied by 233 completions, indicating a clear pipeline gap. Other roles, including Training and Development Specialists (–60 BA), Financial Managers (–63 BA), General and Operations Managers (–39 BA), and Logisticians (–24 BA), also show notable bachelor's-level shortfalls. Some of these occupations also register BA+ shortages, suggesting additional alignment challenges in advanced credential pathways.

At the sub-bachelor's level, the largest numerical gaps are concentrated in occupations that do not typically require formal postsecondary education, such as Office Clerks (–489), Shipping and Receiving Clerks (–169), and Secretaries and Administrative Assistants (–145). These gaps do not represent education pipeline misalignment and should not drive new program development. However, employers may still struggle to find job-ready candidates, especially for roles involving equipment, scheduling, or documentation responsibilities. In such cases, short-term training programs may help strengthen the pipeline.

Table 22 - Transportation-Aligned Occupations with Over/Under-supply by Education Level

Occupation Name*	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
*Stockers and Order Fillers**	-731			844			113		
*Office Clerks, General**	-489			749			260		
Accountants and Auditors		-233	20		332	166		99	186
*Shipping, Receiving, and Inventory Clerks**	-169			181			12		
*Secretaries and Administrative Assistants, Except Legal, Medical, and Executive**	-145			650			505		
Training and Development Specialists	-78	-60	4	87	107	40	9	47	44
Financial Managers	-14	-63	-15	79	154	54	65	91	39
*Laborers and Freight, Stock, and Material Movers, Hand**	-63			541			478		
General and Operations Managers	26	-39	-32	491	587	150	517	548	118
Dispatchers, Except Police, Fire, and Ambulance*	-37			38			1		
Heavy and Tractor-Trailer Truck Drivers	-30			493			463		
Aircraft Mechanics and Service Technicians	-26			59			33		
*Customer Service Representatives**	-26			934			908		
Logisticians	-26	-24	27	31	45	22	5	21	49
*Light Truck Drivers**	-21			201			180		
Airline Pilots, Copilots, and Flight Engineers		-18			18			0	
*First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors**	-17			142			125		
*Industrial Truck and Tractor Operators**	-14			115			101		
Occupational Health and Safety Specialists	-3	-4	-1	4	6	3	1	2	2
*Driver/Sales Workers**	-5			81			76		
Bus and Truck Mechanics and Diesel Engine Specialists*	-5			29			24		
*Cargo and Freight Agents**	-3			23			20		
Transportation, Storage, and Distribution Managers*	4			53			57		
Compliance Officers	-13	21	-2	22	61	9	9	82	7
Sales Managers	30	18	-12	66	157	28	96	175	16
Human Resources Specialists	-14	129	-22	77	265	66	63	394	44
Managers, All Other	111	639	-1	98	204	19	209	843	18

Source: Lightcast

Occupations marked with an asterisk typically require a high school diploma or no formal education. Despite mapping to one or more CIP codes, many of these roles are commonly filled by individuals without postsecondary credentials. As a result, apparent oversupply at the sub-BA level may not reflect true misalignment. Italicized occupations indicate roles that are not strong candidates for expanded education or training programs.

Determining Peer Benchmarks

The Transportation & Warehousing sector in the Spartanburg MSA boasts 15,076 jobs and an employment base that has declined 3.1% between 2022 and 2024. Despite the decline in Transportation & Warehousing, the region still has a high location quotient – 1.2. This location quotient means that this sector is 1.2 times more concentrated in the Spartanburg MSA than in the typical U.S. community. In the Spartanburg MSA, the Transportation & Warehousing sector comprises 6.8% of all jobs.

In the Transportation & Warehousing sector, the average earnings per worker are $57,379. Given that the cost of living in the Spartanburg MSA is 98.7% of the average U.S. community, average local earnings in this sector increase to a relative purchasing power of $58,135.

Lightcast established parameters to identify peer benchmark regions for the Transportation & Warehousing sector. The parameters include both region-level parameters and industry-level parameters. The region-level parameters control for the distinguishing characteristics of the Spartanburg MSA, such as the fact that the Spartanburg MSA is part of a larger labor shed that also includes Greenville, SC and Anderson, SC, the overall size of the Spartanburg economy, and the cost of living in Spartanburg. The industry-level parameters control for the performance of the sector in the region, and these metrics include location quotient (LQ), job growth, and earnings per worker. The parameters are summarized below.

Table 23 - Parameters for Identifying Benchmark MSAs for the Hospitality Sector

	Metric	Range
Regional Parameters	MSA share of the CSA (i.e., the region's share of the full labor shed)	15% to 50% (Spartanburg MSA is 23.7% of the Greenville-Spartanburg-Anderson, SC CSA)
	Overall size of the economy (measured as job total job count)	Job count between 0.25x and 5x the Spartanburg MSA (Spartanburg MSA has 223,358 jobs, so the range is 55,840 to 1,116,790)
	Manufacturing LQ (applied to all sectors, even non-mfg sectors)	At least 1.20x the U.S. average (Spartanburg MSA has a LQ of 2.93x)
Industry Parameters	LQ of the industry is more concentrated than the U.S. or Spartanburg MSA	At least 1.20x the U.S. average *or* at least 75% of the Spartanburg MSA (Spartanburg MSA has a LQ of 1.21, so the low end is 0.91x)
	Industry job growth within the region (between 2022-2024)	Within +/- 5% of sector growth in the Spartanburg MSA, minimum -0.10% (Spartanburg MSA growth is -3.11%, so the range is -0.10% to 2.11%)
	Cost-of-living-index (COLI) adjusted annual earnings in the sector	Between 75% and 125% of COLI-adjusted earnings (Spartanburg MSA is $92,205, so the range is $69,154 to $115,256)

Source: Lightcast

These ranges produced the benchmark communities in the table below.

Table 24 - Peer Benchmark Communities for the Transportation & Warehousing Sector

	Regional Parameters			Industry Parameters					
MSA Name	Total Jobs	Share of Labor Shed	COLI	Jobs	Share	LQ	Growth	Avg. Earnings	Avg. Earnings (COLI Adjusted)
Greensboro-High Point, NC	495,773	48.85%	0.94	30,733	6.20%	1.11	1.67%	$51,318	$54,632
Akron, OH	440,249	18.53%	0.94	27,469	6.24%	1.12	-0.39%	$42,587	$45,274
Staunton-Stuarts Draft, VA	70,980	44.15%	0.99	5,102	7.19%	1.29	-1.22%	$51,710	$52,485
Sunbury, PA	57,137	41.61%	1.04	4,421	7.74%	1.39	-0.98%	$60,228	$58,019

Source: Lightcast

Talent Strategy

Expand Talent Pipeline

One solution is to expand the viable labor pool by using pathways. In other words, by seeking talent outside the same occupation by considering those with relevant experience in different - but *similar* - occupations, employers can tap into larger labor pools of qualified talent.

Lightcast primarily identifies relevant occupations for pathways using its similarity scores. A similarity score is a Lightcast calculation based on how closely aligned the skills are between the two occupations. The higher the score, the more related the two occupations are, making them a better fit for job transitions between the two. Occupation transitions can be chained together, creating multi-step pathways. This helps employers identify skills-similar talent at multiple levels while helping talent visualize career progression opportunities.

Pathways for Transportation & Warehousing target occupations were broken into two maps - one for occupations requiring at least bachelor's level education at the entry level and another for occupations without bachelor's education entry-level requirements. For Figures 8 and 9, the following criteria were used to identify pathways:

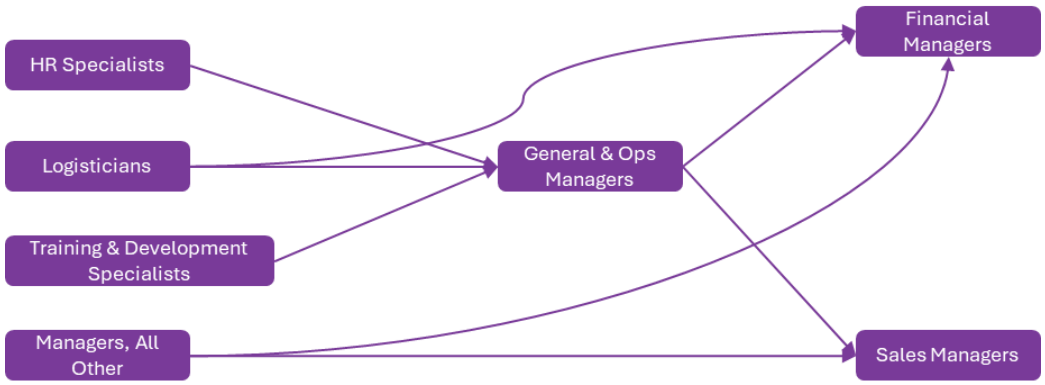
- Only pathways between target occupations are presented
- Occupations must have a minimum similarity score of 0.50
- Each step must have at least a 5% wage increase
- Each step must either be classified as "advancement"[18] or "lateral advancement"[19]
- Occupational steps with large level or educational differences are not presented
- Only multi-step pathways are presented. In other words, if a target occupation maps to just one other target occupation without further steps, it is not included. Therefore, not ALL target occupations are presented in this pathways map.

Generally speaking, given the low employment of BA+ occupations in the sector, their pathways are less critical. In the Transportation and Warehousing sector, General and Operations Managers make up the largest group of BA+ professionals, followed by Logisticians. Fortunately, despite Operations Managers having double the employment of Logisticians, the target occupation is fed by three target occupations. However, one of these three feeder occupations is modeled to have a supply gap in the talent pipeline (Training & Development Specialists). However, HR Specialists are closely related and could help alleviate this gap.

[18] Advancement - Jobs that pay more AND are within the same occupation group as the focus occupation.

[19] Lateral Advancement - Jobs that pay more BUT require transition to a new occupational group as opposed to the focus occupaPortItion.

Figure 8 - Pathway map of bachelor's level target occupations



Source: Lightcast

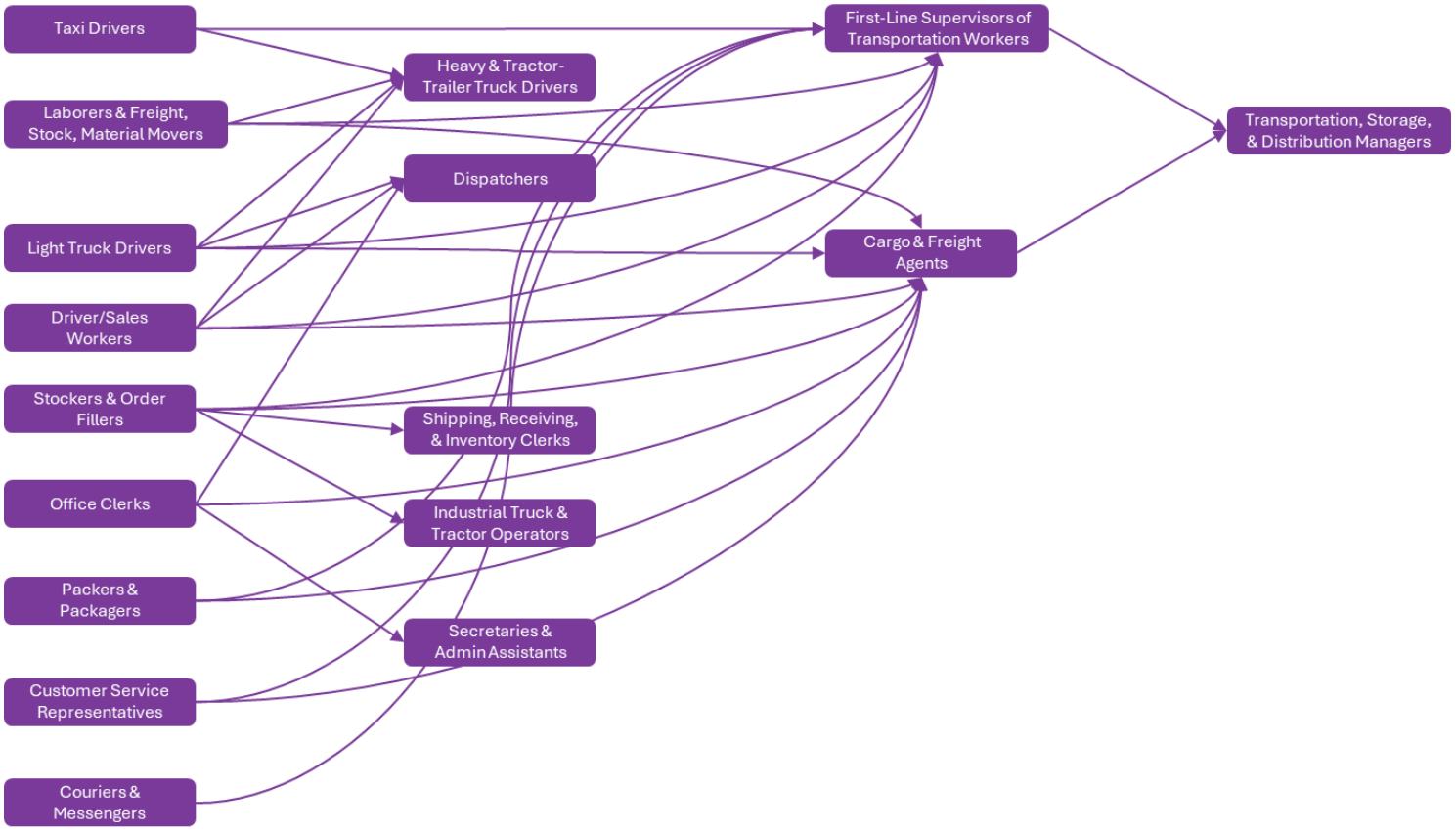
The situation is quite different for occupations that require less than a bachelor's degree. Among these, Heavy & Tractor Trailer Truck Drivers and Laborers stand out as the largest occupations by job count, but they could face a potential pipeline gap. However, since Laborers require no formal education and training, the typical educational pipeline is not as relevant here. Because of the lower skill level needed for the job, feeder occupations are less critical since it is possible to hire candidates without any prior experience. In order to encourage people to enter into this entry-level role then, it is important to demonstrate that Laborers can become Cargo and Freight Agents and eventually Transportation, Storage, & Distribution Managers.

The shortage of Heavy Truck Drivers is quite critical. As the largest occupation in the sector, it also added the most jobs since 2022. Other driving-related target occupations serve as good feeders into this role (Taxi Drivers, Light Truck Drivers, and Driver/Sales Workers) but they would still require proper commercial driver's licensing to legally perform the next step role. While the pathway options beyond truck driving are limited, the occupation itself is lucrative due to the severe labor shortage, a trend seen nationally.

Cargo & Freight Agents have also enjoyed job growth. The occupation clearly benefits from a multitude of feeder occupation options from other target occupations, making supply of talent less of an issue.

Shipping & Receiving Clerks and Industrial Truck & Tractor operators both experience pipeline shortages but could rely on stockers & order fillers as a feeder occupation into their roles. Stockers & Order Fillers is also a larger occupation by employment. It should be noted that all three of these occupations have contracted in employment since 2022.

Figure 9 - Pathway map of non-bachelor's level target occupations



Source: Lightcast

As a reminder, more detailed pathway information for each target occupation can be found in the Appendix. The Appendix shows the top 3 feeder occupations and top 3 next step occupations for each target occupation based on similarity scores and wage advancement. It does not necessarily represent the same pathway options as the figure above which has more criteria. The table demonstrates the wage differential between steps, the type of transition, and even the skills gaps between occupations which, if addressed, would facilitate easier transitions. The table below shows an example of what can be found in the appendix.

Table 25 - Feeder and Next Step Examples for Laborers

Feeder	Characteristics		Target Occupation	Characteristics		Next Step
Packers and Packagers, Hand	Transition Type	Similar	Laborers and Freight, Stock, and Material Movers, Hand $36,682	Transition Type	Similar	Tank Car, Truck, and Ship Loaders
	Skills Gaps	Valid Driver's License; Shipping And Receiving; Housekeeping		Skills Gaps	Inventory Staging; Shrink Wrapping; Customer Engagement	
	Wage Difference	+$5,423		Wage Difference	$15,655	
Cooling and Freezing Equipment Operators and Tenders	Transition Type	Lateral Transition		Transition Type	Similar	Industrial Truck and Tractor Operators
	Skills Gaps	Valid Driver's License; Shipping And Receiving; Order Picking		Skills Gaps	Machinery; Material Handling Equipment; Inventory Staging	
	Wage Difference	$6,544		Wage Difference	$3,368	
Driver/Sales Workers	Transition Type	Lateral Transition		Transition Type	Lateral Transition	Weighers, Measurers, Checkers, and Samplers, Recordkeeping
	Skills Gaps	Forklift Truck; Palletizing; Pallet Jacks		Skills Gaps	Inventory Control; Administrative Support; Auditing	
	Wage Difference	$9,005		Wage Difference	+$7,588	

Source: Lightcast

Improve Alignment

The education pipeline plays an important role in addressing talent shortages, although for many occupations in this sector, formal education is not a primary requirement. When the number of program completions does not match employer demand, labor shortages tend to intensify. This challenge becomes more complex when student demand for programs does not align with workforce needs, leaving institutions to weigh the value of responding to labor market signals against maintaining enrollment in more popular but less workforce-relevant areas.

Some programs do exist to train individuals for key occupations in this sector, but they are currently underutilized. In such cases, efforts should focus on increasing enrollment and completions by expanding program capacity or promoting career pathways more effectively. For example, the region would benefit from an increase in completions among Heavy and Tractor-Trailer Truck Driver programs.

Spartanburg County is already attempting to solve this challenge through its SMART Jobs scholarship program which can be applied to CDL training at Spartanburg Community College. However, it only applies to county residents. The region would benefit from a wider eligible area to cover the entire labor shed, expanding CDL training assistance to more people. Efforts should also be made to communicate how lucrative these jobs can be – A simple one-page document, for instance, could effectively show the career potential by comparing the total earnings of CDL drivers who received tuition assistance with those in other professions that require more schooling but offer only average pay.

To generate enthusiasm for this career field among the younger demographic, allow CTE and standard track high school students to tour truck driving school facilities and engage with

simulators. Gamification such as simulation competitions could generate excitement among younger demographics.

Table 26 - Supply Gap Occupations with Deficit of Program Completions

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Sub-BA Occupations				
Heavy and Tractor-Trailer Truck Drivers	49.0205 Truck and Bus Driver/Commercial Vehicle Operator and Instructor.	Postsecondary nondegree award	Short-term on-the-job training	High - a commercial driver's license is needed and requires driving school.
Aircraft Mechanics and Service Technicians	15.0801 Aeronautical/Aerospace Engineering Technology/Technician.	Postsecondary nondegree award	None	Medium – occupation supports aviation logistics; may benefit from expanded technical program access.
Dispatchers, Except Police, Fire, and Ambulance	52.0408 General Office Occupations and Clerical Services. 52.041 Traffic, Customs, and Transportation Clerk/Technician (ABSENT)	High school diploma or equivalent	Moderate-term on-the-job training	Low – There many entry-level openings for this role each year. However, the more appropriate program for this role (52.041) is absent.
Bus and Truck Mechanics and Diesel Engine Specialists*	47.0605 Diesel Mechanics Technology/Technician.	High school diploma or equivalent	Long-term on-the-job training	Medium – key to maintaining vehicle fleets; merits attention in transportation-heavy region.
BA and BA+ Occupations				
Training and Development Specialists	52.1001 Human Resources Management/Personnel Administration, General 52.1005 Human Resources Development 52.1006 Executive/Career Coaching.	Bachelor's degree	None	Medium – although there are enough HR program completions, most choose to enter other occupations which likely leaves a deficit.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Accountants and Auditors	52.0201 Business Administration and Management, General. 52.0301 Accounting. 52.0299 Business Administration, Management and Operations, Other. 52.0305 Accounting and Business/ Management. 52.0304 Accounting and Finance.	Bachelor's degree	None	High – strong subregional demand and consistent deficits suggest the need for targeted enrollment efforts.
Financial Managers	24.0101 Liberal Arts and Sciences/Liberal Studies. 24.0102 General Studies. 30.0000 Multi-/Interdisciplinary Studies, General. 52.0201 Business Administration and Management, General. 52.0213 Organizational Leadership. 52.0299 Business Administration, Management and Operations, Other. 52.0301 Accounting. 52.0304 Accounting and Finance. 52.0305 Accounting and Business/Management. 52.0801 Finance, General. 52.1304 Actuarial Science.	Bachelor's degree	None	Medium – below-threshold deficit, but critical role for financial oversight in logistics and warehousing.
General and Operations Managers	11.1005 Information Technology Project Management 15.0599 Environmental Control Technologies/Technicians, Other 15.0613 Manufacturing Engineering Technology/Technician 52.0101 Business/Commerce, General 52.0201 Business Administration and Management, General 52.0205 Operations Management and Supervision 52.0208 E-Commerce/Electronic Commerce	Bachelor's degree	None	High – essential for operational oversight in logistics and distribution.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	52.0211 Project Management 52.0213 Organizational Leadership 52.0299 Business Administration, Management and Operations, Other 52.0305 Accounting and Business/Management 52.0399 Accounting and Related Services, Other 52.0701 Entrepreneurship/Entrepreneurial Studies 52.0703 Small Business Administration/Management 52.0799 Entrepreneurial and Small Business Operations, Other 52.0801 Finance, General 52.1101 International Business/Trade/Commerce 52.1301 Management Science 52.1399 Management Sciences and Quantitative Methods, Other 52.9999 Business, Management, Marketing, and Related Support Services, Other			
Logisticians	52.0201 Business Administration and Management, General. 52.0202 Purchasing, Procurement/Acquisitions and Contracts Management. 52.0203 Logistics, Materials, and Supply Chain Management. 52.0205 Operations Management and Supervision. 52.0209 Transportation/Mobility Management. 52.0211 Project Management. 52.0409 Parts, Warehousing, and Inventory Management Operations.	Bachelor's degree	None	High – directly supports core logistics and supply chain operations across the sector.

Source: Lightcast

It is important to note that for some occupations, the education and training requirements are so low that there are no education programs (CIP codes) mapped to them. For this reason, the supply

gap estimation is not applicable – as although no completions exist connected to these occupations, it is not to be expected. These occupations include:

- Couriers & Messengers
- Taxi Drivers
- Packers & Packagers, Hand

For other occupations, there are no relevant programs with completions reported in the region. These gaps may reflect a true absence of aligned programs, or the presence of non-credit offerings not captured in official data. Regardless, the lack of completions limits the ability of the education pipeline to meet workforce needs.

Table 27 - Supply Gap Occupations with Missing Programs in Labor Shed

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
Airline Pilots, Copilots, and Flight Engineers	49.0101 Aeronautics/Aviation/Aerospace Science and Technology, General. 49.0102 Airline/Commercial/Professional Pilot and Flight Crew. 49.0104 Aviation/Airway Management and Operations. 49.0108 Flight Instructor. 49.0109 Remote Aircraft Pilot. 49.0199 Air Transportation, Other.	Bachelor's degree	Moderate-term on-the-job training	High – there are no completions reported in aligned programs, yet commercial aviation roles are credentialed and require formal preparation. Regional access to pilot training would improve sector readiness.

Source: Lightcast

Anticipate Technology Impacts on Labor Demand

Transportation & Warehousing is another sector that is susceptible to the impacts of AI, automation, and robotics. These technologies impact the sector in several ways[20]:

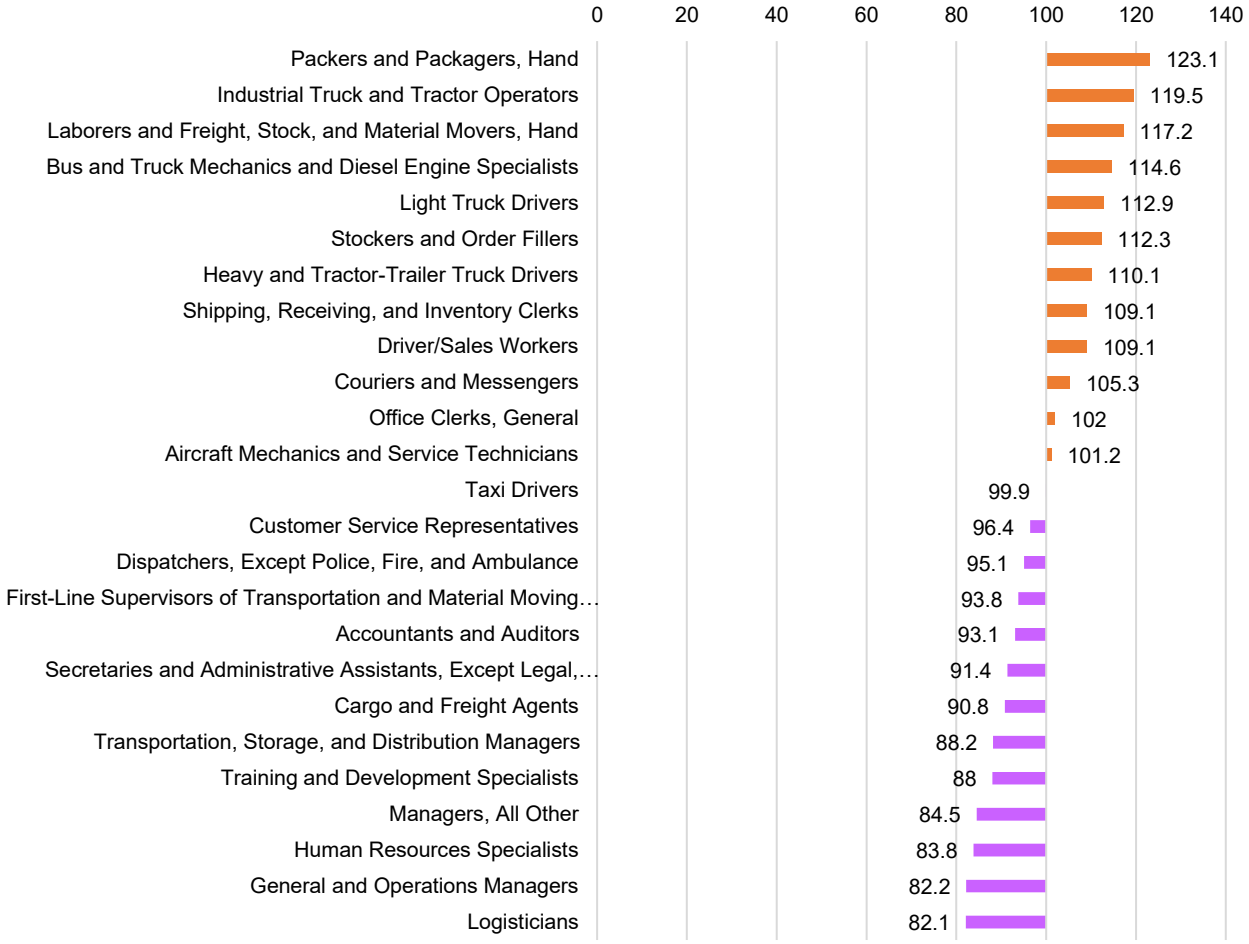
- Inventory tracking
- Order fulfillment
- Packing and sorting
- Predictive maintenance
- Route optimization
- Autonomous vehicles

Experiments with drones for last-mile delivery are also being done. In short, the impacts of automation could be widespread, which can free up labor for other areas experiencing shortages. Using the Lightcast Automation Index, the figure below demonstrates which target occupations are more exposed to automation. Packers & Packagers, Industrial Truck Operators, and Laborers

[20] Sodiya, Umoga, Amoo, & Atadoga, “AI-driven warehouse automation: A comprehensive review of systems,” GSC Advanced Research and Reviews, 2024

are the most exposed to automation given the growth of warehouse fulfillment conveyors and robots.

Figure 10 - Automation Index of Transportation & Warehousing Target Occupations



Source: Lightcast

Engage the Unemployed, Underemployed, or Disengaged

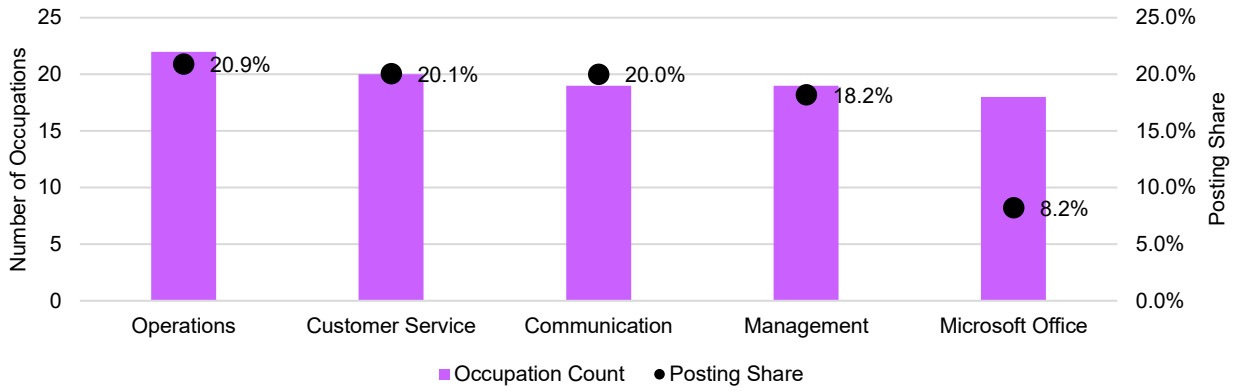
As of October 2024, people in Transportation & Material Moving occupations made up 10% of unemployed people (811) despite these occupations making up over 9% of employment in Spartanburg County. This is poor news for employers, as it means there is an undersized percentage of unemployed with transportation experience in Spartanburg.

One way to facilitate the disengaged and unemployed populations find employment is to address critical skills which are common across occupations in a sector. By embedding these skills within job training for the unemployed, it can increase their success rates in finding – and keeping – a job. Cross-cutting skills in the Transportation & Warehousing sector are presented below both in terms of the number of occupations which feature these skills in job postings as well as the share of job postings they are found in.

For instance, forklift truck driving requires an OSHA-compliant training and certification. It does not take long to complete and is inexpensive while also being a useful skill across multiple

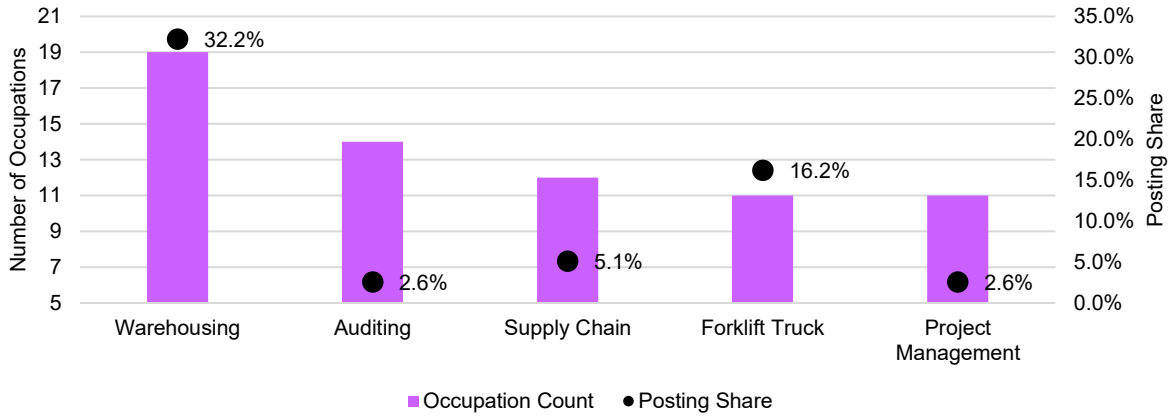
occupations in the sector. This skill would widen employment opportunities for the unemployed or disengaged.

Figure 11 - Top baseline/common skills across Transportation & Warehousing occupations



Source: Lightcast

Figure 12 - Top specialized skills across Transportation & Warehousing occupations



Source: Lightcast

Health Care and Social Assistance

In 2024, Health Care and Social Assistance was the fifth largest sector in Spartanburg County, employing 12,759 individuals, representing 10% growth with a gain of 1,156 jobs since 2022. Despite the industry's size, with an employment concentration of just 0.56, employment is roughly half the national average, meaning Health Care is likely to experience job growth given that there's an economic incentive for the sector to expand to meet population demand.

Occupations

Employment & Job Characteristics

Using the methodology described in the Target Occupations section, Lightcast identified 44 occupations accounting for 83.3% of total Health Care and Social Assistance employment. The largest occupation category is Home Health and Personal Care Aides, which comprises over 2,700 jobs (or 21.9% of the entire industry's workforce) with an increase of 253 jobs since 2022. It should be noted that this occupation is expected to have the highest growth by volume in the foreseeable future as the population ages, with many people becoming less independent. In fact, the ratio of working age to non-working age population is projected to be 2-to1 in the future.[21]

Rapidly expanding roles include Pediatricians (120.4%), General Internal Medicine Physicians (83.7%), Anesthesiologists (72.4%), Phlebotomists (67.1%), Marriage and Family Therapists (49.0%), Occupational Therapists (38.7%), Speech-Language Pathologists (33.4%), Physical Therapists (32.8%), and Child, Family, and School Social Workers (28.0%). However, 10 of the 44 occupations experienced a decline. Some of the most rapidly declining occupations in terms of employment have been Dentists (-17.8%), Recreation Workers (-17.2%), Medical Assistants (-12.0%), and Receptionists/Information Clerks (-8.0%).

Table 28 – Health Care & Social Assistance Target Occupations

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Home Health and Personal Care Aides	2,510	2,763	21.9%	253	10.1%
Registered Nurses	827	1,004	8.0%	178	21.5%
Nursing Assistants	826	988	7.8%	163	19.7%
Childcare Workers	425	502	4.0%	77	18.1%
Medical Secretaries and Administrative Assistants	313	321	2.5%	9	2.9%
Medical Assistants	360	317	2.5%	-43	-12.0%
Dental Assistants	294	316	2.5%	22	7.6%
Licensed Practical and Licensed Vocational Nurses	285	288	2.3%	2	0.8%
Receptionists and Information Clerks	298	275	2.2%	-24	-7.9%
Physical Therapists	150	200	1.6%	49	32.8%

[21] Lightcast, "The Rising Storm: Building a Future-Ready Workforce to Withstand the Looming Labor Shortage"

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Office Clerks, General	205	199	1.6%	-6	-3.1%
Preschool Teachers, Except Special Education	188	193	1.5%	5	2.4%
Dental Hygienists	183	168	1.3%	-15	-8.0%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	150	163	1.3%	14	9.1%
Social and Human Service Assistants	156	157	1.2%	2	1.0%
First-Line Supervisors of Office and Administrative Support Workers	149	154	1.2%	5	3.0%
Cooks, Institution and Cafeteria	155	148	1.2%	-7	-4.3%
Billing and Posting Clerks	118	144	1.1%	25	21.5%
Medical and Health Services Managers	145	139	1.1%	-6	-3.9%
Maids and Housekeeping Cleaners	116	133	1.1%	17	14.6%
Phlebotomists	73	122	1.0%	49	67.1%
Nurse Practitioners	107	122	1.0%	15	13.8%
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	105	117	0.9%	12	11.1%
Dentists, General	140	115	0.9%	-25	-17.8%
Maintenance and Repair Workers, General	104	115	0.9%	11	10.6%
Child, Family, and School Social Workers	88	113	0.9%	25	28.0%
Occupational Therapists	77	107	0.8%	30	38.7%
General and Operations Managers	96	104	0.8%	7	7.7%
Customer Service Representatives	90	97	0.8%	6	6.9%
Recreation Workers	108	90	0.7%	-19	-17.2%
Physicians, All Other	97	89	0.7%	-8	-7.8%
Physical Therapist Assistants	74	86	0.7%	13	17.2%
Social and Community Service Managers	72	86	0.7%	14	18.7%
Healthcare Social Workers	73	84	0.7%	11	15.6%
Clinical Laboratory Technologists and Technicians	65	81	0.6%	16	24.5%
Chiropractors	64	60	0.5%	-5	-7.3%
Speech-Language Pathologists	43	58	0.5%	14	33.4%
Human Resources Specialists	44	55	0.4%	11	25.8%
Education and Childcare Administrators, Preschool and Daycare	48	53	0.4%	5	11.4%
Marriage and Family Therapists	25	37	0.3%	12	49.0%
Pediatricians, General	17	37	0.3%	20	120.4%
Anesthesiologists	21	37	0.3%	15	72.4%
General Internal Medicine Physicians	19	34	0.3%	16	83.7%
Oral and Maxillofacial Surgeons	<10	<10	N/A	N/A	N/A

Source: Lightcast

Between the 44 target occupations in Spartanburg County's Health Care and Social Assistance sector, half require a bachelor’s degree or higher. Indeed, compared to the other core sectors, Health Care and Social Assistance has the broadest range of education requirements. Among the top four highest employment occupations, Home Health and Personal Care Aides and Childcare Workers only require a high school diploma (or equivalent), while Nursing Assistants require a nondegree award and Registered Nurses require a bachelor’s degree.

Nearly all the occupations that do not require post-secondary degrees or credentials still typically require some level of training, typically short-term. Workforce development systems, such as community colleges, may be called upon to provide upskilling opportunities through short-term certificates and training programs, rather than fully-fledged associate's degrees. For instance, while Maintenance and Repair Workers, General; Billing and Posting Clerks; and Medical Secretaries and Administrative Assistants typically only require a high school diploma, these positions also require moderate-term training. Some of this training could be replaced, in part, by short-term education to pre-qualify talent for the sector.

Table 29 – Health Care & Social Assistance Target Occupation Characteristics

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
Oral and Maxillofacial Surgeons	$210.79	Doctoral or professional degree	None	Residency
Anesthesiologists	$129.64	Doctoral or professional degree	None	Residency
Pediatricians, General	$127.71	Doctoral or professional degree	None	Residency
General Internal Medicine Physicians	$99.74	Doctoral or professional degree	None	Residency
Physicians, All Other	$77.26	Doctoral or professional degree	None	Residency
Dentists, General	$63.95	Doctoral or professional degree	None	None
Physical Therapists	$49.75	Doctoral or professional degree	None	None
Chiropractors	$28.60	Doctoral or professional degree	None	None
Nurse Practitioners	$57.31	Master's degree	None	None
Occupational Therapists	$49.48	Master's degree	None	None
Speech-Language Pathologists	$47.92	Master's degree	None	Internship/residency
Healthcare Social Workers	$30.36	Master's degree	None	Internship/residency
Marriage and Family Therapists	$13.60	Master's degree	None	Internship/residency
Medical and Health Services Managers	$50.29	Bachelor's degree	Less than 5 years	None
General and Operations Managers	$44.47	Bachelor's degree	5 years or more	None
Registered Nurses	$36.82	Bachelor's degree	None	None
Social and Community Service Managers	$31.80	Bachelor's degree	Less than 5 years	None
Human Resources Specialists	$30.95	Bachelor's degree	None	None
Clinical Laboratory Technologists and Technicians	$28.19	Bachelor's degree	None	None
Education and Childcare Administrators, Preschool and Daycare	$22.95	Bachelor's degree	Less than 5 years	None
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	$22.88	Master's degree	None	None
Child, Family, and School Social Workers	$20.83	Bachelor's degree	None	None
Physical Therapist Assistants	$39.16	Associate's degree	None	None
Dental Hygienists	$37.66	Associate's degree	None	None
Preschool Teachers, Except Special Education	$14.62	Associate's degree	None	None
Licensed Practical and Licensed Vocational Nurses	$28.17	Postsecondary nondegree award	None	None

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
Dental Assistants	$22.21	Postsecondary nondegree award	None	None
Medical Assistants	$18.10	Postsecondary nondegree award	None	None
Nursing Assistants	$17.73	Postsecondary nondegree award	None	None
Phlebotomists	$17.33	Postsecondary nondegree award	None	None
First-Line Supervisors of Office and Administrative Support Workers	$28.31	High school diploma or equivalent	Less than 5 years	None
Maintenance and Repair Workers, General	$22.18	High school diploma or equivalent	None	Moderate-term on-the-job training
Billing and Posting Clerks	$21.51	High school diploma or equivalent	None	Moderate-term on-the-job training
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	$18.64	High school diploma or equivalent	None	Short-term on-the-job training
Customer Service Representatives	$17.91	High school diploma or equivalent	None	Short-term on-the-job training
Medical Secretaries and Administrative Assistants	$17.78	High school diploma or equivalent	None	Moderate-term on-the-job training
Office Clerks, General	$16.63	High school diploma or equivalent	None	Short-term on-the-job training
Social and Human Service Assistants	$16.15	High school diploma or equivalent	None	Short-term on-the-job training
Receptionists and Information Clerks	$15.81	High school diploma or equivalent	None	Short-term on-the-job training
Recreation Workers	$15.80	High school diploma or equivalent	None	Short-term on-the-job training
Home Health and Personal Care Aides	$14.18	High school diploma or equivalent	None	Short-term on-the-job training
Childcare Workers	$12.90	High school diploma or equivalent	None	Short-term on-the-job training
Maids and Housekeeping Cleaners	$14.18	No formal educational credential	None	Short-term on-the-job training
Cooks, Institution and Cafeteria	$13.73	No formal educational credential	None	Short-term on-the-job training

Source: Lightcast

The table below demonstrates the top common and specialized skills relevant to the occupations in the Health Care and Social Assistance sector, extracted from regional job posting data. Common skills are defined as “skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. “Communication” or “Microsoft Excel”). Also known as soft skills, human skills, and competencies.” Specialized skills are “skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. “NumPy” or “Hotel Management”). Also known as technical skills or hard skills.”

Communication is the most frequent top common skill listed in job postings given the interpersonal and often stressful nature of the sector. Specialized skills vary widely as occupations are highly specialized.

Compared to Manufacturing and Transportation sectors, Health Care and Social Assistance is more regulated. As such, credentials are required more often and represent a wide range depending on the occupation. For this reason, Lightcast includes a Top Credentials column to provide more detail on the occupations. Important certifications that open entry-level pathways are First Aid Certification, Cardiopulmonary Resuscitation (CPR) Certification, and a valid driver’s license.

Table 30 – Health Care & Social Assistance Target Occupation Skills Characteristics

Occupation	Top Common Skills	Top Specialized Skills	Top Credentials
Anesthesiologists	• Operations • Management • Mathematics	• Anesthesia • Medical Direction • Obstetrics And Gynecology	• None Listed
Billing and Posting Clerks	• Communication • Collections • Multitasking	• Billing • Medical Terminology • Medicaid	• None Listed
Child, Family, and School Social Workers	• Communication • Management	• Social Work • Hospice • Case Management	• Licensed Master Social Worker
Childcare Workers	• Communication • Teaching • Leadership	• Caregiving • Home Health Care • Family And Medical Leave Act Of 1993	• Certified Nursing Assistant (CNA) • Cardiopulmonary Resuscitation (CPR) Certification • First Aid Certification
Chiropractors	• Business Administration • Communication	• Chiropractics • Patient Evaluation • Medical History Documentation	• None Listed
Clinical Laboratory Technologists and Technicians	• Communication • Quality Control • Management	• Medical Laboratory • Laboratory Testing • Biology	• American Society For Clinical Pathology (ASCP) Certification • American Medical Technologists (AMT) Certification
Cooks, Institution and Cafeteria	• Customer Service • Cleanliness • Self-Starter	• Food Services • Food Preparation • Food Safety And Sanitation	• None Listed
Customer Service Representatives	• Customer Service • Communication • Management	• Billing • Call Center Experience • Public Relations	• None Listed
Dental Assistants	• Communication • Organizational Skills	• Dentistry • Oral Hygiene • Infection Control	• Radiology Certification
Dental Hygienists	• None Listed	• Dental Hygiene • Medical History Documentation • Periodontology	• Cardiopulmonary Resuscitation (CPR) Certification

Occupation	Top Common Skills	Top Specialized Skills	Top Credentials
Dentists, General	• Management • Mentorship • Leadership	• Dentistry • Treatment Planning • Oral Health	• None Listed
Education and Childcare Administrators, Preschool and Daycare	• Management • Communication • English Language	• Marketing	• First Aid Certification • Cardiopulmonary Resuscitation (CPR) Certification
First-Line Supervisors of Office and Administrative Support Workers	• Management • Operations • Communication	• Billing • Office Management	• None Listed
General and Operations Managers	• Operations • Leadership • Management	• Marketing • Auditing	• None Listed
General Internal Medicine Physicians	• Management • Research • Teaching	• Internal Medicine • Primary Care • Medicare	• Board Certified/Board Eligible • Medical License
Healthcare Social Workers	• Management	• Medical Social Work • Hospice • Mental Health	• Licensed Clinical Social Worker (LCSW) • Licensed Master Social Worker
Home Health and Personal Care Aides	• Communication	• Caregiving • Meal Planning and Preparation • Housekeeping	• Valid Driver's License
Human Resources Specialists	• Communication • Management • Customer Service	• Human Resources Information System (HRIS)	• None Listed
Licensed Practical and Licensed Vocational Nurses	• Management	• Nursing • Nursing Care • Medical Records	• Licensed Practical Nurse (LPN) • Registered Nurse (RN) • Licensed Vocational Nurse (LVN) • Cardiopulmonary Resuscitation (CPR) Certification
Maids and Housekeeping Cleaners	• Customer Service • Communication • Tactfulness	• Housekeeping • Furniture Cleaning • Mopping	• None Listed
Maintenance and Repair Workers, General	• Communication • Computer Literacy • Operations	• HVAC • Plumbing • Painting	• Valid Driver's License
Marriage and Family Therapists	• Communication	• Treatment Planning	• Licensed Professional

Occupation	Top Common Skills	Top Specialized Skills	Top Credentials
		• Social Work • Mental Health	Counselor (LPC) • Licensed Marriage And Family Therapist (LMFT)
Medical and Health Services Managers	• Management • Communication • Operations	• Nursing	• Registered Nurse (RN)
Medical Assistants	• Communication • Scheduling • Clerical Works	• Medical Assistance • Vital Signs • Medical Records	• American Medical Technologists (AMT) Certification • Certified Medical Assistant (CMA)
Medical Secretaries and Administrative Assistants	• Clerical Works • Customer Service • Management	• Nursing • Data Entry • Office Supply Management	• Registered Nurse (RN)
Nurse Practitioners	• Management	• Nursing • Billing • Primary Health Care	• Nurse Practitioner (APRN-CNP)
Nursing Assistants	• Computer Literacy • Communication	• Nursing • Patient Assistance • Activities Of Daily Living (ADLs)	• Certified Nursing Assistant (CNA) • Registered Nurse (RN)
Occupational Therapists	• Communication	• Occupational Therapy • Treatment Planning • Rehabilitation	• National Board For Certification In Occupational Therapy (NBCOT) Certified • Basic Life Support (BLS) Certification
Office Clerks, General	• Clerical Works • Critical Thinking • Decisiveness	• Medical Office Procedures • Medical Records • Setting Appointments	• None Listed
Oral and Maxillofacial Surgeons	• Research	• Oral And Maxillofacial Surgery • Dentistry • Dental Implant	• None Listed
Pediatricians, General	• Teaching • Research • Management	• Pediatrics • Utilization Management • Managed Care	• Board Certified/Board Eligible
Phlebotomists	• Communication • Customer Service • Collections	• Phlebotomy • Data Entry • Billing	• Phlebotomy Certification

Occupation	Top Common Skills	Top Specialized Skills	Top Credentials
Physical Therapist Assistants	• Communication • Writing • Interpersonal Communications	• Physical Therapy • Treatment Planning • Rehabilitation	• Cardiopulmonary Resuscitation (CPR) Certification • Physical Therapy Assistant License
Physical Therapists	• Communication	• Physical Therapy • Rehabilitation • Treatment Planning	• Basic Life Support (BLS) Certification • Cardiopulmonary Resuscitation (CPR) Certification
Physicians, All Other	• Management • Teaching • Research	• Patient Education and Counseling • Medical Science • Medicaid	• Board Certified/Board Eligible • Medical License
Preschool Teachers, Except Special Education	• Teaching • Leadership • English Language	• Child Development • Preschool Education • Lesson Planning	• Cardiopulmonary Resuscitation (CPR) Certification • First Aid Certification
Receptionists and Information Clerks	• Clerical Works • Scheduling • Microsoft Office	• Office Management • Workflow Management	• None Listed
Recreation Workers	• Communication • Planning • Enthusiasm	• Risk Management • Dementia	• Cardiopulmonary Resuscitation (CPR) Certification • First Aid Certification
Registered Nurses	• Planning • Leadership • Teaching	• Nursing • Nursing Care • Nursing Process	• Registered Nurse (RN) • Basic Life Support (BLS) Certification
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	• Clerical Works • Communication • Customer Service	• Medical Records • Front Office • Medical Office Procedures	• None Listed
Social and Community Service Managers	• Communication • Management • Planning	• Social Work • Human Services	• Valid Driver's License • American Red Cross (ARC) Certification
Social and Human Service Assistants	• Management • Customer Service • Planning	• Working With Children • Meal Planning And Preparation • Human Services	• Valid Driver's License

Occupation	Top Common Skills	Top Specialized Skills	Top Credentials
Speech-Language Pathologists	• Communication	• Speech-Language Pathology • Speech Therapy • Rehabilitation	• Certificate Of Clinical Competence In Speech-Language Pathology (CCC-SLP) • Speech-Language Pathology License
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	• Communication	• Mental Health • Treatment Planning • Case Management	• Licensed Professional Counselor (LPC) • Licensed Marriage And Family Therapist (LMFT) • Licensed Clinical Social Worker (LCSW) • Licensed Mental Health Counselor (LMHC)

Source: Lightcast

Occupation Demographics

The table below depicts the share of occupational employment for each race or ethnicity. The highlighted colors indicate that the race or ethnicity is overrepresented based on its share of Spartanburg's population: overrepresented groups are 1.25x more concentrated or 5 percentage points more densely represented in the occupation (whichever is less) than in Spartanburg overall.[22]

In general, we see overrepresentation of White and Asian workers in physician roles. The overrepresentation of these groups is particularly evident in specialized medical professionals: Anesthesiologists, Chiropractors, Dentists, and Oral and Maxillofacial Surgeons. These are highly remunerative roles.

The Black population is overrepresented in twenty-three of the forty-four target occupations. The occupations demonstrating Black overrepresentation tend to be among the lowest paid in the sector, including Cooks at hospitals, Maids and Cleaner staff, and Phlebotomists. However, there Black overrepresentation does extend into career healthcare roles, such as Nurses, Social Workers, and Clinical Laboratory staff. Overall, the Black population represents 30% of the total Health Care and Social Assistance workforce while accounting for just 20.1% of the population.

Hispanic workers are only overrepresented in one of the target occupations: Maids and Housekeeping Cleaners (20.6%).

[22] For instance, the Hispanic population accounts for 20.1% of Spartanburg County population. For an occupation to have an overrepresentation of Hispanic workers relative to the overall population, the Hispanic worker share in the occupation would need to reach the lesser of 1.25x 9.9% = 12.4% or 5% + 9.9% = 14.9%. The lesser of these options is 12.4%.

Table 31 – Health Care & Social Assistance Target Occupation Demographic Representation – Race/Ethnicity

Occupation Name	White (74.2%)	Black (20.1%)	Hispanic (All Races) (9.9%)	Asian (2.7%)	Two or More Races (2.5%)
Anesthesiologists	79.90%	8.70%	3.40%	8.70%	2.70%
Billing and Posting Clerks	72.40%	22.90%	5.80%	1.70%	2.70%
Child, Family, and School Social Workers	52.10%	43.00%	3.30%	0.70%	3.90%
Childcare Workers	64.30%	28.90%	7.50%	1.30%	4.90%
Chiropractors	89.90%	3.10%	1.80%	4.80%	2.20%
Clinical Laboratory Technologists and Technicians	54.50%	39.50%	3.40%	1.80%	4.10%
Cooks, Institution and Cafeteria	50.60%	43.40%	7.30%	1.60%	3.90%
Customer Service Representatives	64.40%	31.00%	6.80%	1.90%	2.30%
Dental Assistants	84.00%	9.90%	8.10%	3.00%	2.10%
Dental Hygienists	92.00%	4.50%	2.60%	2.10%	0.90%
Dentists, General	85.50%	5.80%	2.50%	7.50%	1.00%
Education and Childcare Administrators, Preschool and Daycare	69.00%	27.90%	2.80%	0.70%	2.00%
First-Line Supervisors of Office and Administrative Support Workers	75.50%	19.90%	5.40%	2.00%	2.10%
General and Operations Managers	85.20%	10.50%	4.30%	2.40%	1.60%
General Internal Medicine Physicians	77.30%	12.20%	3.10%	6.70%	3.80%
Healthcare Social Workers	53.80%	42.30%	3.30%	0.50%	3.30%
Home Health and Personal Care Aides	49.40%	47.00%	4.70%	1.20%	1.90%
Human Resources Specialists	69.00%	25.60%	6.10%	2.20%	2.90%
Licensed Practical and Licensed Vocational Nurses	47.90%	48.80%	2.90%	0.70%	2.40%
Maids and Housekeeping Cleaners	46.90%	37.40%	20.60%	3.10%	11.00%
Maintenance and Repair Workers, General	75.10%	19.80%	7.20%	1.80%	2.70%
Marriage and Family Therapists	66.80%	28.10%	3.50%	1.20%	3.80%
Medical and Health Services Managers	66.80%	28.60%	3.40%	1.10%	3.40%
Medical Assistants	61.30%	30.40%	11.30%	1.60%	6.40%
Medical Secretaries and Administrative Assistants	68.70%	25.90%	5.50%	1.10%	4.10%
Nurse Practitioners	78.00%	18.00%	1.90%	1.60%	2.30%
Nursing Assistants	33.90%	62.30%	3.60%	0.60%	3.00%
Occupational Therapists	84.60%	11.70%	1.60%	1.70%	2.00%
Office Clerks, General	72.10%	22.10%	6.70%	2.60%	2.80%
Oral and Maxillofacial Surgeons	84.80%	5.60%	2.40%	8.40%	1.00%
Pediatricians, General	78.80%	10.00%	3.20%	8.10%	3.00%
Phlebotomists	48.40%	45.10%	6.10%	0.80%	5.50%
Physical Therapist Assistants	78.50%	17.30%	3.40%	1.20%	2.90%
Physical Therapists	85.60%	9.50%	1.70%	2.70%	2.10%
Physicians, All Other	76.40%	13.30%	3.10%	6.00%	4.20%
Preschool Teachers, Except Special Education	68.70%	27.60%	3.50%	0.90%	2.40%
Receptionists and Information Clerks	76.20%	18.30%	7.40%	2.10%	3.00%
Recreation Workers	70.20%	25.20%	3.30%	0.90%	3.30%
Registered Nurses	65.10%	30.50%	2.30%	1.30%	3.10%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	80.70%	15.50%	4.60%	1.20%	2.20%
Social and Community Service Managers	68.60%	27.80%	2.40%	0.90%	2.60%
Social and Human Service Assistants	51.90%	43.50%	4.60%	0.70%	3.50%
Speech-Language Pathologists	86.70%	9.60%	2.40%	0.90%	2.50%
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	60.30%	33.90%	3.70%	1.00%	4.60%

Source: Lightcast

Regarding gender, men are generally underrepresented across Health Care and Social Assistance target occupations. They are only overrepresented in six occupations, four of which are doctorate-level:

- Maintenance and Repair Workers, General – 95.1%
- Oral and Maxillofacial Surgeons – 77.7%
- Dentists, General – 73.1%

- General and Operations Managers – 66.1%
- Chiropractors – 60.2%
- Anesthesiologists – 53.8%

Men only account for 11.1% of Home Health and Personal Care Aides, the largest target occupation. Their representation is noticeably low for the next three largest target occupations:

- Registered Nurses – 3.4%
- Nursing Assistants – 4.5%
- Childcare Workers – 5.5%

Considering age demographics, most target occupations are exposed to retirement risks. Lightcast examined the share of occupational employment of 55–64-year-olds, or those nearing retirement age, to determine this risk. Of the 44 target occupations, a small number have a retirement risk on par with or less than the area population, i.e. 55–64-year-olds representing 12.3% (the county's population share): Speech-Language Pathologists (12.8%), Recreation Workers (12.0%), Physical Therapists (11.3%), Nursing Assistants (11.1%), Occupational Therapists (9.3%), Dental Assistants (8.9%), Physical Therapist Assistants (8.4%), Phlebotomists (8.0%), and Medical Assistants (6.2%).

Concerningly, the largest occupation by employment also faces a heightened retirement risk of target occupations: 19.7% of Home Health and Personal Care Aides are aged 55-64. The second largest occupation – Registered Nurses – is only marginally above the area population's average (14.1% compared to 12.3%).

Supply and Demand

Demand Met from the Regional Education System

The regional education system conferred approximately 9,200 workforce-aligned awards for occupations in the Health Care and Social Assistance sector, compared to approximately 11,400 entry-level openings. In aggregate, regional completions fall short of demand by roughly 2,200 awards. Reviewing the conferrals by award level, the most substantial gaps appear at the sub-bachelor's level, where 6,096 completions fall short of the 8,055 openings, and at the advanced degree level (BA+), where only 646 completions align to 1,101 openings. In contrast, there is a slight oversupply at the bachelor's degree level, where 2,457 completions modestly exceed the 2,230 entry-level openings. However, this surplus must be understood in the context of the broader labor market and graduate mobility.

Table 32 – Health Care & Social Assistance Supply & Demand by Award Level

Award Level	Demand (Entry-Level Openings)	Supply (Aligned Completions)
Sub-BA	8,055	6,096
BA	2,230	2,457
BA+	1,101	646
Grand Total	**11,386**	**9,199**

Source: Lightcast

Lightcast analysis of alumni profiles shows that over 65 percent of graduates with bachelor's and advanced degrees in health-related fields from 2022 to 2024 are now employed outside the labor shed. This suggests that a large portion of the region's higher-education output in health care

supports external labor markets. As a result, the numerical surplus at these levels reflects export-oriented degree production rather than a true oversupply of talent available to local employers. In contrast, sub-bachelor's level graduates are more likely to remain in the region and enter the local workforce, making supply gaps at that level more directly reflective of regional training needs.

Because of these dynamics, the supply-demand model applies differentiated thresholds by education level. Gaps at the sub-bachelor's level must exceed 100 completions to be flagged, reflecting the fact that many occupations at this level do not formally require a credential and that most graduates are likely to remain in the region. By contrast, for bachelor's and advanced degree occupations, a lower threshold of 50 completions is used. Even modest deficits at these levels may signal strategic risk, particularly in high-skill roles where national demand is strong and competition for talent is high.

The supply and demand model results, shown in Table 33, suggest that employers hiring for bachelor's-level and advanced-degree roles may already be experiencing shortages. Substance Abuse, Behavioral Disorder, and Mental Health Counselors are oversupplied at the bachelor's level but undersupplied at the advanced level (–97). Other advanced practice roles show similar shortfalls, including Physical Therapists (–71), Nurse Practitioners (–40), Speech-Language Pathologists (–56), and Healthcare Social Workers (–50). In some cases, these shortages suggest that bachelor's-level graduates are not continuing into graduate study at the rates needed to meet workforce demand. For Medical and Health Services Managers, by contrast, completions exceed demand at both the bachelor's and advanced levels, indicating a well-supplied administrative talent pipeline.

At the bachelor's level, notable shortfalls include General and Operations Managers (–39), Registered Nurses (–25), Human Resources Specialists (–22), and Clinical Social Workers (–22), among others. While some of these gaps are near threshold, they involve strategically important occupations that support clinical care delivery, program administration, and employee relations.

At the sub-bachelor's level, multiple occupations show deficits exceeding 100 completions, including Home Health and Personal Care Aides (–573), Childcare Workers (–254), Dental Assistants (–120), Licensed Practical and Licensed Vocational Nurses (–122), and Recreation Workers (–133). While some of these roles do not require postsecondary credentials, those that do merit targeted efforts to expand capacity in certificate and associate-level programs. Additional gaps in support roles such as Physical Therapist Assistants, Medical Secretaries, and Phlebotomists reinforce the need for sub-bachelor's program development to ensure continuity in frontline care delivery.

Table 33 – Health Care & Social Assistance-Aligned Occupations with Over/Under-supply by Education Level

Occupation Name	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
Home Health and Personal Care Aides*	-573			914			341		
*Office Clerks, General**	-489			749			260		

Occupation Name	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
Childcare Workers*	-254			315			61		
*Maids and Housekeeping Cleaners**	-188			192			4		
*Receptionists and Information Clerks**	-150			284			134		
Dental Assistants	-120	-29		150	29		30	0	
*Secretaries and Administrative Assistants, Except Legal, Medical, and Executive**	-145			650			505		
*Recreation Workers**	-133			168			35		
Licensed Practical and Licensed Vocational Nurses	-122	3		173	0		51	3	
Nursing Assistants	-65	-46		496	103		431	57	
*Cooks, Institution and Cafeteria**	-109			113			4		
Physical Therapist Assistants	-50	-53		63	54		13	1	
Preschool Teachers, Except Special Education	-65	-34		78	91		13	57	
Substance Abuse, Behavioral Disorder, and Mental Health Counselors			-97			136			39
Physical Therapists			-71			88			17
*Billing and Posting Clerks**	-65			87			22		
Speech-Language Pathologists			-56			56			0
Medical Secretaries and Administrative Assistants*	-51			320			269		
Healthcare Social Workers			-50			63			13
Phlebotomists	-38	-8		77	13		39	5	
General and Operations Managers	26	-39	-32	491	587	150	517	548	118
Nurse Practitioners			-40			130			90
Occupational Therapists			-40			51			11
Dental Hygienists	-34			44			10		
*Customer Service Representatives**	-26			934			908		
Physicians, All Other			-24			36			12
Dentists, General			-24			25			1
Marriage and Family Therapists			-14			19			5
Anesthesiologists			-13			13			0
General Internal Medicine Physicians			-7			7			0
Pediatricians, General			-7			7			0
Social and Community Service Managers	-4	6	-7	9	34	18	5	40	11
First-Line Supervisors of Office and Administrative Support Workers*	-3			429			426		
Oral and Maxillofacial Surgeons			-1			1			0
Education and Childcare Administrators, Preschool and Daycare	-1	-1	10	2	6	10	1	5	20
Medical Assistants	7	27		366	109		373	136	
Social and Human Service Assistants*	34			100			134		
Registered Nurses	57	-25	2	221	645	101	278	620	103

Occupation Name	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
Chiropractors			56			14			70
Clinical Laboratory Technologists and Technicians	54	29	0	52	84	0	106	113	0
Child, Family, and School Social Workers		113	-22		98	41		211	19
Human Resources Specialists	-14	129	-22	77	265	66	63	394	44
Medical and Health Services Managers	76	155	4	74	112	69	150	267	73

Source: Lightcast

Occupations marked with an asterisk typically require a high school diploma or no formal education. Despite mapping to one or more CIP codes, many of these roles are commonly filled by individuals without postsecondary credentials. As a result, apparent oversupply at the sub-BA level may not reflect true misalignment. Italicized occupations indicate roles that are not strong candidates for expanded education or training programs.

Determining Peer Benchmarks

The Health Care and Social Assistance sector in the Spartanburg MSA boasts 14,820 jobs and an employment base that has grown 8.9% between 2022 and 2024. Despite the significant growth in Health Care and Social Assistance, the region still has a low location quotient – 0.6. This location quotient means that this sector is 0.6 times as concentrated (or 40% less concentrated) in the Spartanburg MSA than in the typical U.S. community. In the Spartanburg MSA, the Health Care and Social Assistance sector comprises 6.6% of all jobs.

In the Health Care and Social Assistance sector, the average earnings per worker are $53,689. Given that the cost of living in the Spartanburg MSA is 98.7% of the average U.S. community, average local earnings in this sector increase to a relative purchasing power of $54,397.

Lightcast established parameters to identify peer benchmark regions for the Health Care and Social Assistance sector. The parameters include both region-level parameters and industry-level parameters. The region-level parameters control for the distinguishing characteristics of the Spartanburg MSA, such as the fact that the Spartanburg MSA is part of a larger labor shed that also includes Greenville, SC and Anderson, SC, the overall size of the Spartanburg economy, and the cost of living in Spartanburg. The industry-level parameters control for the performance of the sector in the region, and these metrics include location quotient (LQ), job growth, and earnings per worker. The parameters are summarized below.

Table 34 - Parameters for Identifying Benchmark MSAs for the Health Care and Social Assistance Sector

	Metric	Range
Regional Parameters	MSA share of the CSA (i.e., the region's share of the full labor shed)	15% to 50% (Spartanburg MSA is 23.7% of the Greenville-Spartanburg-Anderson, SC CSA)
	Overall size of the economy (measured as job total job count)	Job count between 0.25x and 5x the Spartanburg MSA (Spartanburg MSA has 223,358 jobs, so the range is 55,840 to 1,116,790)
	Manufacturing LQ (applied to all sectors, even non-mfg sectors)	At least 1.20x the U.S. average (Spartanburg MSA has a LQ of 2.93x)
Industry Parameters	LQ of the industry is more concentrated than the U.S. or Spartanburg MSA	At least 1.20x the U.S. average *or* at least 75% of the Spartanburg MSA (Spartanburg MSA has a LQ of 0.58, so the low end is 0.44x)
	Industry job growth within the region (between 2022-2024)	Within +/- 5% of sector growth in the Spartanburg MSA, minimum -0.10% (Spartanburg MSA growth is 8.92%, so the range is 3.92% to 13.92%)
	Cost-of-living-index (COLI) adjusted annual earnings in the sector	Between 75% and 125% of COLI-adjusted earnings (Spartanburg MSA is $54,397, so the range is $40,798 to $67,996)

Source: Lightcast

These ranges produced the benchmark communities in the table below.

Table 35 - Peer Benchmark Communities for Health Care and Social Assistance

	Regional Parameters			Industry Parameters					
MSA Name	Total Jobs	Share of Labor Shed	COLI	Jobs	Share	LQ	Growth	Avg. Earnings	Avg. Earnings (COLI Adjusted)
Hartford-West Hartford-East Hartford, CT	812,262	46.56%	1.24	114,305	14.07%	1.23	5.60%	$76,180	$61,198
Ogden, UT	390,615	18.69%	1.06	35,888	9.19%	0.81	4.98%	$65,473	$61,720
Warner Robins, GA	115,131	44.18%	0.95	7,913	6.87%	0.60	11.19%	$49,048	$51,853
Auburn-Opelika, AL	108,124	34.16%	0.93	7,045	6.52%	0.57	8.37%	$45,254	$48,608

Source: Lightcast

Talent Strategy

Expand Talent Pipeline

One solution is to expand the viable labor pool by using pathways. In other words, by seeking talent outside the same occupation by considering those with relevant experience in different - but *similar* - occupations, employers can tap into larger labor pools of qualified talent.

Lightcast primarily identifies relevant occupations for pathways using its similarity scores. A similarity score is a Lightcast calculation based on how closely aligned the skills are between the two occupations. The higher the score, the more related the two occupations are, making them a better fit for job transitions between the two. Occupation transitions can be chained together, creating multi-step pathways. This helps employers identify skills-similar talent at multiple levels while helping talent visualize career progression opportunities.

The following criteria were used to identify pathways for Health Care and Social Assistance target occupations:

- Only pathways between target occupations are presented
- Occupations must have a minimum similarity score of 0.50
- Each step must have at least a 5% wage increase
- Each step must either be classified as “advancement”[23] or “lateral advancement”[24]
- Occupational steps with large level or educational differences are not presented
- Only multi-step pathways are presented. In other words, if a target occupation maps to just one other target occupation without further steps, it is not included. Therefore, not ALL target occupations are presented in this pathways map.

Physician roles require an MD or DO, so individuals are specifically trained for these positions with no true alternative pathways available. Similarly, other Health Care roles facing workforce shortages (such as Speech Language Pathologists and Occupational Therapists) also require advanced education, typically a master's degree, to specialize in their fields. While Physical Therapist Assistants can enter the profession with an associate's degree, becoming a fully qualified Physical Therapist necessitates a doctoral degree, which represents a significant

[23] Advancement - Jobs that pay more AND are within the same occupation group as the focus occupation.

[24] Lateral Advancement - Jobs that pay more BUT require transition to a new occupational group as opposed to the focus occupation.

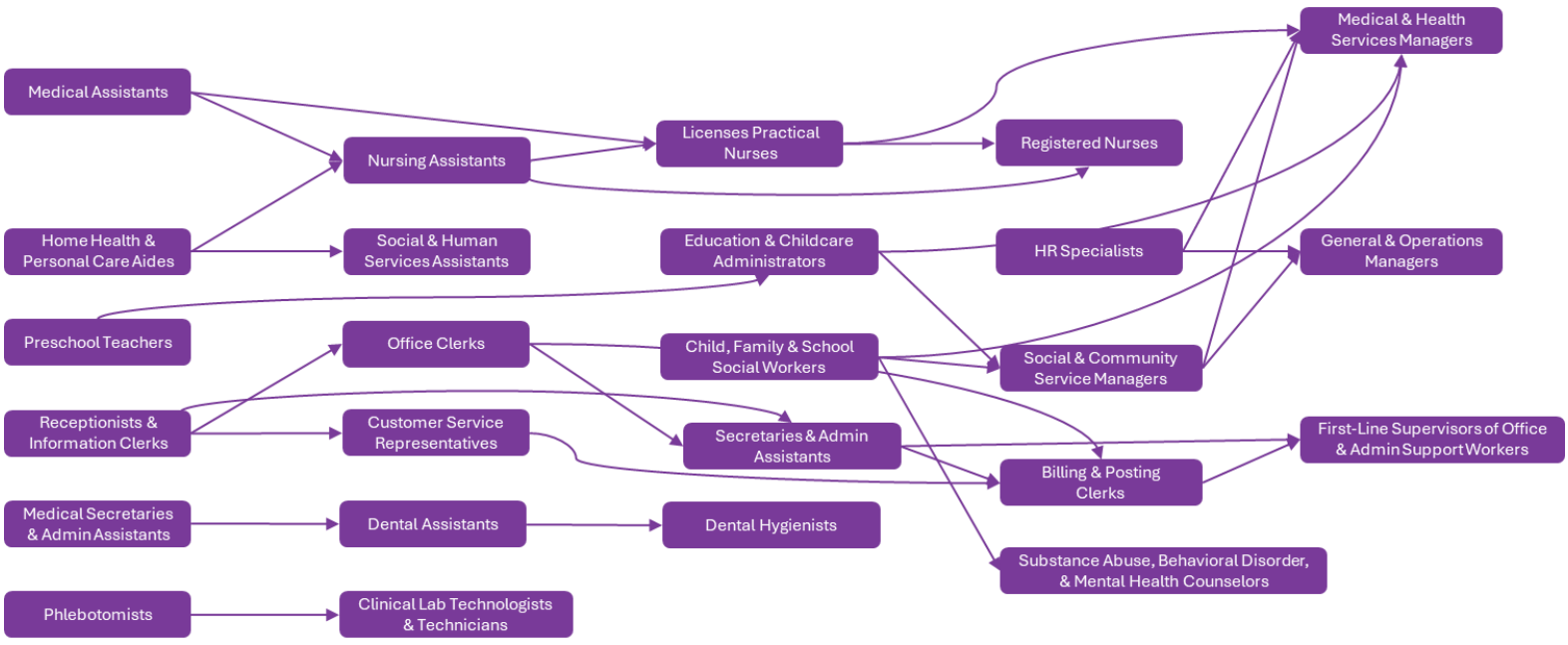
educational leap and could mean leaving the workforce for an extended period which is a transition that may feel impractical for many.

On the other hand, Home Health and Personal Care Aides are the largest occupation by job count, but attracting individuals to these roles is challenging due to their low wages, contributing to supply challenges. Since these positions require minimal formal education (typically just a high school diploma, short-term training, and no prior experience), the usual educational pipeline is not as relevant. There are few clear feeder occupations, as candidates can be hired with little-to-no experience, making the need for specialized education moot.

However, this occupation can serve as a steppingstone in the Health Care sector. Home Health Aides can advance to Nursing Assistants, then to Licensed Practical Nurses (LPNs) (which also experience a pipeline gap), and eventually to Registered Nurses (RNs). Though each of these transitions may require additional education or certifications, this is a feasible and practical career progression. Highlighting this pathway is crucial when recruiting for these lower-paying roles, as it can help potential employees envision a clearer career trajectory and motivate them to enter the field.

Clear career pathways also exist for administrative roles in healthcare. Positions like Receptionists and Information Clerks can lead to jobs as Office Clerks, Customer Service Representatives, Administrative Assistants, and Billing and Posting Clerks, offering viable pathways for individuals interested in these areas.

Figure 13 - Pathway map of target occupations



Source: Lightcast

As a reminder, more detailed pathway information for each target occupation can be found in the Appendix. The Appendix shows the top 3 feeder occupations and top 3 next step occupations for each target occupation based on similarity scores and wage advancement. It does not necessarily

represent the same pathway options as the figure above which has more criteria. The table demonstrates the wage differential between steps, the type of transition, and even the skills gaps between occupations which, if addressed, would facilitate easier transitions. The table below shows an example of what can be found in the appendix.

Table 36 – Feeder and Next Step Examples for Registered Nurses

Feeder	Characteristics		Target Occupation	Characteristics		Next Step
Licensed Practical and Licensed Vocational Nurses	Transition Type	Lateral Advancement	Registered Nurses $76,591	Transition Type	Lateral Transition	Medical and Health Services Managers
	Skills Gaps	Advanced Cardiovascular Life Support (ACLS) Certification; Intensive Care Unit; Pediatric Advanced Life Support (PALS)		Skills Gaps	Billing; Auditing; Marketing	
	Wage Difference	+$17,993		Wage Difference	+$28,021	
Nursing Assistants	Transition Type	Lateral Advancement		Transition Type	Advancement	Physician Assistants
	Skills Gaps	Advanced Cardiovascular Life Support (ACLS) Certification; Nursing Process; Intensive Care Unit		Skills Gaps	Orthopedics; Primary Care; Electronic Medical Record	
	Wage Difference	+$39,721		Wage Difference	+$35,585	
Health Technologists and Technicians, All Other	Transition Type	Lateral Advancement		Transition Type	Lateral Transition	Industrial-Organizational Psychologists
	Skills Gaps	Nursing Care; Advanced Cardiovascular Life Support (ACLS) Certification; Nursing Process		Skills Gaps	Psychology; Psychiatry; Industrial And Organizational Psychology	
	Wage Difference	+$37,691		Wage Difference	+$37,032	

Source: Lightcast

Improve Alignment

The education pipeline plays a critical role in addressing workforce shortages. When the number of program graduates does not match employer demand, gaps emerge that make hiring more difficult. These shortages are further compounded when student interest does not align with labor market needs, leaving institutions to choose between sustaining enrollment in popular programs or shifting capacity toward high-demand fields.

In some cases, programs produce more graduates than the labor market can absorb. Ideally, institutions respond by adjusting capacity or encouraging students to enter pathways with stronger job prospects. For example, while nursing completions in the region slightly exceed overall demand, there is a shortfall at the bachelor's level. This suggests that BSN production must increase, particularly if graduate retention is low. Turnover, geographic mobility, and program type all affect whether graduates actually enter and remain in the local nursing workforce.

There are also many cases where aligned programs exist but are under-producing relative to labor market demand. These occupations register clear supply gaps despite the presence of

regional training infrastructure. For instance, Home Health and Personal Care Aides show the largest gap in the sector, yet completions from aligned certificate programs remain low. Similar gaps exist for Licensed Practical Nurses, Physical Therapist Assistants, Dental Assistants, and other credentialed occupations.

The table below identifies health care and social assistance occupations where program-level expansion is needed. These are roles for which the region already offers aligned programs, but where completions fall short of projected workforce demand. Addressing these gaps will require efforts to increase enrollment, expand capacity, or improve completion rates within the existing program portfolio.

Table 37 - Supply Gap Occupations with Deficit of Program Completions

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Sub-BA Occupations				
Home Health and Personal Care Aides	51.9999 Health Professions and Related Clinical Sciences, Other 51.3902 Nursing Assistant/Aide and Patient Care Assistant/Aide 19.0799 Human Development, Family Studies, and Related Services, Other 51.2602 Home Health Aide/Home Attendant 51.1199 Health/Medical Preparatory Programs, Other	High school diploma or equivalent	Short-term on-the-job training	High – largest occupation in sector with strong growth. Although low entry barrier in terms of education and training, it is a critical feeder occupation.
Licensed Practical and Licensed Vocation Nurses	51.3901 Licensed Practical/Vocational Nurse Training 51.1199 Health/Medical Preparatory Programs, Other 51.3999 Practical Nursing, Vocational Nursing and Nursing Assistants, Other (ABSENT)	Postsecondary nondegree award	None	High – 8th largest occupation that serves both as next step and feeder for other target occupations.
Childcare Workers	13.1210 Early Childhood Education and Teaching. 19.0708 Child Care and Support Services Management. 13.1299 Teacher Education and Professional Development, Specific Levels and Methods, Other. 19.0706 Child Development. 19.0709 Child Care Provider/Assistant.	High school diploma or equivalent	Short-term on-the-job training	Medium – Aligned programs produce many graduates, but poor job quality limits retention in the occupation. Expansion should be paired with wage and workplace interventions.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Dental Assistants	51.0601 Dental Assisting/Assistant. 51.0602 Dental Hygiene/Hygienist. 51.1199 Health/Medical Preparatory Programs, Other.	Postsecondary nondegree award	None	High – Regional completions fall short of demand despite the presence of active programs. Expansion would relieve staffing shortages in dental care settings.
Nursing Assistants	51.0999 Allied Health Diagnostic, Intervention, and Treatment Professions, Other. 51.2602 Home Health Aide/Home Attendant. 51.3902 Nursing Assistant/Aide and Patient Care Assistant/Aide. 51.9999 Health Professions and Related Clinical Sciences, Other.	Postsecondary nondegree award	None	High – Training programs are present but not producing enough graduates to meet employer demand in hospitals and long-term care facilities.
Physical Therapist Assistants	51.0806 Physical Therapy Assistant. 51.1199 Health/Medical Preparatory Programs, Other.	Associate's degree	none	High – Existing programs meet licensure standards but output remains below demand. Scaling enrollment would address persistent shortages in therapy services.
Dental Hygienists	51.0602 Dental Hygiene/Hygienist.	Associate's degree	None	Medium – Completions are below demand, and the occupation supports preventive oral care. Expansion may be limited by clinical placement availability.
Medical Secretaries and Administrative Assistants	51.0000 Health Services/Allied Health/Health Sciences, General. 51.0705 Medical Office Management/Administration. 51.0707 Health Information/Medical Records Technology/Technician. 51.0710 Medical Office Assistant/Specialist. 51.0713 Medical Insurance Coding Specialist/Coder. 51.0714 Medical Insurance Specialist/Medical Biller. 51.0716 Medical	High school diploma or equivalent	Moderate-term on-the-job training	Medium – Demand is strong and growing. Programs are in place but modest expansion could ease hiring difficulties in outpatient settings.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	Administrative/Executive Assistant and Medical Secretary. 51.9999 Health Professions and Related Clinical Sciences, Other.			
Phlebotomists	51.1009 Phlebotomy Technician/Phlebotomist. 51.9999 Health Professions and Related Clinical Sciences, Other.	Postsecondary nondegree award	None	Medium – Programs exist and offer fast entry into the clinical workforce. Modest enrollment increases could help meet growing procedural demand.
BA and BA+ Occupations				
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	42.0101 Psychology, General. 42.2803 Counseling Psychology. 44.0000 Human Services, General. 44.0701 Social Work. 51.1508 Mental Health Counseling/Counselor.	Master's degree	None	High – BA-level output is strong, but completions at the master's level remain too low. Graduate program expansion is needed to meet credentialing requirements.
Physical Therapists	51.2308 Physical Therapy/Therapist.	Doctoral or professional degree	None	High – Doctoral-level programs are present but under-producing. Regional demand continues to exceed supply.
Healthcare Social Workers	42.0101 Psychology, General. 44.0000 Human Services, General. 44.0701 Social Work. 51.0001 Health and Wellness, General. 51.1504 Community Health Services/Liaison/Counseling. 51.2211 Health Services Administration. 51.2299 Public Health, Other.	Master's degree	Internship/residency	High – Master's-level programs are in place but output is insufficient. Expansion would support behavioral health, discharge planning, and case management roles.
General and Operations Managers	44.0401 Public Administration 52.0101 Business/Commerce, General 52.0201 Business Administration and Management, General	Bachelor's degree	None	Medium – Business and leadership programs exist, but few graduates specialize in health care operations. Expansion should focus on targeted

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	52.0205 Operations Management and Supervision 52.0213 Organizational Leadership 52.0299 Business Administration, Management and Operations, Other 52.0305 Accounting and Business/Management 52.0701 Entrepreneurship/Entrepreneurial Studies 52.0801 Finance, General 52.1101 International Business/Trade/Commerce			tracks or certifications.
Nurse Practitioners	51.3801 Registered Nursing/Registered Nurse. 51.3802 Nursing Administration. 51.3805 Family Practice Nurse/Nursing. 51.3808 Nursing Science. 51.3810 Psychiatric/Mental Health Nurse/Nursing. 51.3818 Nursing Practice. 51.3820 Clinical Nurse Leader. 51.3899 Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing, Other.	Master's degree	None	High – Advanced nursing programs are operational but not graduating enough clinicians. Expansion is constrained by faculty availability and preceptor capacity.
Physicians, All Other	31.0501 Sports, Kinesiology, and Physical Education/Fitness, General. 31.0599 Sports, Kinesiology, and Physical Education/Fitness, Other. 51.1102 Pre-Medicine/Pre-Medical Studies.	Doctoral or professional degree	Internship/residency	Medium – Pipeline support exists at the pre-med level. Medical school expansion is not regionally controlled, but strengthening pre-health advising and partnerships may improve graduate retention.
Marriage and Family Therapists	19.0701 Human Development and Family Studies, General. 19.0799 Human Development, Family Studies, and Related Services, Other. 42.0101 Psychology, General. 44.0000 Human Services, General.	Master's degree	Internship/residency	Medium – Relevant graduate programs exist but produce few completions. Modest expansion could help meet behavioral health system needs.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	44.0701 Social Work. 51.1505 Marriage and Family Therapy/Counseling.			
Registered Nurses	51.1199 Health/Medical Preparatory Programs, Other. 51.3801 Registered Nursing/Registered Nurse. 51.3802 Nursing Administration. 51.3805 Family Practice Nurse/Nursing. 51.3808 Nursing Science. 51.3810 Psychiatric/Mental Health Nurse/Nursing. 51.3818 Nursing Practice. 51.3820 Clinical Nurse Leader. 51.3899 Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing, Other.	Bachelor's degree	None	High – Despite a net surplus, bachelor's-level RN completions fall short of demand. Expansion is needed due to local turnover and out-migration.

Source: Lightcast

There are also occupations experiencing workforce shortages for which no aligned education programs currently exist in the region. In these cases, stakeholders in economic development, workforce development, and higher education must work together to establish new program offerings that address unmet labor market needs. The absence of such programs limits the region's ability to produce credentialed talent locally and increases reliance on external recruitment.

The most critical absence is the lack of an education pipeline for Occupational Therapists. This role requires a master's degree and is not easily addressed through incremental pathway development, meaning the region must import nearly all of its occupational therapy workforce. Similarly, while Speech-Language Pathologists typically require a master's degree, the only available program in the region operates at the bachelor's level and is not specifically aligned with licensure requirements.

Several other high-skill occupations—including Internal Medicine Physicians, Anesthesiologists, Pediatricians, and Oral and Maxillofacial Surgeons—require residency or advanced fellowship training. These specialties are not typically addressed through regional academic expansion but may benefit from future graduate medical education partnerships. The table below highlights high-need occupations where program creation, rather than expansion, is needed to meet regional demand.

Table 38 - Supply Gap Occupations with Missing Programs in Labor Shed

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
Nuclear Medicine Technologists	51.0905 Nuclear Medical Technology/Technologist	Associate's degree	None	Medium - volume of new openings is low, with only 16 employed in the county.
Occupational Therapists	51.1107 Pre-Occupational Therapy Studies 51.2306 Occupational Therapy/Therapist.	Master's degree	None	Medium – volume of new openings is still on the lower side but it only requires a master's degree.
Speech-Language Pathologists	51.0201 Communication Sciences and Disorders, General. 51.0203 Speech-Language Pathology/Pathologist. 51.0204 Audiology/Audiologist and Speech-Language Pathology/Pathologist. 51.0299 Communication Disorders Sciences and Services, Other.	Master's degree	None	High – occupation requires a specialized master's degree that is not offered in the region. Demand is moderate, and the role cannot be filled through other credential pathways.
Dentists, General	51.0502 Advanced General Dentistry 60.0102 Dental Public Health Residency Program 51.0401 Dentistry 60.0106 Pediatric Dentistry Residency Program 51.0509 Pediatric Dentistry/Pedodontics	Doctoral or professional degree	None	Low – volume of positions is very low to spin up a medical/dental school and is probably adequately served by external recruitment.
General Internal Medicine Physicians	61.0801 Internal Medicine Residency Program 61.0899 Internal Medicine Residency/Fellowship Programs, Other 61.0108 Internal Medicine/Anesthesiology Combined Specialty Program 61.0109 Internal Medicine/Dermatology Combined Specialty Program 61.0111 Internal Medicine/Emergency Medicine/Critical Care Medicine Combined Specialty Program 61.0112 Internal Medicine/Family Medicine Combined Specialty Program	Doctoral or professional degree	Internship/residency	Low – volume of positions is very low to spin up a medical/dental school and is probably adequately served by external recruitment.

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
	61.0113 Internal Medicine/Medical Genetics and Genomics Combined Specialty Program 61.0114 Internal Medicine/Neurology Combined Specialty Program 61.0115 Internal Medicine/Pediatrics Combined Specialty Program 61.0116 Internal Medicine/Preventive Medicine Combined Specialty Program 61.0117 Internal Medicine/Psychiatry Combined Specialty Program			
Anesthesiologists	61.0401 Anesthesiology Residency Program. 61.0499 Anesthesiology Residency/Fellowship Programs, Other. 61.0108 Internal Medicine/Anesthesiology Combined Specialty Program 61.0119 Pediatrics/Anesthesiology Combined Specialty Program 61.0103 Emergency Medicine/Anesthesiology Combined Specialty Program.	Doctoral or professional degree	Internship/residency	Low – volume of positions is very low to spin up a medical/dental school and is probably adequately served by external recruitment.
Pediatricians	61.1902 Adolescent Medicine Fellowship Program 61.1903 Child Abuse Pediatrics Fellowship Program 61.1904 Developmental-Behavioral Pediatrics Fellowship Program 61.0115 Internal Medicine/Pediatrics Combined Specialty Program 61.1905 Neonatal-Perinatal Medicine Fellowship Program 61.1906 Pediatric Cardiology Fellowship Program 61.1907 Pediatric Critical Care Medicine Fellowship Program 61.1908 Pediatric Emergency Medicine Fellowship Program 61.1909 Pediatric Endocrinology Fellowship Program 61.191 Pediatric Gastroenterology Fellowship Program	Doctoral or professional degree	Internship/residency	Low – volume of positions is very low to spin up a medical/dental school and is probably adequately served by external recruitment.

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
	61.1911 Pediatric Hematology-Oncology Fellowship Program 61.1912 Pediatric Infectious Diseases Fellowship Program 61.1913 Pediatric Nephrology Fellowship Program 61.1814 Pediatric Pathology Fellowship Program 61.1914 Pediatric Pulmonology Fellowship Program 61.2609 Pediatric Radiology Fellowship Program 61.2003 Pediatric Rehabilitation Medicine Fellowship Program 61.1915 Pediatric Rheumatology Fellowship Program 61.1917 Pediatric Transplant Hepatology Fellowship Program 61.2802 Pediatric Urology Fellowship Program 61.1901 Pediatrics Residency Program 61.1999 Pediatrics Residency/Fellowship Programs, Other 61.0119 Pediatrics/Anesthesiology Combined Specialty Program 61.012 Pediatrics/Emergency Medicine Combined Specialty Program 61.0121 Pediatrics/Medical Genetics and Genomics Combined Specialty Program 61.0122 Pediatrics/Physical Medicine & Rehabilitation Combined Specialty Program 61.0123 Pediatrics/Psychology/Child-Adolescent Psychology Combined Specialty Program			
Oral and Maxillofacial Surgeons	60.0101 Oral and Maxillofacial Surgery Residency Program 51.0507 Oral/Maxillofacial Surgery	Doctoral or professional degree	Internship/residency	Low – volume of positions is very low to spin up a medical/dental school and is probably adequately served by external recruitment.

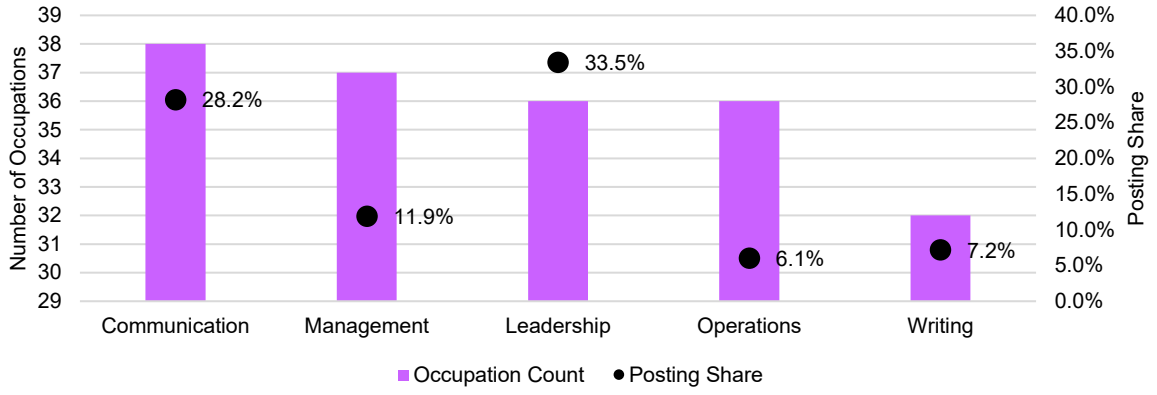
Source: Lightcast

Engage the Unemployed, Underemployed, or Disengaged

As of October 2024, people in Health Care practitioner, technical, and support occupations made up 5% of unemployed persons (470) despite these occupations making up 10% of employment in Spartanburg County. This is poor news for employers, as it means there is an undersized percentage of unemployed with Health Care experience in Spartanburg. The same percentage breakdown occurs across the two-MSA region.

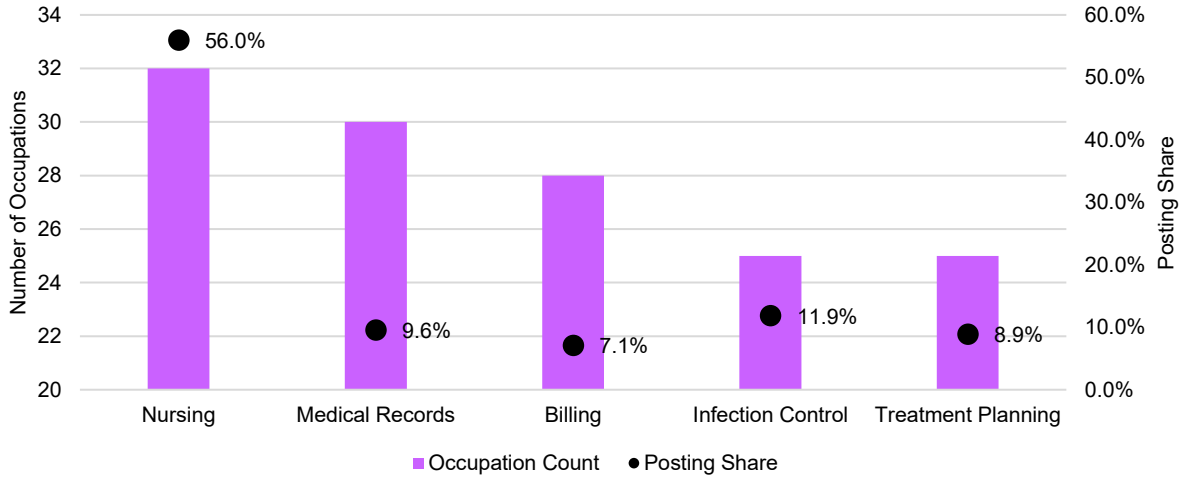
One way to facilitate the disengaged and unemployed populations find employment is to address critical skills which are common across occupations in a sector. By embedding these skills within job training for the unemployed, it can increase their success rates in finding – and keeping – a job. Cross-cutting skills in the Health Care and Social Assistance sector are presented below both in terms of the number of occupations which feature these skills in job postings as well as the share of job postings they are found in:

Figure 14 - Top baseline/common skills across Health Care & Social Assistance occupations



Source: Lightcast

Figure 15 - Top specialized skills across Health Care & Social Assistance occupations



Source: Lightcast

Hospitality

In 2024, Hospitality was the fourth largest sector in Spartanburg County, employing 13,587 individuals, representing 6% growth with a gain of 392 jobs since 2022. With an employment concentration of just 0.94, the sector is nearly on-par with the national average.

Occupations

Employment & Job Characteristics

Using the methodology described in the Target Occupations section, Lightcast identified 23 occupations accounting for 94.7% of total Hospitality employment. The largest occupation category is Fast Food and Counter Workers, which comprises over 3,500 jobs (or 27.0% of the entire industry's workforce) with an increase of 367 jobs since 2022. Employment in this sector is top heavy, meaning only three occupations (Fast Food and Counter Workers, Waiters and Waitresses, and Restaurant Cooks) account for roughly 50% of total sector employment. The sector's low-paying nature means there are generally less barriers – and less pathway opportunities – for employment.

The fastest-growing occupation in the sector is Dining Room and Cafeteria Attendants and Bartender Helpers, which saw a growth of 27.1% in just two years. Other rapidly expanding roles include Training and Development Specialists (23.5%), Bartenders (18.6%), and Chefs and Head Cooks (13.3%). However, 10 of the 23 occupations experienced a job decline. Some of the most rapidly declining occupations have been Cooks, Institution and Cafeteria (-16.3%) and Hotel, Motel, and Resort Desk Clerks (-8.6%).

Table 39 – Hospitality Target Occupations

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Fast Food and Counter Workers	3,227	3,594	27.0%	367	11.4%
Waiters and Waitresses	1,811	1,790	13.4%	-21	-1.2%
Cooks, Restaurant	1,150	1,239	9.3%	89	7.7%
Cooks, Fast Food	1,206	1,133	8.5%	-73	-6.1%
First-Line Supervisors of Food Preparation and Serving Workers	985	934	7.0%	-52	-5.2%
Food Preparation Workers	614	585	4.4%	-29	-4.8%
Cashiers	414	443	3.3%	29	7.1%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	382	399	3.0%	18	4.6%
Bartenders	330	391	2.9%	61	18.6%
Driver/Sales Workers	285	289	2.2%	3	1.1%
Dishwashers	287	271	2.0%	-15	-5.3%
Food Service Managers	269	269	2.0%	1	0.3%

Occupation	2022 Jobs	2024 Jobs	% of Industry Jobs	Job Growth, 2022-2024	% Job Growth, 2022-2024
Maids and Housekeeping Cleaners	244	229	1.7%	-15	-6.2%
Dining Room and Cafeteria Attendants and Bartender Helpers	154	196	1.5%	42	27.1%
General and Operations Managers	164	172	1.3%	8	4.8%
Hotel, Motel, and Resort Desk Clerks	164	150	1.1%	-14	-8.6%
Cooks, Institution and Cafeteria	161	135	1.0%	-26	-16.3%
Maintenance and Repair Workers, General	142	132	1.0%	-9	-6.5%
Chefs and Head Cooks	106	120	0.9%	14	13.3%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	86	89	0.7%	3	4.0%
Training and Development Specialists	26	31	0.2%	6	23.5%
Accountants and Auditors	11	12	0.1%	1	4.8%
Meeting, Convention, and Event Planners	11	11	0.1%	-1	-7.1%

Source: Lightcast

Between the 23 target occupations in Spartanburg County's Hospitality sector, only four require a bachelor's degree. Compared to the other core sectors, Hospitality has the lowest education requirements. Among the top four highest employment occupations, none require a formal education credential.

Nearly all the occupations that do not require post-secondary degrees or credentials still typically require some level of training, typically short-term. Workforce development systems, such as community colleges, may be called upon to provide upskilling opportunities through short-term certificates and training programs, rather than fully-fledged associate's degrees. For instance, while Restaurant Cooks and Maintenance Repair Workers typically only require a high school diploma (or none at all), these positions also require moderate-term training. Some of this training could be replaced, in part, by short-term programs to pre-qualify talent for the sector.

Some occupations require experience in lieu of training or education. These occupations are First-Line Supervisors of Food Preparation and Serving Workers and Chefs/Head Cooks. Two of the bachelor's level occupations also require experience: Training and Development Specialists and General and Operations Managers.

Table 40 – Hospitality Target Occupation Characteristics

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
General and Operations Managers	$44.47	Bachelor's degree	5 years or more	None
Accountants and Auditors	$32.86	Bachelor's degree	None	None
Training and Development Specialists	$29.75	Bachelor's degree	Less than 5 years	None
Meeting, Convention, and Event Planners	$21.41	Bachelor's degree	None	None
Food Service Managers	$26.06	High school diploma or equivalent	Less than 5 years	Short-term on-the-job training
Chefs and Head Cooks	$22.63	High school diploma or equivalent	5 years or more	None
Maintenance and Repair Workers, General	$22.18	High school diploma or equivalent	None	Moderate-term on-the-job training
First-Line Supervisors of Food Preparation and Serving Workers	$17.90	High school diploma or equivalent	Less than 5 years	None

Occupation	Median Hourly Wage	Typical Education Level	Typical Experience Level	Typical Training Level
Hotel, Motel, and Resort Desk Clerks	$13.71	High school diploma or equivalent	None	Short-term on-the-job training
Driver/Sales Workers	$13.31	High school diploma or equivalent	None	Short-term on-the-job training
Cooks, Restaurant	$14.99	No formal educational credential	Less than 5 years	Moderate-term on-the-job training
Maids and Housekeeping Cleaners	$14.18	No formal educational credential	None	Short-term on-the-job training
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	$13.98	No formal educational credential	None	Short-term on-the-job training
Food Preparation Workers	$13.90	No formal educational credential	None	Short-term on-the-job training
Dishwashers	$13.84	No formal educational credential	None	Short-term on-the-job training
Cooks, Institution and Cafeteria	$13.73	No formal educational credential	None	Short-term on-the-job training
Cashiers	$13.70	No formal educational credential	None	Short-term on-the-job training
Cooks, Fast Food	$12.98	No formal educational credential	None	Short-term on-the-job training
Dining Room and Cafeteria Attendants and Bartender Helpers	$12.94	No formal educational credential	None	Short-term on-the-job training
Fast Food and Counter Workers	$12.93	No formal educational credential	None	Short-term on-the-job training
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	$11.80	No formal educational credential	None	Short-term on-the-job training
Waiters and Waitresses	$9.07	No formal educational credential	None	Short-term on-the-job training
Bartenders	$8.99	No formal educational credential	None	Short-term on-the-job training

Source: Lightcast

The table below demonstrates the top common and specialized skills relevant to the occupations in the Hospitality sector, extracted from regional job postings data. Common skills are defined as “skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. “Communication” or “Microsoft Excel”). Also known as soft skills, human skills, and competencies.” Specialized skills are “skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. “NumPy” or “Hotel Management”). Also known as technical skills or hard skills.”

Communication, cleanliness, customer service, and sanitation are frequent common skills listed in job postings. Specialized skills vary between the Food Service and the Accommodation sides of the sector. On the Food Service side, Food Safety, Food Preparation, and Restaurant Operation are frequently listed skills.

Table 41 – Hospitality Target Occupation Skills Characteristics

Occupation	Top Common Skills	Top Specialized Skills
Accountants and Auditors	• Management • Detail Oriented • Microsoft Excel	• Accounting • Auditing • Reconciliation
Bartenders	• Customer Service • Communication • Sanitation	• Restaurant Operation • Bartending • Food Preparation
Cashiers	• Customer Service • Order Entry	• Restaurant Operation • Cash Register • Cash Handling

Occupation	Top Common Skills	Top Specialized Skills
	• Greeting Customers	
Chefs and Head Cooks	• Operations • Communication • Sanitation	• Food Preparation • Food Safety And Sanitation • Restaurant Operation
Cooks, Fast Food	• Sanitation • Cleanliness • Communication	• Restaurant Operation • Cooking • Food Safety And Sanitation
Cooks, Institution and Cafeteria	• None Listed	• None Listed
Cooks, Restaurant	• Sanitation • Customer Service • Positivity	• Cooking • Food Preparation • Food Safety And Sanitation
Dining Room and Cafeteria Attendants and Bartender Helpers	• Sanitation • Customer Service • Positivity	• Food Services • Food Safety And Sanitation • Cooking
Dishwashers	• Cleanliness • Sanitation • Customer Service	• Restaurant Operation • Food Safety And Sanitation • Food Preparation
Driver/Sales Workers	• Map Reading • Good Driving Record • Customer Service	• Midrange Computer
Fast Food and Counter Workers	• Communication • Customer Service • Interpersonal Communications	• Restaurant Operation • Cash Handling • Cash Register
First-Line Supervisors of Food Preparation and Serving Workers	• Customer Service • Communication • Management	• Restaurant Operation • Cash Handling • Food Safety And Sanitation
Food Preparation Workers	• Customer Service • Cleanliness • Enthusiasm	• Restaurant Operation • Grilling • Food Preparation
Food Service Managers	• Management • Customer Service • Sales	• Restaurant Operation • Restaurant Management
General and Operations Managers	• Operations • Leadership • Sales	• Restaurant Operation • Restaurant Management • Food Services
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	• Customer Service • Teamwork • Communication	• Restaurant Operation • Seating Guests • Food Preparation
Hotel, Motel, and Resort Desk Clerks	• Customer Service • Communication • Reservations	• Auditing • Customer Complaint Resolution • Housekeeping
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	• Customer Service • Cleanliness • Positivity	• Food Safety And Sanitation • Safety Procedures • Power Tool Operation
Maids and Housekeeping Cleaners	• Cleanliness • Customer Service • Communication	• Housekeeping • Linens • Furniture Cleaning
Maintenance and Repair Workers, General	• Management • Cleanliness • Customer Service	• HVAC • Plumbing • Preventive Maintenance

Occupation	Top Common Skills	Top Specialized Skills
Meeting, Convention, and Event Planners	• Sales • Reservations • Customer Service	• Banquet Event Orders • Accounting • Front Office
Training and Development Specialists	• Operations • Communication • Leadership	• Learning Management Systems
Waiters and Waitresses	• Communication • Customer Service • Management	• Restaurant Operation • Cash Register • Health And Safety Standards

Source: Lightcast

Occupation Demographics

The table below depicts the share of occupational employment for each race or ethnicity. The highlighted colors indicate that the race or ethnicity is overrepresented based on its share of Spartanburg's population: overrepresented groups are 1.25x more concentrated or 5 percentage points more densely represented in the occupation (whichever is less) than in Spartanburg overall.[25]

We see overrepresentation of Black and Two or More Races populations across the most Hospitality target occupations. The Black population is overrepresented in fifteen of the twenty-three target occupations. In fact, Black workers represent 27% of the total Health Care and Social Assistance workforce while accounting for just 20.1% of the population.

Hispanic and White workers are less frequently overrepresented across the target occupations compared to other racial or ethnic groups. In fact, White workers are only overrepresented in two of the target occupations while Hispanic workers are overrepresented across five of the occupations.

Table 42 – Hospitality Target Occupation Demographic Representation – Race/Ethnicity

Occupation Name	White (74.2%)	Black (20.1%)	Hispanic (All Races) (9.9%)	Asian (2.7%)	Two or More Races (2.5%)
Accountants and Auditors	78.40%	14.20%	3.60%	5.20%	2.10%
Bartenders	85.10%	10.20%	5.70%	1.50%	2.80%
Cashiers	62.70%	28.80%	9.30%	4.90%	2.80%
Chefs and Head Cooks	55.30%	26.40%	9.30%	12.90%	4.80%
Cooks, Fast Food	59.50%	32.60%	15.20%	3.80%	3.10%
Cooks, Institution and Cafeteria	50.60%	43.40%	7.30%	1.60%	3.90%
Cooks, Restaurant	55.70%	36.40%	13.40%	3.50%	3.30%
Dining Room and Cafeteria Attendants and Bartender Helpers	65.10%	26.70%	13.60%	3.70%	3.70%
Dishwashers	57.30%	36.20%	13.10%	2.00%	3.30%
Driver/Sales Workers	69.20%	26.00%	7.50%	1.70%	2.60%
Fast Food and Counter Workers	66.50%	26.40%	8.00%	3.00%	3.30%
First-Line Supervisors of Food Preparation and Serving Workers	64.90%	29.30%	8.20%	2.40%	2.60%
Food Preparation Workers	65.60%	26.40%	10.00%	3.80%	3.30%
Food Service Managers	69.80%	17.20%	8.60%	7.50%	5.10%
General and Operations Managers	85.20%	10.50%	4.30%	2.40%	1.60%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	71.60%	21.20%	8.10%	2.60%	3.90%
Hotel, Motel, and Resort Desk Clerks	57.00%	28.30%	4.50%	11.70%	1.80%

[25] For instance, the Hispanic population accounts for 20.1% of Spartanburg County population. For an occupation to have an overrepresentation of Hispanic workers relative to the overall population, the Hispanic worker share in the occupation would need to reach the lesser of 1.25x 9.9% = 12.4% or 5% + 9.9% = 14.9%. The lesser of these options is 12.4%.

Janitors and Cleaners, Except Maids and Housekeeping Cleaners	59.90%	33.70%	11.80%	1.30%	4.30%
Maids and Housekeeping Cleaners	46.90%	37.40%	20.60%	3.10%	11.00%
Maintenance and Repair Workers, General	75.10%	19.80%	7.20%	1.80%	2.70%
Meeting, Convention, and Event Planners	78.50%	15.10%	5.10%	1.70%	4.50%
Training and Development Specialists	68.80%	26.30%	4.90%	1.90%	2.50%
Waiters and Waitresses	73.60%	18.40%	8.60%	4.10%	3.20%

Source: Lightcast

Regarding gender, women are overrepresented in 13 of the 23 target occupations in Hospitality:

- Maids and Housekeeping Cleaners – 91.9%
- Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop – 86.5%
- Meeting, Convention, and Event Planners – 81.2%
- Waiters and Waitresses – 75.4%
- Cooks, Institution and Cafeteria – 75.1%
- Hotel, Motel, and Resort Desk Clerks – 72.7%
- Cashiers – 69.5%
- Fast Food and Counter Workers – 68.9%
- Accountants and Auditors – 64.6%
- Food Preparation Workers – 64.2%
- Training and Development Specialists – 64.1%
- First-Line Supervisors of Food Preparation and Serving Workers – 63.4%
- Bartenders – 62.0%

Considering age demographics, ten target occupations are exposed to retirement risks. Lightcast examined the share of occupational employment of 55–64-year-olds, or those nearing retirement age, to determine this risk. Of the 23 target occupations, 11 have a retirement risk compared to the area population, i.e. 55–64-year-olds representing 12.3% (the county's population share):

- Maintenance and Repair Workers, General – 25.1%
- Janitors and Cleaners, Except Maids and Housekeeping Cleaners – 20.9%
- Accountants and Auditors – 20.7%
- General and Operations Managers – 19.8%
- Driver/Sales Workers – 18.8%
- Maids and Housekeeping Cleaners – 18.6%
- Training and Development Specialists – 18.4%
- Cooks, Institution and Cafeteria – 18.1%
- Chefs and Head Cooks – 15.2%
- Food Service Managers – 13.8%
- Meeting, Convention, and Event Planners – 13.2%

The largest occupations by employment do not face a heightened retirement risk, but as young people generally account for a smaller share of the population, the pipeline of talent may be constrained in the future.

Supply and Demand

Demand Met from the Regional Education System

The regional education system conferred 5,292 workforce-aligned awards for occupations in the Hospitality sector, compared to approximately 7,010 entry-level openings. While there is a sizable

gap at the sub-bachelor's level—2,027 completions versus 4,081 openings—many of these openings are in occupations that typically do not require formal postsecondary education, such as Waiters and Waitresses, Janitors and Cleaners, and Cooks. These gaps do not indicate true labor shortages or misalignment in the education pipeline, as these roles are typically filled by workers without formal credentials and therefore fall outside the scope of postsecondary education programs.

Table 43 – Hospitality Supply & Demand by Award Level

Award Level	Demand (Entry-Level Openings)	Supply (Aligned Completions)
Sub-BA	4,081	2,027
BA	2,301	2,757
BA+	628	508
Grand Total	**7,010**	**5,292**

Source: Lightcast

Although bachelor's and advanced degree completions modestly exceed local demand, this does not necessarily indicate an oversupply. Graduates at these levels are more geographically mobile and are often recruited by employers outside the immediate region, so local demand does not reflect the full market for their skills. As a result, maintaining or growing the pool of credentialed graduates remains important, and local employers may still face competition to attract and retain this talent. These dynamics highlight the need for ongoing talent retention and engagement strategies within the region.

Because of these dynamics, the supply-demand model applies differentiated thresholds by education level. Gaps at the sub-bachelor's level must exceed 100 completions to be flagged, based on the higher likelihood that these graduates stay local. For bachelor's and advanced degree roles, a lower threshold of 50 completions is used to capture deficits that may still present strategic risks, particularly for roles where local competition overlaps with strong national demand.

The supply-demand model results, shown in Table 44, suggest that employers in the Hospitality sector are already experiencing entry-level shortages across multiple roles. The largest numerical gaps appear at the sub-bachelor's level in frontline occupations that support day-to-day service delivery. These include Waiters and Waitresses (–478), Janitors and Cleaners (–468), and Restaurant Cooks (–326), among others. However, these roles typically require no formal postsecondary education and are usually filled through non-credentialed labor pools, and are not recommended targets for program development.

In contrast, a set of occupations show meaningful supply gaps and require some form of formal training or credential. These include Food Service Managers (–37) and Chefs and Head Cooks (–18). While these occupations may not always require degrees for entry, they benefit from structured training that builds culinary, managerial, or operational competencies. Where aligned programs already exist, regional institutions may consider increasing enrollment, expanding capacity, or improving alignment with employer needs.

At the bachelor's level, employers may face difficulty filling roles such as Training and Development Specialists (–60), Business Operations Specialists (–84), and General and

Operations Managers (–39). These occupations support core functions in management, workforce development, and hospitality operations. Strategic expansion of relevant bachelor's-level programs in business, hospitality, or human resources may help address these gaps.

Table 44 - Hospitality-Aligned Occupations with Over/Under-supply by Education Level

Occupation Name	Over (+) or Under (-) Supply			Demand (Entry-Level Openings)			Supply (Aligned Completions)		
	Sub-BA	BA	BA+	Sub-BA	BA	BA+	Sub-BA	BA	BA+
*Waiters and Waitresses**	-478			494			16		
*Janitors and Cleaners, Except Maids and Housekeeping Cleaners**	-468			477			9		
*Cooks, Restaurant**	-326			338			12		
*First-Line Supervisors of Food Preparation and Serving Workers**	-289			302			13		
*Bartenders**	-271			281			10		
*Food Preparation Workers**	-267			275			8		
Accountants and Auditors	0	-233	20	0	332	166	0	99	186
*Maids and Housekeeping Cleaners**	-188			192			4		
Training and Development Specialists	-78	-60	4	87	107	40	9	47	44
Business Operations Specialists, All Other	0	-84	-43	0	248	62	0	164	19
*Cooks, Institution and Cafeteria**	-109			113			4		
*Dining Room and Cafeteria Attendants and Bartender Helpers**	-89			92			3		
*Hotel, Motel, and Resort Desk Clerks**	-70			100			30		
General and Operations Managers	26	-39	-32	491	587	150	517	548	118
Food Service Managers	-37			68			31		
Meeting, Convention, and Event Planners	-5	-19	-3	14	55	6	9	36	3
Chefs and Head Cooks	-18			19			1		
Dietitians and Nutritionists	0	-2	-5	0	10	14	0	8	9
Entertainment and Recreation Managers, Except Gambling	-2	-3	0	6	13	4	4	10	4
*Driver/Sales Workers**	-5			81			76		
Sales Managers	30	18	-12	66	157	28	96	175	16
Market Research Analysts and Marketing Specialists	0	110	-26	0	323	73	0	433	47
Human Resources Specialists	-14	129	-22	77	265	66	63	394	44
*Maintenance and Repair Workers, General**	493			410			903		
Managers, All Other	111	639	-1	98	204	19	209	843	18

Source: Lightcast

Occupations marked with an asterisk typically require a high school diploma or no formal education. Despite mapping to one or more CIP codes, many of these roles are commonly filled by individuals without postsecondary credentials. As a result, apparent oversupply at the sub-BA level may not reflect true misalignment. Italicized occupations indicate roles that are not strong candidates for expanded education or training programs.

Determining Peer Benchmarks

The Hospitality sector in the Spartanburg MSA boasts 14,859 jobs and an employment base that has grown 4.2% between 2022 and 2024. Despite meaningful growth in the Hospitality sector, the region still has a middling location quotient – 1.0. This location quotient means that this sector is just as well represented in the Spartanburg MSA as in the typical U.S. community. In the Spartanburg MSA, the Hospitality sector comprises 6.7% of all jobs.

In the Hospitality sector, the average earnings per worker are low: $27,732. Given that the cost of living in the Spartanburg MSA is 98.7% of the average U.S. community, average local earnings in this sector increase to a relative purchasing power of $28,097.

Lightcast established parameters to identify peer benchmark regions for the Hospitality sector. The parameters include both region-level parameters and industry-level parameters. The region-level parameters control for the distinguishing characteristics of the Spartanburg MSA, such as the fact that the Spartanburg MSA is part of a larger labor shed that also includes Greenville, SC and Anderson, SC, the overall size of the Spartanburg economy, and the cost of living in Spartanburg. The industry-level parameters control for the performance of the sector in the region, and these metrics include location quotient (LQ), job growth, and earnings per worker. The parameters are summarized below.

Lightcast established the parameters in the table below to identify peer benchmark regions for the hospitality sector.

Table 45 - Parameters for Identifying Benchmark MSAs for the Hospitality Sector

	Metric	Range
Regional Parameters	MSA share of the CSA (i.e., the region's share of the full labor shed)	15% to 50% (Spartanburg MSA is 23.7% of the Greenville-Spartanburg-Anderson, SC CSA)
	Overall size of the economy (measured as job total job count)	Job count between 0.25x and 5x the Spartanburg MSA (Spartanburg MSA has 223,358 jobs, so the range is 55,840 to 1,116,790)
	Manufacturing LQ (applied to all sectors, even non-mfg sectors)	At least 1.20x the U.S. average (Spartanburg MSA has a LQ of 2.93x)
Industry Parameters	LQ of the industry is more concentrated than the U.S. or Spartanburg MSA	At least 1.20x the U.S. average *or* at least 75% of the Spartanburg MSA (Spartanburg MSA has a LQ of 0.96, so the low end is 0.72x)
	Industry job growth within the region (between 2022-2024)	Within +/- 5% of sector growth in the Spartanburg MSA, minimum -0.10% (Spartanburg MSA growth is 6.65%, so the range is 1.65% to 11.65%)
	Cost-of-living-index (COLI) adjusted annual earnings in the sector	Between 75% and 125% of COLI-adjusted earnings (Spartanburg MSA is $54,397, so the range is $21,072 to $35,121)

Source: Lightcast

These ranges produced the benchmark communities in the table below.

Table 46 - Peer Benchmark Communities for the Hospitality Sector

	Regional Parameters			Industry Parameters					
MSA Name	Total Jobs	Share of Labor Shed	COLI	Jobs	Share	LQ	Growth	Avg. Earnings	Avg. Earnings (COLI Adjusted)
Hartford-West Hartford-East Hartford, CT	812,262	46.56%	1.24	46,461	5.72%	0.82	2.52%	$33,853	$27,195
Greensboro-High Point, NC	495,773	48.85%	0.94	35,508	7.16%	1.03	4.51%	$26,038	$27,720
Akron, OH	440,249	18.53%	0.94	30,579	6.95%	1.00	4.72%	$24,983	$26,559
Ogden, UT	390,615	18.69%	1.06	22,057	5.65%	0.81	5.93%	$23,869	$22,501
Winston-Salem, NC	384,236	37.86%	0.96	27,832	7.24%	1.04	6.02%	$25,926	$26,868
York-Hanover, PA	250,845	31.01%	1.02	14,606	5.82%	0.84	1.11%	$24,622	$24,137

South Bend-Mishawaka, IN-MI	184,663	36.83%	0.94	13,499	7.31%	1.05	4.74%	$25,664	$27,211
Oshkosh-Neenah, WI	118,015	41.93%	1.00	7,238	6.13%	0.88	7.37%	$23,193	$23,298
Johnson City, TN	116,310	36.51%	0.92	10,148	8.72%	1.25	5.11%	$24,863	$27,061
Warner Robins, GA	115,131	44.18%	0.95	9,519	8.27%	1.19	3.60%	$22,403	$23,684
Auburn-Opelika, AL	108,124	34.16%	0.93	10,196	9.43%	1.36	7.91%	$24,821	$26,661
Jefferson City, MO	104,973	37.60%	0.93	5,450	5.19%	0.75	1.61%	$24,298	$26,016
Niles, MI	84,694	16.89%	0.93	7,218	8.52%	1.22	8.06%	$26,545	$28,596
Staunton-Stuarts Draft, VA	70,980	44.15%	0.99	4,765	6.71%	0.96	2.34%	$27,142	$27,548
Battle Creek, MI	69,573	26.70%	0.89	4,472	6.43%	0.92	8.58%	$26,472	$29,620
Lima, OH	64,162	46.40%	0.92	5,041	7.86%	1.13	7.79%	$23,895	$26,027

Source: Lightcast

Talent Strategy

Expand Talent Pipeline

One solution is to expand the viable labor pool by using pathways. In other words, by seeking talent outside the same occupation by considering those with relevant experience in different - but *similar* - occupations, employers can tap into larger labor pools of qualified talent.

Lightcast primarily identifies relevant occupations for pathways using its similarity scores. A similarity score is a Lightcast calculation based on how closely aligned the skills are between the two occupations. The higher the score, the more related the two occupations are, making them a better fit for job transitions between the two. Occupation transitions can be chained together, creating multi-step pathways. This helps employers identify skills-similar talent at multiple levels while helping talent visualize career progression opportunities.

For Figure 16, the following criteria were used to identify pathways:

- Only pathways between target occupations are presented
- Occupations must have a minimum similarity score of 0.50
- Each step must have at least a 5% wage increase
- Each step must either be classified as “advancement”[26] or “lateral advancement”[27]
- Occupational steps with large level or educational differences are not presented
- Only multi-step pathways are presented. In other words, if a target occupation maps to just one other target occupation without further steps, it is not included. Therefore, not ALL target occupations are presented in this pathways map.

Because of the lower skill level needed for most Hospitality jobs, feeder occupations are less critical since it is possible to hire candidates without any prior experience. In order to encourage people to enter entry-level roles then, it is important to demonstrate progression opportunities. Most career pathways in Hospitality are relatively short – as in, beyond the person’s entry-level role, the next step is a supervisory position. The silver-lining is that education is not often an impediment to progression.

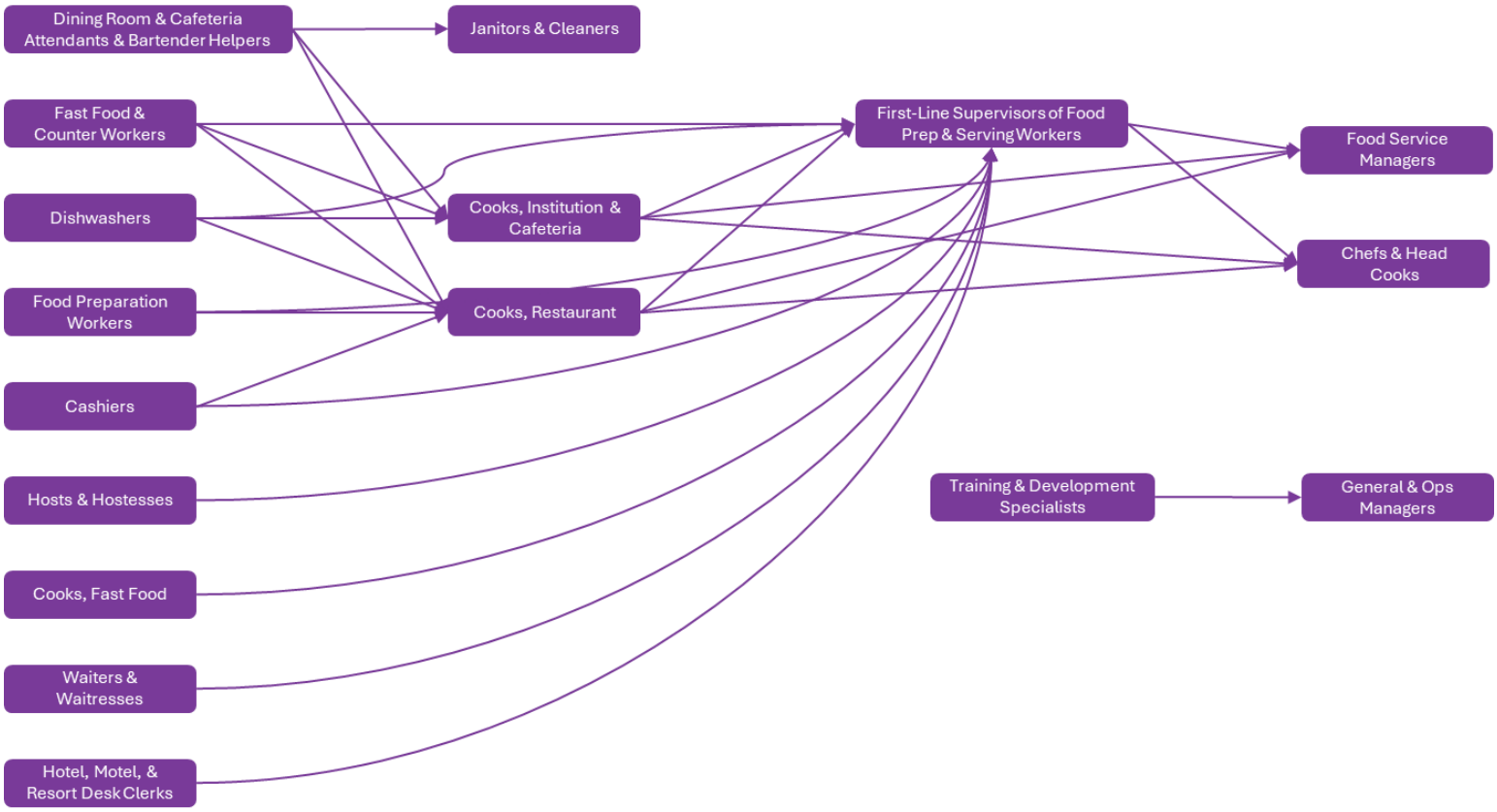
High employment occupations such as Fast-Food Counter Workers and Waiters & Waitresses can progress to First-Line Supervisors of Food Preparation and Serving Workers. Restaurant and

[26] Advancement - Jobs that pay more AND are within the same occupation group as the focus occupation.

[27] Lateral Advancement - Jobs that pay more BUT require transition to a new occupational group as opposed to the focus occupation.

Institutional/Cafeteria Cooks are a solid middle position. Fast-Food Counter Workers, Cashiers, Dishwashers, and Food Preparation Workers can progress to these roles while enjoying wage increases. Furthermore, Cooks are a gatekeeper occupation as they prepare people for Chef or Food Service Manager positions.

Figure 16 - Pathway map of target occupations



Source: Lightcast

Improve Alignment

The education pipeline plays a critical role in addressing workforce shortages. When the number of program graduates does not match employer demand, gaps emerge that make hiring more difficult. These shortages are further compounded when student interest does not align with labor market needs, leaving institutions to choose between sustaining enrollment in popular programs or shifting capacity toward high-demand fields.

In some cases, programs produce more graduates than the labor market can absorb. Ideally, institutions respond by adjusting capacity or encouraging students to enter pathways with stronger job prospects. However, in Hospitality, this is less common due to the limited number of credentialed occupations in the sector and the high rate of informal hiring. Still, roles like Training and Development Specialists or Business Operations Specialists show mismatches between completions and demand that may warrant closer alignment in relevant programs.

There are also many cases where aligned programs exist but are under-producing relative to labor market demand. These occupations register clear supply gaps despite the presence of

regional training infrastructure. For instance, Food Service Managers show a deficit in completions across several related programs, including Restaurant Management and Culinary Arts. Chefs and Head Cooks also face a modest gap, though they represent a low-volume occupation. For First-Line Supervisors of Food Preparation Workers, the gap may be addressed more effectively through structured training or apprenticeships, especially where experience-based promotion is limited. Restaurant Cooks also show a large numerical gap, but this role typically requires only moderate on-the-job training and is not well-aligned to formal education pathways. Again, apprenticeship models may be more appropriate in expanding the supply of job-ready candidates in this area.

The table below identifies Hospitality-aligned occupations where program-level expansion is needed. These are roles for which the region already offers aligned programs, but where completions fall short of projected workforce demand. Addressing these gaps will require efforts to increase enrollment, expand capacity, or improve completion rates within the existing program portfolio.

Table 47 - Supply Gap Occupations with Deficit of Program Completions

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Sub-BA Occupations				
Food Service Managers	52.0905 Restaurant/Food Services Management 12.0503 Culinary Arts/Chef Training 52.0904 Hotel/Motel Administration/Management 12.05 Cooking and Related Culinary Arts, General	High school diploma	Short-term on-the-job training	Medium – can benefit from education but can also be served by promoting experienced industry workers.
Chefs and Head Cooks	12.0503 Culinary Arts/Chef Training 12.05 Cooking and Related Culinary Arts, General	High school diploma	None	Low – can benefit from education but it is a low volume occupation.
BA Occupations				
Accountants and Auditors	52.0201 Business Administration and Management, General. 52.0301 Accounting. 52.0299 Business Administration, Management and Operations, Other. 52.0305 Accounting and Business/Management. 52.0304 Accounting and Finance.	Bachelor's degree	None	High – strong subregional demand and consistent deficits suggest the need for targeted enrollment efforts.
Training and Development	52.1005 Human Resources Development	Bachelor’s degree	None	Low – although a deficit, there are not many jobs for this

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
Specialists	52.1001 Human Resources Management/Personnel Administration, General 52.1006 Executive/Career Coaching 52.1005 Human Resources Development 52.1001 Human Resources Management/Personnel Administration, General			occupation in this sector.
Business Operations Specialists, All Other	24.0101 Liberal Arts and Sciences/Liberal Studies. 24.0102 General Studies. 30.0000 Multi-/Interdisciplinary Studies, General. 30.3301 Sustainability Studies. 52.0101 Business/Commerce, General. 52.0201 Business Administration and Management, General. 52.0205 Operations Management and Supervision. 52.0299 Business Administration, Management and Operations, Other. 52.0305 Accounting and Business/Management. 52.0701 Entrepreneurship/Entrepreneurial Studies. 52.1101 International Business/Trade/Commerce.	Bachelor's degree	None	Low – completions are below demand, but the occupation is generalist in nature and served by a broad set of business and interdisciplinary programs. Sector-specific alignment is limited.
General and Operations Managers	52.0101 Business/Commerce, General. 52.0201 Business Administration and Management, General. 52.0205 Operations Management and Supervision. 52.0213 Organizational Leadership. 52.0299 Business Administration, Management and Operations, Other. 52.0305 Accounting and Business/Management. 52.0701 Entrepreneurship/Entrepreneurial	Bachelor’s degree	None	Medium – completions fall short at both BA and BA+ levels. Although the occupation is cross-sectoral, management roles in hospitality benefit from targeted business and operations training. Expansion may improve talent pipeline depth.

Occupation	Existing Programs – Deficit Completions	Typical Education Level	Typical Training	Deficit Program Importance
	Studies. 52.0801 Finance, General. 52.1101 International Business/Trade/Commerce.			

Source: Lightcast

For some occupations, there are no education programs (CIP codes) mapped to them due to the very low education and training requirements. For this reason, the supply gap estimation is not applicable – as although no completions exist connected to these occupations, it is not to be expected. These occupations include:

- Fast Food & Counter Workers
- Cashiers
- Dishwashers
- Hosts & Hostesses, Restaurant, Lounge, and Coffee Shop
- Cooks, Fast Food

Other occupations have relevant programs, but which are absent in the region: Bartenders and Waiters & Waitresses. However, it is quite unlikely that someone would enter a program for a waiter/waitressing position given the low pay and low education and training requirements. For Bartenders, it is possible for people to seek education for higher-end bartending positions where the theory of mixology could be learned. However, this can also be achieved through on-the-job training and mentorship.

Table 48 - Supply Gap Occupations with Missing Programs in Labor Shed

Occupation	Missing Programs	Typical Education Level	Typical Training	Absent Program Importance
Bartenders	12.0502 Bartending/Bartender	No formal education credential	Short-term on-the-job training	Low
Waiters and Waitresses	12.0507 Food Service, Waiter/Waitress, and Dining Room Management/Manager	No formal education credential	Short-term on-the-job training	Low

Source: Lightcast

People rarely jump into management positions straight out of education programs. Furthermore, there are many programs in the region which would impart management skills unto individuals. For this reason, hospitality management is not likely to experience as critical of a talent shortage as front-line roles. That said, if employers find that there is not enough talent with industry-specific

management knowledge and skills, the following programs are notably absent from completions in the region and could help with developing qualified talent:

- 52.0909 Hotel, Motel, and Restaurant Management.
- 52.0901 Hospitality Administration/Management, General
- 19.0505 Foodservice Systems Administration/Management

Apprenticeships are also an excellent way of addressing talent or skills shortages as it applies industry specific knowledge gained through work-based learning, while tying directly to the job position. For instance, there are a couple of Hotel and Restaurant Cook apprenticeships registered with the State of South Carolina.[28] Employers could explore the establishment of similar apprenticeships for hospitality management roles.

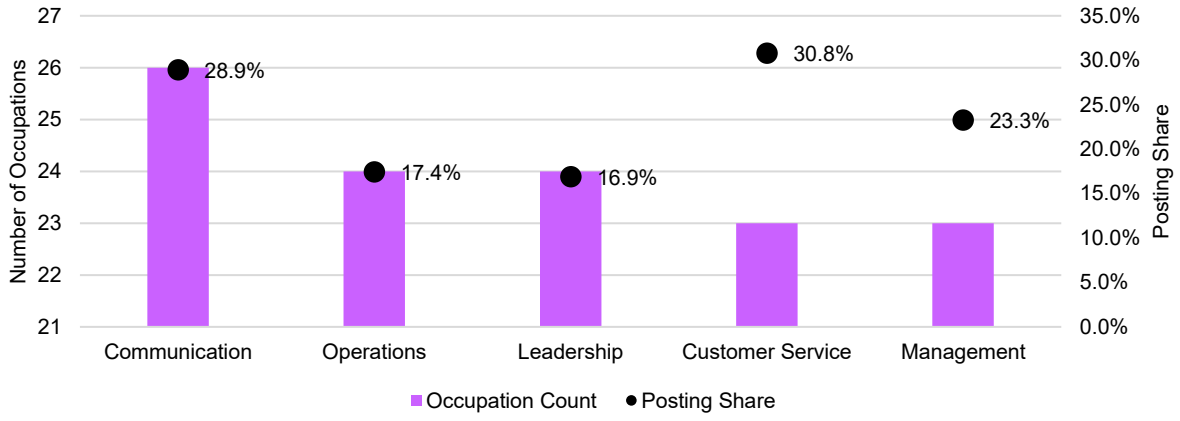
Engage the Unemployed, Underemployed, or Disengaged

As of October 2024, people in Hospitality occupations made up 6% of unemployed people (507) despite these occupations making up roughly 7.7% of employment in Spartanburg County. This is poor news for employers, as it means there is an undersized percentage of unemployed with Hospitality experience in Spartanburg.

One way to facilitate the disengaged and unemployed populations find employment is to address critical skills which are common across occupations in a sector. By embedding these skills within job training for the unemployed, it can increase their success rates in finding – and keeping – a job. Cross-cutting skills in the Hospitality sector are presented below both in terms of the number of occupations which feature these skills in job postings as well as the share of job postings they are found in.

Given the interpersonal nature of Hospitality, communication and customer service are two important common skills featured in job posting demand. These skills are mentioned across multiple occupations and are present in roughly 1/3rd of job postings.

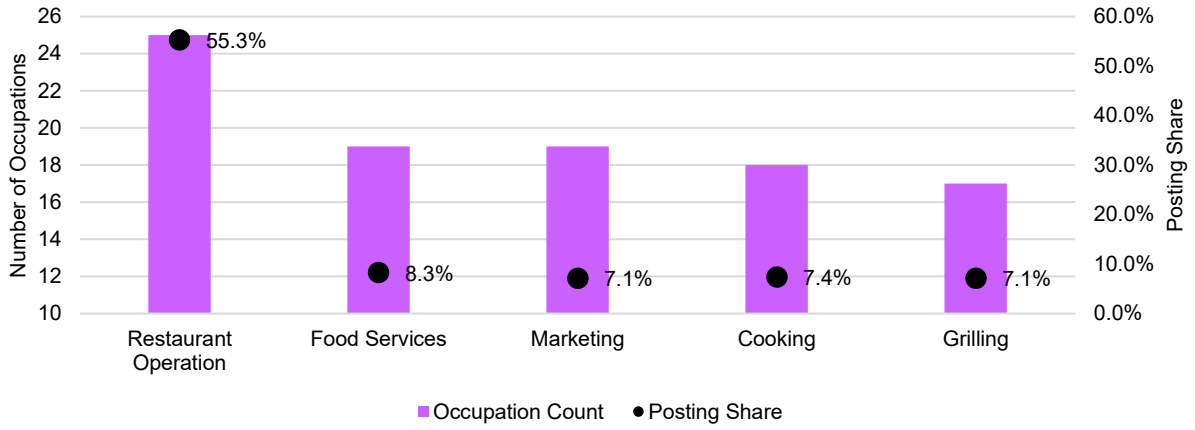
Figure 17 - Top common skills across Hospitality target occupations



Source: Lightcast

[28] South Carolina registered apprenticeship list, https://www.scpath.org/PDF/Apprenticeship_List_for_PATH.pdf

Figure 18 - Top specialized skills across Hospitality target occupations

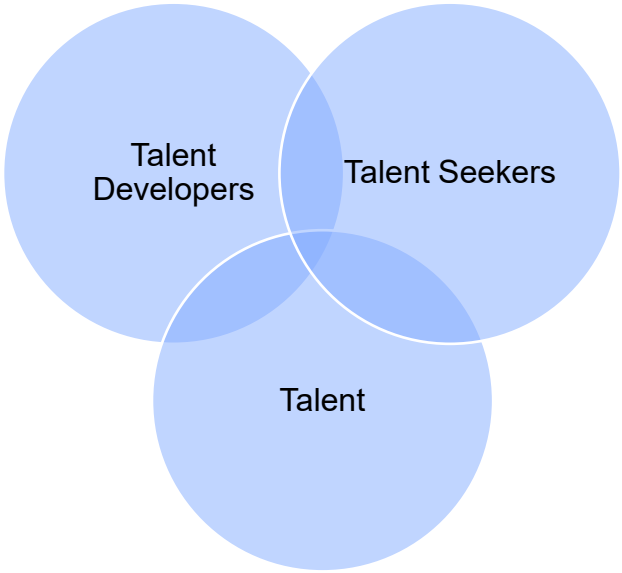


Source: Lightcast

Action Plan

The following is a wholistic strategic framework for talent development. This framework aligns with the USC Upstate Talent Pledge which recognizes that the responsibility of talent development is a collective one: it cannot be achieved by any single level of education or be developed by employers alone. The Talent Pledge is connected to an annual Talent Forum hosted by USC Upstate. The framework relies on connections and feedback loops between every level of the talent development pipeline. It integrates traditional high school, CTE, higher education, the workforce development system, and even the OneSpartanburg, Inc. talent attraction strategy with employer needs, and, of course, the talent themselves, as conceptualized below.

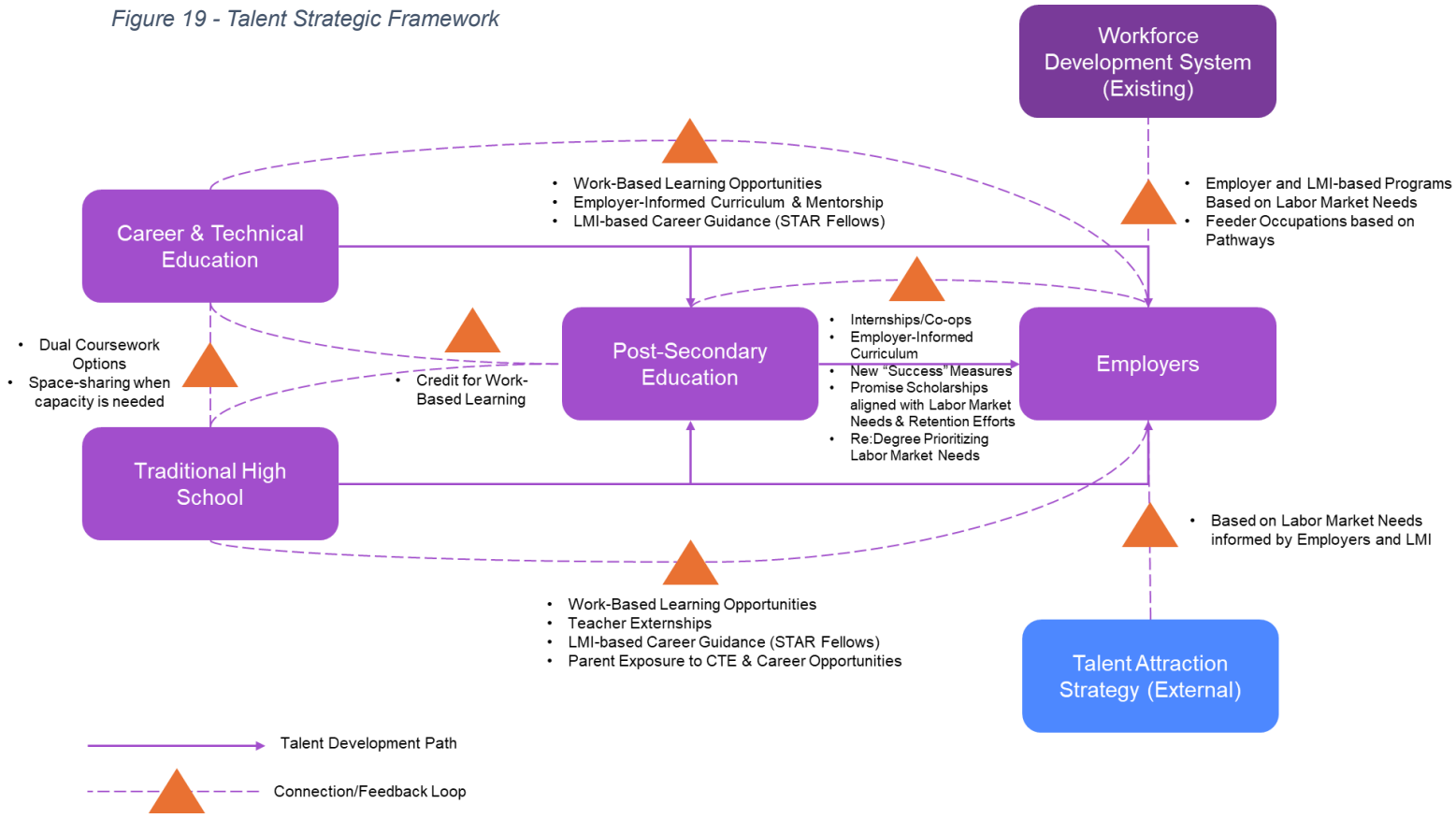
The responsibility of talent development is a collective one: it cannot be achieved by any single level of education or be developed by employers alone.



If an employer is having difficulty filling certain roles, it can tap into any level of the talent development pipeline, depending on the level of education required for the role. The framework heavily relies upon work-based learning as a way of developing skills and interest earlier in a student's journey which has been reported on extensively and positively by national organizations such as NACE. Say an employer is having difficulty finding people with skills and interest in electromechanical technician roles. The employer can engage with traditional high schools or CTE programs to offer work-based learning opportunities to students. Additionally, initiatives like the STAR Fellowship program, organized by OneSpartanburg, Inc., can influence student, teacher, and parent perceptions about technician opportunities by utilizing localized labor market

information (LMI) and opportunities to inform them of career pathways. Employers can also engage with regional Workforce Development Boards to signal a need for more electromechanical technician candidates, again offering work-based learning or informing curriculum to bolster the pipeline.

Figure 19 - Talent Strategic Framework



Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
Increase Labor Market Flexibility	Communicate for employers to hire for potential. Train the rest.	When labor is tight, employers must be more flexible in their hiring methods. Truth is that available labor might not have the skills employers need. Hire for potential (attitude, ability to learn), train for the rest. Restructuring lean but efficient teams is another effective strategy for reducing dependency on labor market availability. Invest in HR personnel to prevent over-reliance on ATS systems that often automatically filter out potentially qualified candidates. OneSpartanburg can communicate this idea to employers by utilizing job posting data to demonstrate how some industries are changing entry-level criteria in terms of education and experience. For example, at least 16 state	Employers OneSpartanburg, Inc.	High	Medium-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
		governments no longer require college degrees for most state jobs.			
	Advocate for scholarship dollars aligned with workforce needs (The business & education working group can explore pooling scholarship dollars)	Workforce alignment integrated into the Spartanburg Promise scholarship program will ensure that employers have access to a more robust talent pipeline and will allow for retention. Pool small scholarship dollars accordingly. Create a common application for scholarships that evaluates eligibility.	Employers OneSpartanburg, Inc. Post-secondary	High	Medium-term
	Advocate for accommodation of part-time workers (Efforts are already being made through working groups dedicated to mentorship, OJT, continuing education, and inclusive work environments	Young people have low LFPR nationally, but much of this is due to education. If employers want to increase LFPR among young people, they need to accommodate student schedules by offering part-time employment, internships, etc. Over 70% of part-time students work compared to just 40% of full-time students.[29] Full-time students work less hours, meaning they are more dependent on part-time work due to time constraints. A tight labor force means employers should be encouraged to identify transferable skills and be more flexible in their approach to hiring part-time employees, interns, apprentices, co-op students, etc. Adjust hiring practices accordingly. Flexibility in work arrangements increase labor force participation rates among individuals seeking more flexible arrangements due to childcare, transportation, disability, etc. (For example, since hybrid work arrangements have grown, participation among persons with disabilities is high). Tie work-based learning programs to KPIs like conversion rates, retention rates, and more, aligning to compare nationally.	OneSpartanburg, Inc. Employers	High	Long-term
	Create culture of talent adaptability (Efforts to develop this through mentorship and OJT are already underway).	Speed of change in skills demand is fast. Even post-secondary institutions have expressed concern at this speed. Stakeholders must teach skills such as problem solving, growth mindset, and other soft skills so that area labor is better suited to life-long learning rather than fixed skills. This can be strengthened by emphasizing transferrable skills while encouraging employers to review training programs to meet potential employees where they are with the goal upskilling. Lower experience or skill requirements for entry-level positions that require bachelor's degrees. Offer higher end pay range for applicants with bachelor's degrees. Invest in onboarding processes that facilitate early cross training.	K-12 Post-Secondary Employers	Medium	Long-term

[29] NCES, https://nces.ed.gov/programs/coe/indicator/ssa/college-student-employment

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
		Budget for and actively promote continuing education, certification attainment, and growth pathways within the company. See action item below around creating a common language around essential skills for K-12, higher education, and employers.			
Expand & Deepen Labor Shed Connections	Create relationships with CTE across the entire labor shed. (Applicable to working groups dedicated to OJT and bridging the skills gap)	Seek to develop relationships/partnerships with Career and Technology Centers across the entire labor shed including those located in North Carolina. Centralize to make publicly available data from this Talent Gap Analysis, CLNA, and related, and encourage a standard practice that references this repository for educational programs, workforce initiatives, and talent marketing efforts. Convene on a regular basis labor-shed Career Center directors as well as their leadership teams to collaborate, innovate, and participate in informational sessions relevant to local regional talent needs.	Labor Shed Career Centers OneSpartanburg, Inc.	Medium	Immediate
	Create relationships with workforce boards. (Applicable to working groups dedicated to OJT, continuing education, business & education partnerships, and bridging the skills gap	Minimum annual meeting of all workforce boards – Upstate, Worklink, Greenville, and Upper Savannah (could be during the same convening of CTE directors). Advocate for programs where pipeline gaps occur.	Labor Shed Workforce Development Boards OneSpartanburg, Inc.	Medium	Immediate
	Investigate why people commute to Spartanburg or other labor shed destinations to explore if talent marketing efforts can be adjusted.	Survey commuters from across the labor shed to discover barriers and attractions to work in Spartanburg.	OneSpartanburg, Inc.	Low	Medium
Improve K-12 student labor market exposure	Begin a branded Work-Based Learning (WBL) under-18 talent promotion campaign with employers as the primary audience, but then market to employers, students, and parents as momentum builds. (Applicable to working groups dedicated to	Continue the culture of work-based learning at the high school level in partnership with all schools in Spartanburg. Continue to remove barriers for high school work-based learning at employers in partnership with company council, HR, and insurance considerations. Fill the Work-Based-Learning coordinator school district position and embed them at the OneSpartanburg, Inc. offices where the nexus of collaboration would occur. Phase 1: Hire a legal expert ombudsman on OSHA, general liability, workman's comp, HIPAA,	OneSpartanburg, Inc. K-12 Employers	High	Medium-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
	bridging the skills gap, OJT, and mentorship).	etc. to work with employer counsel. Have this labor lawyer on retainer to answer employer questions/concerns around legal and liability issues. Identify businesses that have the most strict liability policies and establish a model to work around the legal limitations and liability concerns. By creating a blueprint model for the most difficult challenges for, it can be promoted to other businesses. Counsel-to-counsel discussions might identify barriers and find solutions. Map out roles where under-18 year olds can serve by industry, using legal and industry experts. Apprenticeships can formalize this structure. Phase 2: create a list of employers who have successfully engaged under-18 WBL as case studies. Phase 3: Promote. Promote. Promote. Link Junior Leadership and collegiate leadership programs to WBL opportunities.			
	Ensure access to labor market data to increase efficiency	Create a uniform platform (portal) for all districts and colleges in the area to use, where employers post internships/WBL opportunities, students apply for those opportunities, and counselors help match skill/interests with opportunities. This could be integrated with a career exploration tool to allow candidates to seamlessly evaluate their interests and qualifications with available WBL opportunities. Advocate for educators and student developers to have access to labor market information (LMI) to inform their daily activities with students. They should be able to comfortably demonstrate to students wages based on experience level, job growth, and skills, credentials, and education requirements.	OneSpartanburg, Inc. K-12 Employers Higher Ed	High	Medium
	Lobby for CTE innovation and investments.	Career center directors noted the need for more funding to expand capacity. Explore more public-private partnership models to expand funding capabilities beyond the public budget. When brick and mortar expansion is cost prohibitive, explore/consider placing **select** existing CTE programs that are currently in the career centers back in the home high schools. While there will be costs associated with imbedding CTE programs in the traditional high school setting, the costs will be much lower than brick and mortar expansions. This will likely increase access to programs for more students. Career center directors also expressed the need for more flexibility - students choose between academics and the CTE route - which creates a competitive dichotomy instead of complementary dynamic between high schools and career	K-12 Employers Policy-Makers	High	Long-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
		centers. Enable academic track students to participate in career center courses. Encourage early college programs such as Spartanburg County Early College High School through SCC. Collect new key data point: what percentage of career center students *who apply for college* are accepted?			
	Educate invested parties – educators, parents, counselors, etc.	Explore more ways to educate the educators on local opportunities and careers, recognizing STAR Fellowship scaling constraints. Revisit educator externships - where teachers can spend time in a business while getting paid. Also have guidance counselors extern at CTE career centers and local employers. This would increase exposure to more workforce opportunities among people who may be siloed. Conduct student-parent industry tours. Host PTA meetings at employment locations.	OneSpartanburg, Inc. K-12	Medium	Long-term
	Spread overlapping and basic skills to low participation groups, improving career readiness.	Soft skills are essential: communication, problem-solving, customer service, operations, management, and leadership are transferable skills which span occupations and sectors. Create a common language around essential skills at the K-12 level in all schools across Spartanburg County. Adopt these skills at the higher education level and expand if needed. Seek adoption of these skills and associated curriculums by local and regional employers. (Similar to the Profile of the SC Graduate - This would be a profile of needed essential skills of the SC graduate). The key here is getting K-12, higher education, and employers to use the same language around agreed upon essential skills for future employment. A good starting point is the NACE Career Readiness Competencies coupled with Lightcast's Skills Taxonomy which has a library of soft (common, transferable) skills. Focus on imparting these skills as well as training to convey competency.	K-12 Employers OneSpartanburg, Inc. (as language convener)	Medium	Medium-Term
Manufacturing	Promote expansion of or marketing of existing programs where labor gaps occur	The following occupations face a deficit of completions: • Heavy and Tractor-Trailer Truck Drivers • Accountants and Auditors • Industrial Engineers • Project Management Specialists • Software Developers • Mechanical Engineers • Logisticians • Electrical Engineers	OneSpartanburg, Inc. USC Upstate Spartanburg CC Workforce Development Board	High	Medium-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
	Adapt to the labor force needs of continued transition toward advanced manufacturing	The following professional and technical positions are projected to have strong growth into 2030 due to the continuing advancement of automation, robotics, and artificial intelligence. While lower in volume than front-line workers, they will need local and regional investments into the educational pipeline to ensure demand is met in the future: • 51-9162 Computer Numerically Controlled Tool Programmers (39% projected growth) • 15-1252 Software Developers (20% projected growth) • 17-2071 Electrical Engineers (20% projected growth) • 15-1212 Information Security Analysts (17% projected growth) • 17-2072 Electronics Engineers, Except Computer (17% project growth) • 51-2028 Electrical, Electronic, and Electromechanical Assemblers (14% projected growth) • 49-9041 Industrial Machinery Mechanics (12% projected growth) • 11-3021 Computer and Information Systems Managers (11% projected growth) • 17-2112 Industrial Engineers (11% projected growth) • 17-2141 Mechanical Engineers (10% projected growth) Embed AI digital skills alongside soft-skills development in K-12 and post-secondary curriculum. Re-skill people in occupations impacted by automation to help transition them to roles growing due to automation or towards roles experiencing regional supply gaps.	Employers OneSpartanburg, Inc. Higher Education	High	Medium-term
	Due to talent supply gaps, advocate for creation of short-term programs for moderate & long-term training occupations. If program exists but with no completions, see action below. (Applicable to working groups dedicated to bridging the skills	• 41.0301 Chemical Technology/Technician OR 41.0303 Chemical Process Technology OR 15.0615 Chemical Engineering Technology/Technician • 15.0607 Plastics and Polymer Engineering Technology/Technician15.0611 OR Metallurgical Technology/Technician 15.0614 Welding Engineering Technology/Technician OR 15.0611 Metallurgical Technology/Technician – welding programs exist	OneSpartanburg, Inc. Spartanburg CC Workforce Development Board	Medium	Medium-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
	gap, continuing education, & OJT).	in the region, but this prepares for skills in *robotic welding*			
Transportation	Promote expansion of or marketing of existing programs where labor gaps occur	The following occupations have a deficit of completions: • Heavy and Tractor-Trailer Truck Drivers • Aircraft Mechanics and Service Technicians • Bus and Truck Mechanics and Diesel Engine Specialists • Training and Development Specialists • Accountants and Auditors • Logisticians Furthermore, there are no regional programs for Airline Pilots, Copilots, and Flight Engineers. Create simple one-page document comparing the total earnings of CDL drivers who received tuition assistance with those in other professions that require more schooling but offer only average pay. Allow CTE and standard track high school students to tour truck driving school facilities and engage with simulators. Gamification such as simulation competitions could generate excitement among younger demographics.	OneSpartanburg, Inc. USC Upstate Spartanburg CC Workforce Development Board	High	Immediate
	Continue to ensure trucking school is covered to lower entry barrier for gap occupation	Employer sponsorship for this pathway – cover the cost of driving school if they want to become truckers if work min of two years with area employer SMART Jobs scholarships can already be applied to CDL training at SCC	Spartanburg County Spartanburg CC Workforce Development Board Employers	High	Ongoing
	Spread overlapping skills	• Forklift certification	OneSpartanburg, Inc. Spartanburg CC Workforce Development Board	Medium	Immediate

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
Health Care & Social Assistance	Promote expansion of or marketing of existing programs where labor gaps occur	The following occupations have a deficit of completions: • Home Health and Personal Care Aides • Licensed Practical and Licensed Vocation Nurses • Childcare Workers • Dental Assistants • Nursing Assistants • Physical Therapist Assistants • Dental Hygienists • Medical Secretaries and Administrative Assistants • Phlebotomists • Substance Abuse, Behavioral Disorder, and Mental Health Counselors • Physical Therapists • Healthcare Social Workers • Nurse Practitioners • Marriage and Family Therapists Additionally, Registered Nurse completions need to increase at the BSN level.	Higher Ed Workforce Development Board OneSpartanburg, Inc.	High	Medium-Term
	Build reliable pathway to encourage more entrants as Home Health Aides	Showing Home Health → Medical Assistant → Nursing Assistant → LPN → RN pathway may encourage more entrants into low-paying but undersupplied Home Health Aide occupation Public-private sponsorship for this pathway - cover cost of home health aides if they want to become medical assistants if work min of two years with employer	OneSpartanburg, Inc. Health Care Employers	High	Long-Term
	Advocate for creation of short term programs for moderate & long-term training occupations. If program exists but with no completions, see action below.	• 51.1107 Pre-Occupational Therapy Studies OR 51.2306 Occupational Therapy/Therapist • 51.0203 Speech-Language Pathology/Pathologist OR 51.0204 Audiology/Audiologist and Speech-Language Pathology/Pathologist • 51.0905 Nuclear Medical Technology/Technologist	Higher Ed OneSpartanburg, Inc.	Medium	Medium-Term
	Explore health care apprenticeships and garner interest for shortage roles	Tailor high school summer learning intensives to high need roles or departments and make a strong connection to educational attainment support, if needed.	OneSpartanburg, Inc. Employers	Medium	Medium-Term
	Push Pathway Opening Certificates	CPR & First Aid are certifications required for multiple target occupations, even those at entry-level. Increasing certificate completions can help pre-qualify talent to fill target roles.	Workforce Development Board	Low	Immediate
Hospitality	Promote expansion of or marketing of existing programs where labor gaps occur	The following occupations experience deficits of completions: • Food Service Managers • Accountants & Auditors • General & Operations Managers	OneSpartanburg, Inc. Spartanburg CC	Medium	Medium-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
			Employers		
	Advocate for creation of short term programs for moderate & long-term training occupations.	Consider establishment of apprenticeship programs for hospitality management, bartenders, etc.	OneSpartanburg, Inc. Spartanburg CC Employers	Low	Long-term
Other	Conduct Reverse Site Selection Analysis	See accompanying appendix with suggestions on analysis criteria to help benchmark target sectors against other regions.	OneSpartanburg, Inc.	Medium	Medium-term
	Encourage new "success" metrics for post-secondary institutions	Post-secondary institutions typically look at graduation rate and placement rate (within a certain timeframe) as metrics of success for students. However, new metrics can help provide even more valuable information: • Employer Net Promoter Scores (NPS) indicating satisfaction with quality of graduates as employees. This metric is not widely used for this purpose – so a higher education institution would be among the first innovators to do so. Some universities use the NPS to measure alumni satisfaction or loyalty, but this does not capture the best source for evaluating workforce preparedness among alumni: the employers themselves. • % job-education alignment indicating the share of students who achieve employment in a role aligned with their area of study. Some universities use the National Association of Colleges and Employers (NACE) First-Destination Survey to measure this result. For instance, UMass Amherst reported 87% of its 2024 undergraduates "obtained a career outcome related to their field of study." • % of students participating in internship or co-op. The best example of this is Northeastern University which has a renowned co-op program that is credited to employment outcomes: 50% of co-op students receive a job offer from their employer partner. employer internship debriefs to review student skills and skill levels. Several universities do this in some form: Southern Illinois University Edwardsville, Texas State University, and University of Wisconsin Oshkosh.	College Town	Medium	Long-term

Thematic Area	Action	Description	Stakeholder Table	Priority	Timeframe
	Community Resources Mapping & Convening	Disruption to Federal funding may impact a lot of smaller neighborhood organizations and nonprofits offering wraparound services. A negative impact to wraparound services could dampen LFPR. Convene these organizations to inventory what is available, what services are offered, and what specific physical areas are underserved to help increase services in low participation areas.	Upstate Workforce Board United Way of Piedmont OneSpartanburg, Inc.	Low	Medium-term

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Talent Study 2.0

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