



LABOR MARKET AND WORKFORCE REPORT

Produced for the Delta Regional Authority
CREC with EntreWorks Consulting – October 2021

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About the Organizations

CREC is an independent, 501(c)3 not-for-profit organization with a primary public service goal of helping regions compete by conducting research, providing technical assistance, and offering expert advice in the economic development, workforce development, and higher education fields. CREC promotes the importance of data and expert research to help inform evidence-based public policy decision making.

Based in Arlington, VA, EntreWorks Consulting (www.entreworks.net) is an economic development consulting and policy development firm focused on helping communities, businesses, and organizations achieve their entrepreneurial potential. EntreWorks Consulting helps regions to design, implement, and promote innovative economic development strategies, policies, and programs. Since its founding, EntreWorks has worked with customers in more than 46 US states and overseas.

The Delta Regional Authority (DRA) is a regional economic development agency representing a partnership between federal, state, and local governments. Established by Congress in 2000, the DRA makes strategic investments into physical and human infrastructure of Delta communities. It is composed of the governors of the eight Delta states and a federal co-chair appointed by the President. 45 multi-county local development districts provide local involvement and context to the DRA's governing structure. DRA serves the 10-million people across 252 counties and parishes in Alabama, Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee.

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Executive Summary

The Delta Region, spanning 252 counties and parishes and home to more than 10 million residents, is America's most economically distressed region. Regional poverty rates are more than two times higher than the national average, and a host of social, educational, and economic barriers have contributed to persistent economic distress and increasing levels of income inequality. The region now faces the dual challenge of developing new talent for leading industries while also supporting the reskilling of firms and workers across the region.

With this report, we seek to advance the Delta Regional Authority (DRA) goals of building a more prosperous Delta Region economy while ensuring that all the region's residents can fully participate. DRA and its partners have launched programs that aim to build the region's capacity to both create good jobs and to fill them with well-trained and skilled home-grown talent. Their programs aim to ensure that the region's employers can access needed talent, and, more importantly, create promising and better-paying career opportunities for residents.

We identified several promising workforce training practices across the Delta Region. For example, in southwest Alabama, many rural residents lack transportation, making it nearly impossible for them to attend workforce training and education programs. In response to this transportation challenge, the University of West Alabama LINCS program uses mobile training units to bring programs directly to rural residents. Other promising workforce training practices by DRA partners in Arkansas, Kentucky, Louisiana, and elsewhere include pioneering new apprenticeship programs targeted to in-demand fields like manufacturing, mechatronics, and energy distribution. In Kentucky, Mississippi, and Missouri, private employers are partnering with DRA and local governments to train young people in coding and other in-demand IT-related skills.

These promising examples reflect the resourcefulness of local leaders in the public and private sectors and suggest there are many more opportunities to create good jobs and related training support across the Delta Region. Some of these opportunities are highlighted in the "critical occupations" section of this report. In sectors critically important to economic growth, such as healthcare and manufacturing, the need for training and retraining outstrips the talent development capacity of the traditional higher education and workforce systems. Many employers scramble to find workers while residents seek employment that can support their families. The sweet-spot is in expanding career opportunities in high-paying, high-demand industries, making these accessible to a broader cross-section of the population, including workers currently in lower-paying jobs or otherwise on the sidelines and residents from outside the region looking to return home.

Continued research and community engagement will help DRA set an ambitious agenda to galvanize promising programs and to ensure these are more inclusive of low-income people, women, and people of color. For example, we found that demand for first-line supervisors is quite strong. Yet there is very little formal training in skills, such as digital literacy, modern production practices, or basic business finance, that are needed to prepare new and incumbent workers for these roles. Apprenticeship programs provide structured upskilling leading to good jobs that pair earning with learning but, according to our research, very few of these programs are reaching women and people of color. Other training programs may also serve these populations and lead to valuable post-secondary credentials, and this is an area for future investigation.

Serious gaps in talent development exist, and the Delta Region's talent challenges are not just about the availability of quality training providers and programs. Residents face numerous obstacles in their efforts to find, obtain, and retain good jobs. Lack of transportation and childcare and poor health limit their ability to find and keep good jobs. Effective solutions must take a holistic approach and tackle a wider range of talent development obstacles.

DRA and the Delta Workforce Program should continue to build regional capacity by investing in training, providing technical assistance, sharing, and disseminating leading practices. Local development districts and economic and workforce development leaders have critical roles to play in creating and combining resources to cultivate and maintain demonstrated and validated pathways to upward mobility and economic opportunity, including pathways that are identified and fortified for specific communities and demographic groups.

State leaders and higher education administrators in the Delta Region can address gaps in the resources needed to both advance industry and reduce poverty. For states, that may mean implementing grant programs to support DRA's efforts; for higher education administrators, it may mean leveraging university resources to create industry-responsive curriculum and provide credit for prior learning. No one organization or community can do this alone; all must work to support one another to enhance the Delta's workforce.

Introduction

While some rural areas in the US recovered quickly from the recent COVID pandemic and associated economic disruption, almost all have experienced long-term population decline as well as slow increases in wages and education levels, with communities further from metropolitan areas lagging furthest behind over the past decade. Disparities in broadband access will continue to drive a wedge between urban and rural community outcomes in a variety of ways, affecting business and remote worker location decisions and the viability of virtual services such as in telehealth.¹ Homegrown solutions are needed to address the challenges and meet the existing and future needs of industry.

The challenge of workforce development in rural areas is multi-faceted. There is a strong relationship between people, place, and industry. The image below highlights some of the associated challenges. Developing a workforce to meet the needs of industry depends on a multi-faceted response to these challenges—economic, workforce, and community development initiatives are needed in places that are losing population and those that are vulnerable to further technological change.



In a May 2018 examination of successful micropolitan areas, the Walton Family Foundation highlighted the role of community colleges and state universities in crafting curriculum as well as in advancing programs with larger firms that intentionally respond to the development needs of local businesses. The 2018 report also emphasized the importance of economic development planning and business development.² In 2017, an Interagency Task Force on Ag-

¹ The National Council of State Legislatures reports that 40 percent of people in rural communities don't have access to the very low minimum broadband standard from the Federal Communications Commission (Hentze and Canada, vol 27, no 22, June 2019).

² The Walton report discusses the role of universities and research institutions, community colleges and workforce development, entrepreneurial supports, strategic economic development planning, manufacturing and logistics and foreign direct investment, technology and technical services, and quality of place.

riculture and Rural Prosperity identified five areas for federal action: electronic connectivity, quality of life, workforce, technological innovation, and economic development. In its memo, the Task Force described the workforce challenge as a need for workers and training but also the need for an environment where people can thrive.³ A Regional Rural Development Center memo on “Supporting a Rural Workforce” described important roles for multi-county regions and Cooperative Extension Services with an emphasis on attracting and retaining talent with STEM and other vocational skills.

In its 2021 rural workforce development toolkit, the USDA Rural Development Innovation Center describes leading examples of workforce development planning as well as education, training, and apprenticeship initiatives alongside other rural area priorities (infrastructure and equipment financing, industry and employer engagement, entrepreneurship, and local business development). The USDA guidance notes that local strategic planning processes for workforce development should be integrated with economic development plans, engage local employers and educators, and solicit support from state officials and nearby workforce development boards. The USDA guidance also highlights the importance of data to drive strategies.

The data that is needed is both quantitative and qualitative. Quantitative inquiry can help to focus and define issues in rural areas, but qualitative information is needed to understand the unique nature of the issues. This report surveys the workforce landscape for the entire Delta Region, raises questions and suggests approaches that could be advanced in the towns, metros, and multi-county planning regions that comprise the Delta.

This 2021 report, produced for the DRA Delta Workforce Program by the Center for Regional Economic Competitiveness (CREC) and EntreWorks Consulting, provides a labor market and workforce analysis to advance the Program’s goals and grant-making priorities. The DRA’s mission is to mitigate poverty and improve economic opportunity in the eight-state Delta Region, home to around 10 million residents in 252 counties. The Delta Workforce Program was launched in 2018 to increase economic competitiveness in the Delta Region, prioritize investment in distressed communities, build sustainable workforce pipelines, and strengthen local economies. Current grant-making priorities include increasing industry-led workforce training and collaborative talent pipelines alongside workforce initiatives that support key industry clusters, accelerate local economic development, and are supported by multiple employers and their partners.

The research effort in 2021 deployed several approaches to understand the Delta Region’s workforce development landscape. The initial research (See Sections I-III.c below) involved detailed analysis of labor market trends in the Delta’s leading industry clusters, including agriculture, manufacturing, and logistics/distribution. This report summarizes the industry and occupation growth trends and describes specific occupations within these industries. In addition, the research team developed five case studies of promising talent programs, each responding to a unique geography, set of employer demands, recognized industry challenges and local demographic trends. (See Section VI and Appendix G). Finally, key DRA workforce partners operating at the state, regional, and local levels provided input through focus group discussions. These partners provided input on what works (and what doesn’t) and offered insights on persistent challenges in the region as well as the acute challenges they faced during the COVID pandemic.

Scholars and practitioners have identified persistent challenges to implementing and sustaining employer-led workforce development initiatives: gaining and sustaining trust among employers; expanding high-quality programs to include more women, people of color, and low-income workers and students; connecting firms and workers to upskilling and credentialing opportunities. Economic regions that can address these challenges will have an advantage in attracting and retaining firms and workers. However, there are specific considerations for rural and high poverty areas that aim to advance these and related initiatives. Housing, healthcare, transportation, childcare and other quality of work and quality of life infrastructure must be in place to support growth and poverty reduction.

³ The call for action on electronic connectivity described the need to increase productivity, innovation, and workforce readiness by extending connections to households, schools, and healthcare centers as well as to farms, factories, and small businesses. The call for action on quality-of-life investments included affordable housing, efficient transportation, medical services, public safety, and community resilience. Technological innovation opportunities in farming were highlighted as well as innovations in manufacturing and mining, STEM education, and rural data management. Rural industrial and commercial transportation infrastructure was described as essential for getting rural products to market.

Industry and Occupational Analysis for the Delta Region

What jobs are available to Delta Region residents? When asked a question of this sort, researchers typically examine a region's leading **industry clusters** – groups of industries, such as manufacturing or food service, with firms that have common product markets or input requirements or a tendency to locate near each other. A cluster analysis can provide insight into common challenges that businesses face in terms of growth and development. Once clusters or groups are identified, trends for the entire cluster can be analyzed and cluster trends compared to each other to identify leading (emerging, lagging, or declining) clusters. Analysts might examine total employment or the rate of growth in employment. Analysts might also examine where industry and employment activity are increasing and are more concentrated in a region versus nationwide to identify industries that give the region a competitive advantage and provide promising job and career opportunities.

Each city and county has its own unique industry mix, based on distinctive histories, natural resource endowments, and location relative to product markets. But there are also common patterns across the Delta Region. For example, most Delta Region counties have agriculture-related employment, while manufacturing industries are more concentrated in a few key locations such as around Memphis and Little Rock.

Our analysis sought to identify common clusters across the entire Delta Region. Industries are grouped to recognize similar products, services, labor, and technology inputs. Occupations are grouped to recognize similar knowledge and subject matter expertise. For each group, we provide a high-level analysis of trends based on clusters' relative concentration levels, employment, and recent growth rates. See Appendix D for a detailed discussion of how clusters were assigned.

Section I: Key Industries

KEY INDUSTRY INSIGHTS

1. The agriculture and resource extraction industry cluster collectively generates fewer jobs than the other leading clusters but it is a critical cluster important to many rural counties in the Region, particularly those west of the Mississippi River. This cluster's growth and development will have strong implications for many rural communities regionwide.
2. The Delta Region's most prominent industry clusters overall are in healthcare, labor-intensive manufacturing, and high-tech infrastructure (logistics, power, and data infrastructure). These three industry clusters provide opportunities for targeted investment and future growth.
3. The labor-intensive manufacturing cluster is a major source of jobs in the region, demonstrates high concentrations at both the regional and county level, and shows growth in the Delta Region that surpasses national industry trends. The labor-intensive manufacturing industry is a prime candidate for future job growth within the region and represents a promising competitive advantage.
4. The high-tech infrastructure cluster is another major source of jobs, with even faster growth projected over the next several years. This cluster is important to the competitiveness of industries across the region, moving goods and providing critical infrastructure, and appears poised for continued rapid expansion throughout the region.

Top 3 industry clusters across the Delta Region:

High-tech infrastructure:

Traditional logistics and distribution industries such as wholesale trade and warehousing as well as more modern telecommunication infrastructure--information high-tech infrastructure, such as data processing centers, telecommunication companies, and utilities

Healthcare:

Hospitals, medical research facilities, labs, and psychiatric wards

Labor-intensive manufacturing:

Most forms of manufacturing, from metal stamping to textile weaving, as well as food processing to produce beet sugar and breakfast cereal

TOP INDUSTRY CLUSTERS IN THE DELTA REGION

To focus on county-level dynamics, we identified the most dominant clusters for each individual county (based on county-level employment levels) and then recorded the industry clusters that were consistently dominant in the greatest number of counties. Our method of analysis helped us understand both how industry cluster employment is distributed across the region and how individual counties within the Delta Region are likely impacted by these industries. County-level analysis also helped to identify rural trends that might be subsumed at the regional level.

Reading Top Industry Maps:

Figure 1: labor-intensive manufacturing industries provide region-wide employment with strong alignment with DRA states and outlying LDDs in Alabama.

Figure 2: highlights agriculture and resource extraction employment west of the Mississippi River and in the upper Delta Region

Figure 3: highlights high-tech infrastructure employment primarily east of the river and along the Louisiana coast.

As the term “industry cluster” suggests, industries are not randomly distributed across the landscape. Instead, regions have varying specializations and concentrations of economic activity based on history, the local employer mix, and other factors. The region’s largest industry cluster, high-tech infrastructure, maintains a strong presence across the entire Delta Region, with more intensive concentrations in Shelby County, TN (home to Memphis and FedEx), employing nearly 10 percent of the population there, and in Pulaski County, AR (Little Rock), employing nearly 8 percent of the population.

These two communities also show high concentrations of healthcare-related employment, which is common in larger urban areas that are home to major hospitals and health research centers. New Orleans, Jackson MS, and Baton Rouge also display high concentrations of healthcare cluster employment.

Regional employment in the labor-intensive manufacturing cluster is concentrated in Memphis and Little Rock. Some smaller counties, like Yalobusha MS and Marion AR, show higher than average employment.

The labor-intensive manufacturing industry cluster is the top employer in the most DRA counties (Figure 1) and ranks 3rd in terms of overall employment for the Delta Region (see Table 1 in Appendix A). While the cluster does not employ as many people as in healthcare and high-tech infrastructure clusters regionwide, its employment base is diversified across the Delta Region’s counties. The healthcare cluster is large but more concentrated in urban areas and the high-tech infrastructure cluster is more concentrated along the Mississippi River.

The high-tech infrastructure cluster is the top employer in approximately 16 percent of DRA counties (Figure 3). The agriculture and resource extraction cluster is also the top employer in approximately 16 percent of DRA counties (Figure 2) but ranks much lower region-wide. The prominence of agriculture and resource extraction industries means that investments into the agricultural workforce made in tandem with upgrading industrial processes to more advanced or efficient methods may bolster the economic outlook for Delta Region counties, particularly in rural areas. High-tech infrastructure will provide more geographically concentrated job creation.

Healthcare is the fourth largest cluster at the county level, followed by corporate management and administration. No county is dominated by the knowledge intensive business services cluster, and finance, investment, and real estate ranks top in only two counties in the region, Sharp County, AR, and Issaquena County, MS.

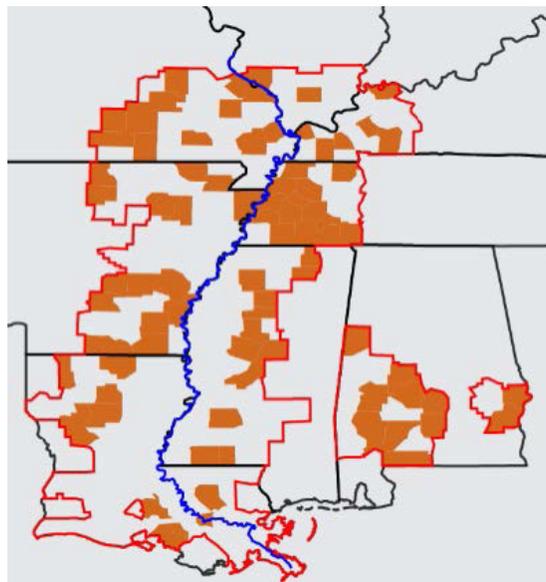


Figure 1: Top Industry Cluster by County: Labor-intensive Manufacturing Cluster

One approach to understanding trends across the region, at the county level, is to examine the local concentration of an industry cluster. The Location Quotient (LQ) compares the local percent of employment with the national percent of employment for the industry. If the local concentration of the cluster is the same as it is nationwide, the LQ value is 1. Areas with an LQ greater than 1.2 are considered to have a local concentration.

Compared to the rest of the country, counties in the region have a strong concentration in agriculture and resource extraction, with an average county-level LQ around 1.6 and a maximum county-level LQ of nearly 18 (Figure 4). The LQ translates to a relative concentration in agriculture and resource extraction about one and a half times what is seen at the national level.

Certain clusters exhibit similarly high concentrations but in only a few locations. The research, engineering, and technology cluster has an LQ of over 14 in Calhoun County, AR, but on average is less concentrated than in the rest of the country (Figure 5). The media, entertainment, and recreation, government, higher education, healthcare, and labor-intensive manufacturing clusters also exhibit high concentrations in several counties throughout the region, such as media in Tunica MS, government in Johnson IL, higher education in Lafayette MS, and healthcare in Hardin IL. These clusters are not shown here.

The labor, capital, and resource intensive manufacturing cluster exceed national growth rates and display high LQ throughout the **entire** region (Figure 6), while employing the most people across the most counties. Mapping the county-level LQ for this cluster shows that many of the counties exhibiting relatively high location quotients lay outside of Core-Based Statistical Areas (CBSAs)⁴ and away from the Mississippi river. Alabama in particular displays a high concentration of this cluster, with most DRA Alabama counties exceeding the national benchmark by a high margin. This concentration away from urban centers indicates that growing the industries comprising this cluster is likely to increase job opportunities in rural communities more than in urban areas.

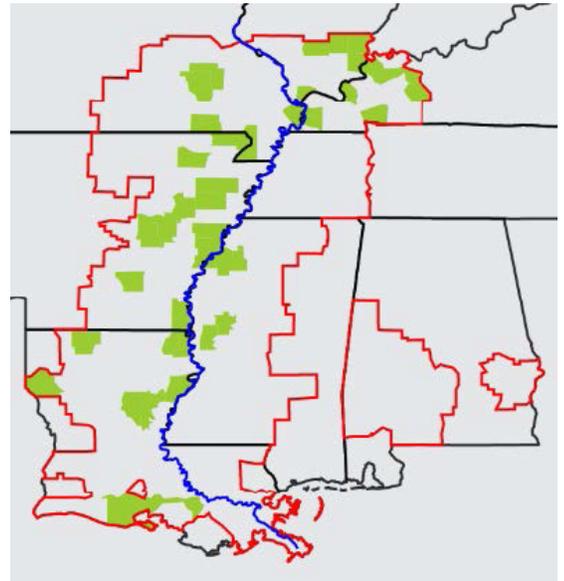


Figure 2: Top Industry Cluster by County: Agriculture and Resource Extraction

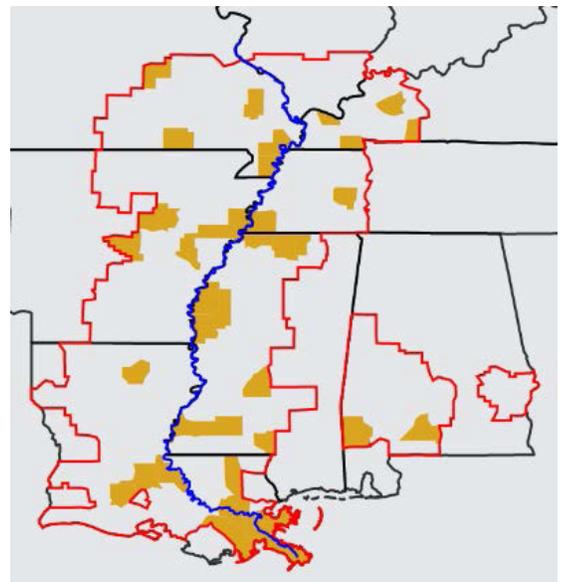


Figure 3: Top Industry Cluster by County: High-tech Infrastructure

⁴ For more information about CBSAs, see: <https://www.census.gov/topics/housing/housing-patterns/about/core-based-statistical-areas.html>

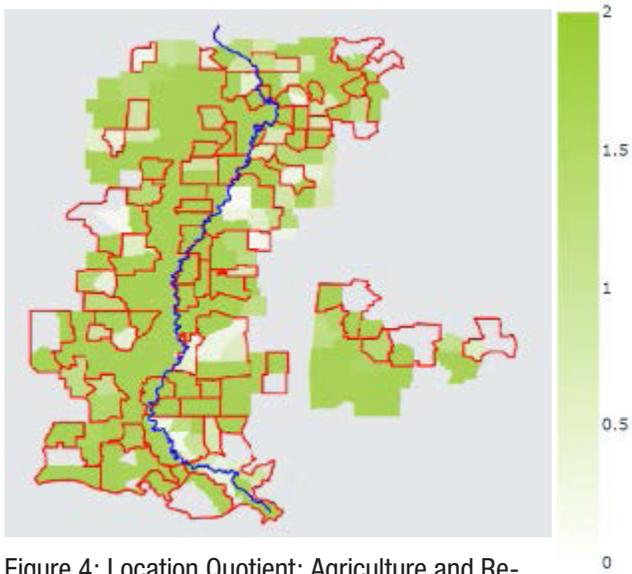


Figure 4: Location Quotient: Agriculture and Resource Extraction (red lines indicate CBSA boundaries)

national jobs growth. Agriculture and resource extraction industry cluster jobs are still growing (Figure A; Appendix A), but the cluster is growing at a slower rate than the national average. If the cluster had kept on par with national growth, we should see around 3,000 more workers in agriculture and resource extraction industry jobs.

INDUSTRY SHIFT SHARE ANALYSIS

Shift share analyses is a useful way for analysts to examine how industries are growing or shrinking in comparison to national rates. We may, for instance, see that growth is positive for an industry cluster in the Delta Region, but compared to national growth rates, growth within the Delta Region is lagging. Similarly, a Delta industry cluster may be shrinking, losing employees year over year, but compared to the rate of contraction seen at the national level, that cluster is doing better in the Delta Region – shrinking at a slower rate. Shift share analyses can also be used to approximate the number of jobs that would be added or lost had the industry cluster been growing at the same speed as seen at the national level.

A shift share analysis of key clusters shows that most industry clusters are growing slower than the national average. Over the past five years, on average, the agriculture and resource extraction industry cluster lags



Figure 5: Location Quotient: Research, Engineering, and Technology

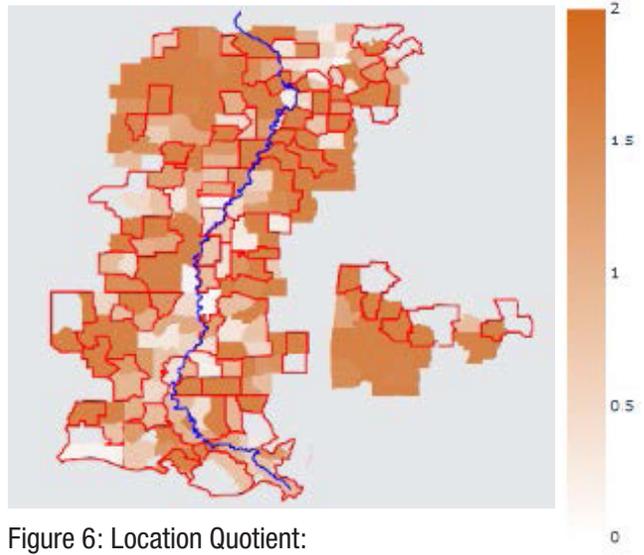


Figure 6: Location Quotient: Labor-Intensive Manufacturing

While the agriculture and resource extraction industry cluster has experienced lower job growth over the last five years than at the national level, it is still a dominant source of employment in many counties throughout the region. Other dominant industry clusters, however, show stronger growth. On average, the corporate management and administration and labor-intensive manufacturing clusters are the only two clusters in the region that appear to be growing faster than the national rate.

HOW HAVE THESE CLUSTERS CHANGED?

Most industry clusters grew between 2015 and 2019. Finance, insurance, and real estate (FIRE) industries nearly doubled its labor force in the delta region. Only four clusters, higher education, knowledge intensive business services, media, entertainment, and recreation, and government shrank during that time. These four clusters also saw diminished regional concentration over that time. Agriculture and resource extraction and FIRE industries both saw decreases to location quotient, indicating that although they are growing, their prominence in the region has waned relative to other industries.

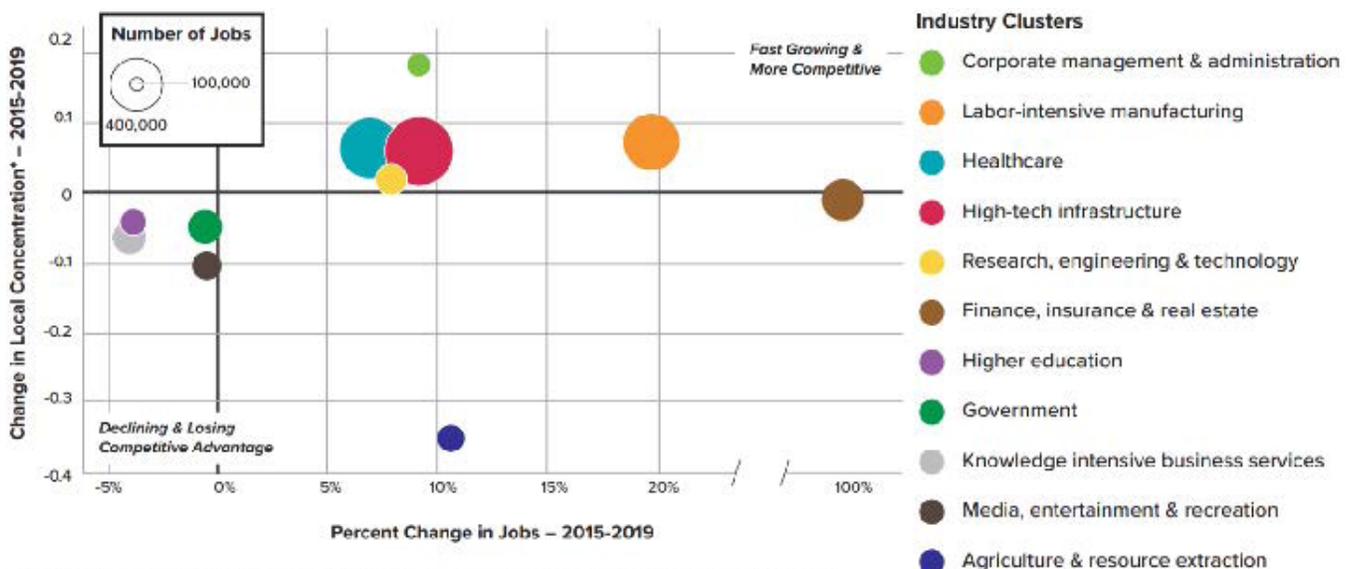
WHAT CHARACTERISTICS DO THESE INDUSTRY CLUSTERS SHARE?

These top industry clusters are all **growing** slower than national averages, indicating overall economic growth within the Delta Region has lagged national growth, despite these top industries being more highly **concentrated** within the Delta Region than the national average. This suggests that although growth has been lagging, these industries — labor-intensive manufacturing, agriculture and resource extraction, and high-tech infrastructure — are still vital sources of jobs and economic strength in the region. Overall, national trends indicate there is plenty of room for growth for these industries within the Delta Region.

Compounding upon the low growth rates, we see that these industry clusters are not the number one source of high paying jobs in the region. The industry clusters with the highest average annual wages are finance/investment/real estate (FIRE) and corporate management/administration. Both healthcare and labor-intensive manufacturing fall below the Delta Region average annual wage of \$64,845 per year, and the high-tech infrastructure cluster only barely surpasses it.

Overall, we see a weak to average presence in clusters such as FIRE, knowledge intensive business services, or high-tech infrastructure, which are growing fast and providing good jobs. These clusters, particularly high-tech infrastructure, offer an excellent opportunity for future workforce development and investment. They offer robust career ladders, require limited prior training for entry level workers (relative to clusters like education and healthcare), and are expected to grow and continue growing over the next decade. Although high-tech infrastructure is a large employer in the region, it is not as highly concentrated as other top clusters, and its growth has lagged national rates.

Figure A: Delta Region (Delta Region) Industry Cluster Change Over Time



* Local concentration, or location quotient, represents employment concentration in a region compared to average national employment concentration. A positive number in this case indicates that a cluster has become more highly concentrated within the Delta Region, a negative number indicates a decrease in regional concentration.

Section II: Key Occupations

Industry cluster analysis offers one lens for understanding workforce development trends, but a deeper analysis of **occupational** trends is also needed. To expand our understanding of the employment dynamics within and across industries, we explored the growth, concentration, and size of occupation clusters. Occupations were clustered according to ONET knowledge categories; occupations with similar knowledge areas were grouped together.⁵ This approach allowed us to explore employment dynamics of similar occupations traditionally separated by standard occupation coding parameters, giving us insight into a “truer” labor market that more accurately reflects the activities of workers and the similarities of various occupations across sectors.

KEY OCCUPATION INSIGHTS

1. Occupation clusters in the region show less dramatic concentrations than seen in industry clusters, though high levels of concentration are still present. Transportation, counseling/specialized education/therapy, medical science/health services, mechanical/production, machine operation/repair, and education clusters are all found in higher concentrations within the Delta Region than on average nationwide.
2. The agriculture/life/natural sciences and engineering/architecture clusters demonstrate high rates of entry-level, middle-skill occupations. These occupations provide pathways for incumbent workers looking to upskill and transition to a new occupation.
3. While occupation clusters have lagged national growth rates, certain occupations, especially those related to transportation and warehousing, were growing at rates far exceeding national averages (prior to COVID-19 disruption).

Top 3 occupation clusters across the entire Delta Region:

Semi-skilled service: LQ 0.99

Wide range of occupations from insurance appraisers, craft artists, and dietetic technicians to bailiffs, animal caretakers, and funeral attendants

Management and finance: LQ 0.90

Occupations relating to financial and materiel management, such as HR and food services managers, credit analysts and budget analysts, embalmers and morticians, concierges and travel guides, and retail salespersons and animal breeders.

Machine operation and repair: LQ 1.12

Chemical technicians, cooks, janitors, fallers and other loggers, team assemblers, butchers, heavy machine operators, upholsters, tire builders, and motion picture projectionists.

TOP OCCUPATION CLUSTERS IN THE DELTA REGION

Semi-skilled service, management and finance, and machine operation and repair are the three most dominant occupation clusters across the Delta Region in terms of overall employment. These clusters are characterized by relatively low hourly pay, between \$13 and \$25 per hour compared to the Delta Region average of \$25.18 per hour across all occupations, and lower than average concentrations at the DRA state level. At the DRA state level, these same industries dominate the employment landscape.

Many DRA workers are currently employed in the semi-skilled services occupation cluster. This wide-reaching and lower-paying occupation cluster, characterized by a shared set of fundamental consumer-facing skills, includes diverse jobs ranging from insurance appraisers, craft artists, and dietetic technicians to bailiffs, animal caretakers, and funeral attendants. Although these occupations have little commonality in terms of the typical industry of employment or scope of work, the core knowledge areas required to perform each job are relatively similar.

While these jobs are slightly more concentrated in urban areas like Memphis and Little Rock, they are an important employment source across the Delta Region. In fact, semi-skilled service jobs are the largest occupation cluster in 246 out of 252 DRA counties. However, these occupations are not highly concentrated within the Delta Region relative to the rest of the country.

The management and finance occupation cluster, the second largest in the region, encompasses managers of all backgrounds, such as HR, food service, childcare, gambling, lodging, and real estate. The management and finance cluster also includes credit analysts and loan officers, and a diverse mix of other jobs such as morticians, travel guides, and retail salespersons. These jobs tend to be concentrated in urban areas. For example, the Memphis metro area accounts for about 1 in 6 Delta Region workers in the cluster. In contrast, most DRA counties have low concentrations of workers in the management and finance cluster.

The third largest occupation cluster, machine operation and repair, is another example of how various professions with little industrial overlap share similar foundational knowledge areas. The machine operation and repair cluster includes chemical technicians, cooks, janitors, fallers and other loggers, team assemblers, butchers, heavy machine operators, upholsters, tire builders, and motion picture projectionists. As with the other two top ranking occupation clusters, most of the people working in the machine operation and repair cluster work in the Memphis and Little Rock areas.

As with industry clusters above, the top three occupation clusters are some of the lowest paying clusters on average. Both the semi-skilled service and machine operation and repair clusters exhibit stagnant growth. Medical science and health occupations, in contrast, have grown by a large margin since 2015 and demonstrate relatively average concentrations within the region compared to the rest of the country (1.16 LQ).

WHERE IS OCCUPATIONAL EMPLOYMENT CONCENTRATED IN THE REGION?

Top occupation clusters in the Delta Region show less dramatic changes and concentrations than industry clusters, with most hovering around the national average concentration. While the industrial concentration of the Delta Region varies greatly by county relative to the national average, the overall occupational composition of most counties in the Delta Region is rather static and on par with the rest of the country.

That said, certain counties within the Delta Region demonstrate remarkably higher concentrations of specific occupation clusters relative to the national average. Counseling, specialized education, and therapy occupations reach as high as nine times the national average concentration in some counties; construction and specialized mechanical occupations reach well above eight; and the transportation occupation cluster reaches above seven in one county.



Figure 11: Percent Middle Skill: Agricultural, Life, and Natural Sciences

WHERE ARE THE MIDDLE SKILL JOBS?

When discussing workforce health and resilience, it is critical to consider the pathways available to individuals entering and moving through the workforce. Middle-skill jobs serve a crucial role, offering an achievable pivot for employed workers with access to training and a promising starting point for individuals new to the workforce with little work experience.⁶

These occupations are identified by education, related work experience, typical job training, and specific vocational preparation required (the amount of lapsed time required by a typical worker to learn the techniques, information, and skills required for average performance of a specific middle-skill job). Middle-skill jobs typically require vocational training, related on-the-job experience, or an associate's degree. Applicants will demonstrate previous work-related skills and knowledge. An electrician, for example, must have completed three to four years of an apprenticeship or several years of vocational training to qualify for an opening. Additionally, electricians are often required to pass a licensing exam to perform their job. Employees in middle-skill roles typically need one to two years of training combining on-the-job experience and informal training taught by experienced workers. These occupations typically require between one and four years of specific vocational preparation.

These jobs are generally accessible to workers with some degree of job experience and / or education and dovetail nicely with workforce training initiatives and apprenticeship programs. Because the skills required for these jobs can be learned in a relatively short amount of time, workers are able to transition into these roles as a direct result of targeted training and upskilling efforts. These occupations also tend to display strong upward mobility potential, connecting to supervisory positions and serving as a solid basis for a career ladder. Assessing the prominence of middle-skill jobs in a region gives us insight into the capacity for a cluster to hire on new workers and the strength of a cluster's career ladder within the region.

A high proportion of middle-skill jobs is most pronounced in Alabama and in the southwest but can also be found elsewhere in the Delta Region. Regarding **specific** occupation clusters, agriculture, life, and natural sciences occupations exhibit an interesting spread of middle-skill jobs, ranging from 0 percent and 100 percent of total cluster jobs, depending on what part of the Delta Region is being observed. (Figure 11). Engineering and architecture occupations also display a similar regional trend, with northeastern counties displaying a higher proportional rate of middle-skill engineering and architecture jobs than the rest of the region (Figure 12).

As previously noted, semi-skilled service occupations — occupations characterized by relatively low hourly pay — have a relatively low percentage of middle-skill jobs, varying from 0 percent to 25 percent county to county.

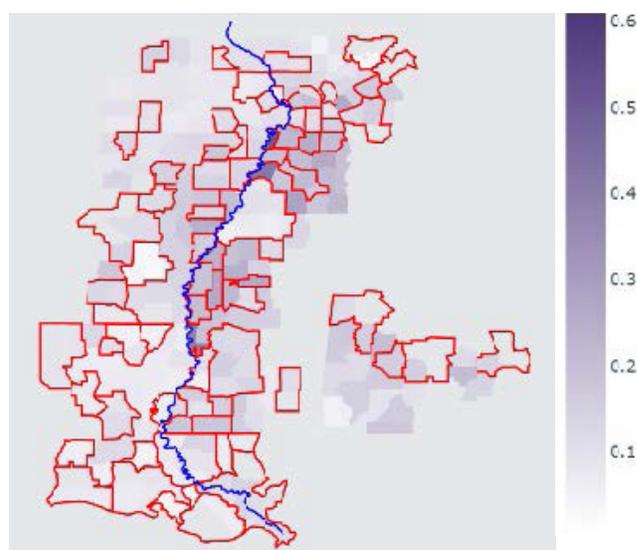


Figure 12: Percent Middle Skill: Engineering and Architecture

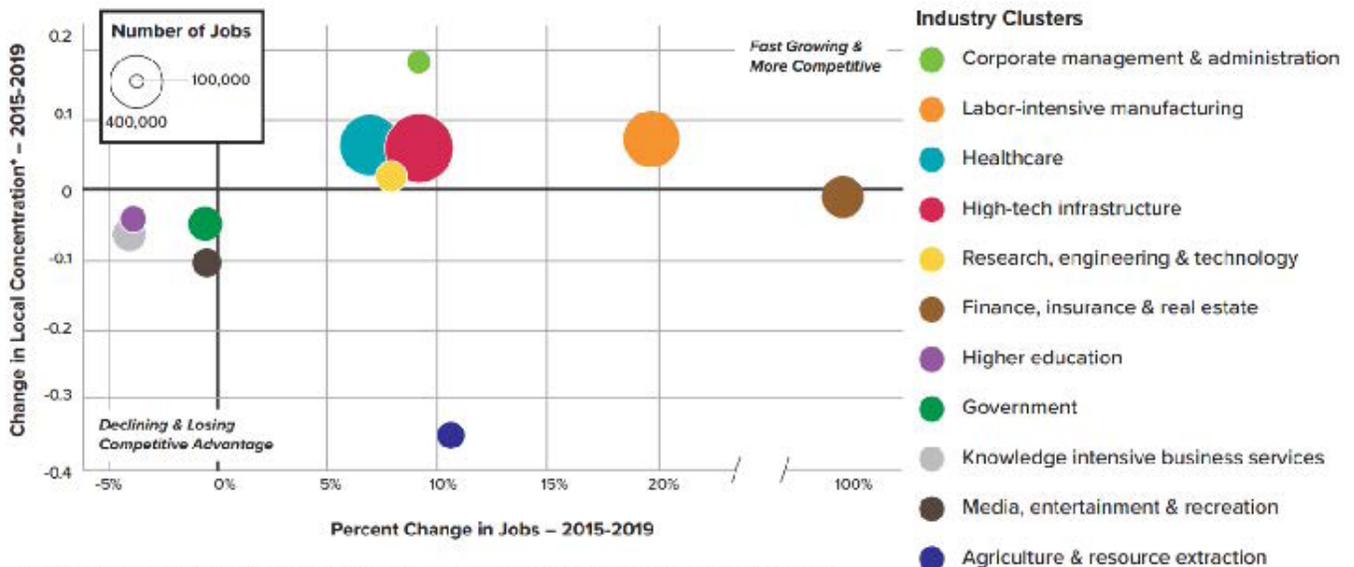
⁶ Conveniently, O*NET classifies these middle-skill occupations into a group called Job Zone 3 (for more on Job Zones see: <https://www.onetonline.org/help/online/zones>), enabling us to explore the relative concentration of middle-skill jobs by occupation cluster across the Delta Region.

OCCUPATION SHIFT SHARE ANALYSIS

Overall, the occupation clusters in the Delta Region have lagged national growth, particularly in the construction and specialized mechanical occupations cluster. However, in the last five years throughout the Delta Region, Light Truck Drivers, Middle School Teachers, Retail Salespersons, Hand Packers and Packagers, Industrial Truck and Tractor Operators, Sales Representatives of Wholesale and Manufacturing, Technical and Scientific Products, Receptionists and Information Clerks, Nurse Practitioners, and Shipping, Receiving, and Inventory Clerks all surpassed the national average in job growth (Table 2; Appendix B). Most of these fast-growing occupations in the Delta Region feature prominently in the transportation and warehousing industries.

HOW HAVE THESE CLUSTERS CHANGED?

Slightly over half of the Region's occupation clusters grew between 2015 and 2019. The largest growth was seen in medical science and health services, education, and agriculture, life, and natural science occupations. The Delta's largest occupation cluster, semi-skilled service occupations, showed little to no job's growth over that time, as its local concentration diminished. Engineering technologies and machine operation and repair occupations likewise saw no jobs growth and saw either stagnant or diminishing regional concentration. Most occupation clusters saw decreased local concentrations, indicating that the few growing clusters, particularly transportation and engineering and architecture, had come to play an increasingly prominent role in the Delta's occupational landscape by 2019.



* Local concentration, or location quotient, represents employment concentration in a region compared to average national employment concentration. A positive number in this case indicates that a cluster has become more highly concentrated within the Delta Region, a negative number indicates a decrease in regional concentration.

Figure B: Delta Region Occupation Cluster Change Over Time

WHAT CONCLUSIONS CAN WE DRAW ABOUT OCCUPATIONAL EMPLOYMENT IN THE DELTA?

First and foremost, we see very little occupational **specialization** in the Delta. Most occupation clusters are found at or below national concentration levels. No occupation cluster surpasses a LQ of 1.2, the typical cutoff for being considered “concentrated”. Except for engineering technologists and medical science and health services jobs, occupational specialization is generally concentrated in poorly paying jobs. This is particularly apparent for semi-skilled service occupations, both the most common and lowest paying occupation cluster.

Comparing the Delta Region to surrounding states in terms of job growth and LQ increase over the past five years, we see that the Delta Region has experienced more dramatic employment level changes for many of its occupation clusters. Specifically, several occupational clusters are noticeably lagging in the Delta Region such as the information technology and communications, engineering technologists, and engineering and architecture occupation clusters. These three occupational clusters are not growing at nearly the rate seen at the state level and the information technology and communications cluster is shrinking, having lost nearly 10 percent of its workforce between 2015 and 2019. Construction and specialized mechanical occupations are also on the decline in both the Delta Region and surrounding states. The job loss rate seen in the Delta Region is about double the rate seen at the state level. In contrast to these other Delta Region occupation clusters, both the agriculture and natural sciences and education clusters have seen growth **within** the Delta Region, though increased employment has not resulted in higher employment concentrations for the Delta Region agriculture and natural sciences clusters compared to the national employment average.

Middle skill opportunities are limited and vary widely from cluster to cluster. Some clusters, such as agricultural, life, and natural sciences demonstrate a wide range of middle skill occupations, the entirety of the cluster’s workforce in several counties. Other clusters, such as semi-skilled services have almost no middle skill jobs, either employing exclusively low-skill workers (the case with semi-skilled services) or high-skill workers. In both cases, these occupation clusters do not offer many employment opportunities for middle-skill or entry-level workers, and therefore employment pathways for low skill workers through most occupation clusters in the Delta Region may be limited.

Section III.a: Examining Supply Side Dynamics – Labor

To develop a comprehensive understanding of employment dynamics in the region, we developed a supply and demand map of the region’s economy. This map combines demographic and economic data on the Delta’s population with information on regional education and training systems and the demand for qualified workers. This information serves to expand our understanding of the Delta Region beyond industrial and occupational analysis, giving us insights into the needs of the population and how well training and education align with the needs of businesses.

KEY WORKFORCE INSIGHTS

1. The Delta Region is home to a large population of potential workers, but residents face many employment obstacles:
 - a. Poverty: Poverty rates in Delta communities are twice the national average.
 - b. Educational Attainment: Workers in the Delta have lower education attainment rates. For example, Delta Region high school completion rates are ten percent lower than national averages.
2. These economic challenges are even more pronounced for people of color and women:
 - a. Black Delta residents are:
 - i. More than twice as likely to be living in poverty than White residents.
 - ii. More likely to be unemployed, with unemployment rates six percent higher than among the White labor force.
 - iii. More likely to receive lower pay, with average pay rates 13.6 percent lower than White pay rates.
 - b. Female Delta residents:
 - i. More likely to earn less, typically \$9,000 less than the average male worker.
 - ii. Receive less public support. The income of unemployed women is 30 percent less than unemployed men, despite experiencing unemployment at virtually the same rate.

Earlier in this report, we examined occupational and industrial employment in the Delta Region, identifying concentrations and potential specializations across urban and rural areas. We found the Delta could be characterized by significant concentrations of employment in industries such as agriculture, resource extraction, healthcare, and labor-intensive manufacturing. Many of these industries are growing slowly, but even faster-growing sectors, such as logistics, pay lower than average wages.

These dynamics can create significant workforce development challenges. In many cases, Delta residents are less well-prepared for work, have fewer options to gain new skills, and have fewer options to obtain employment in growing sectors that provide promising career pathways. These dynamics are further described below, where we outline workforce demographics by age, gender, race, education, employment status, and income.^{7 8}

WORKFORCE DEMOGRAPHICS OF THE DELTA REGION

In some ways, the Delta workforce resembles the overall US workforce. Age and gender distributions are like nationwide averages; however, the racial makeup of the workforce differs greatly. Within the Delta Region, the Black population’s workforce share is nearly twice the national average, while other minorities, such as Asian-Americans, represent a small share of the population. Likewise, Hispanic and Latino people represent a smaller share of the Delta’s population than the average nationally.

⁷ Demographic data presented in this report was sourced from the 2019 American Community Survey (ACS) 1-year tables and the 2019 ACS Public Use Microdata Files (PUMS). Although tabulated at the regional level, PUMS data is available down to the public Use microdata area (PUMA) level.

⁸ Note that income data is self-reported. For employed populations, income data is primarily derived from wages. For unemployed people, income can come either from unemployment insurance or alternative revenue streams.

On average, the Delta Region employment rate falls below the national average. In 2019, the Delta Region unemployment rate was 6.5 percent while the US was 3.5 percent and the labor force participation rate in the Delta Region was only 57.3 percent, compared to the US rate of over 63 percent.

Below, we review the demographics of the Delta workforce by age, gender, race and ethnicity, and education level. This analysis highlights significant challenges facing Delta Region workers.⁹

AGE

Table 3: Employment Status. by Age in the Delta Region¹⁰

Estimated Population			
Age	Employed	Unemployed	Not in the Labor Force
16 to 24	646,268	111,621	653,415
25 to 34	1,118,138	92,965	349,171
35 to 64	2,929,209	135,062	1,391,131
65 and older	298,727	8,927	1,580,297
Total	4,992,342	348,575	3,974,014

Estimated Population			Average Annual Income			
Age	Unemployment Rate	Labor Force Participation Rate	Age	Employed	Unemployed	Not in the Labor Force
16 to 24	15%	54%	16 to 24	\$18,643	\$6,395	\$4,449
25 to 34	8%	78%	25 to 34	\$36,418	\$11,566	\$5,999
35 to 64	4%	69%	35 to 64	\$48,106	\$14,138	\$5,844
65 and older	3%	16%	65+	\$39,285	\$11,853	\$3,007
Total	7%	57%	Total	\$35,613	\$10,988	\$4,825

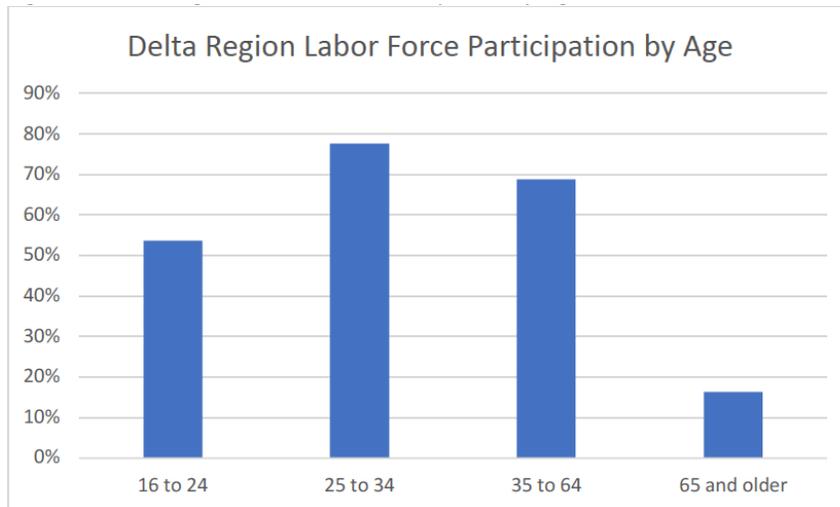
Employment and labor force participation in the Delta Region follows a predictable pattern – varying by age cohort in a bell shape. Figure E shows labor force participation, beginning low as people start to enter the workforce in and after high school, picking up through the mid-twenties to thirties, levelling off until retirement age and dropping sharply after 65.

For individuals not in the labor force, this income likely represents some form of stipend, like SSI, retirement, pensions, or investment dividends.

⁹ Due to federal data limitations, we are only able to present information on binary gender (male and female) and simplified racial and ethnic categories. We understand that the gender, ethnic, and racial landscape of the Delta Region is far more diverse than this analysis would suggest, but we are limited by what data is available to us.

¹⁰ Tables follow a standard format. Population estimates are presented for employed and unemployed individuals as well as individuals not in the labor force (NILF). Unemployment (UR) and labor force participation rates (LFPR) are presented to help contextualize population estimates. Tables with details by state are provided in Appendix D.

Figure E: Delta Region Labor Force Participation by Age



Incomes steadily rise until retirement age is reached. One possible explanation for the drop in wages for the final age cohort is that those with higher incomes will have retired, leaving only low-income workers still in the labor pool.

The bell-shaped distribution observed at the Delta Region level is seen across the various state cohorts found in the Delta Region (see Figure E). While average incomes and participation rates fluctuate from state to state, the region is consistent in the employment pattern observed across age cohorts. The Delta's distribution mirrors that seen on the national level as well, although labor force participation rates within the delta are consistently a few percentage points lower than the rest of the nation.

GENDER

In the Delta Region, men are more likely than women to participate in the labor force. However, compared to the national average, men in the Delta Region show lower participation rates, whereas women participate at higher rates than their national counterparts. This indicates that although, in general men participate in the Delta's labor force more than women, women are more likely than men to be engaged in the workforce within the Delta Region.

The lower female labor force participation rate is not the consequence of lower nominal levels of participation, as women and men participate in the labor force in almost identical numbers. Instead, the decreased participation rate is due to higher numbers of women in the overall population, likely at the higher end of the age distribution.

There is a significant difference in pay between men and women in the Delta Region, with men earning \$9,000 more annually on average (Table 4). With the national pay gap estimated at 18 percent, in the Delta, the gender pay gap is above 22 percent. The difference in average pay between men and women in the Delta is even greater when comparing unemployed workers and individuals not in the labor force – 29.5 percent and 35.6 percent respectively. This indicates that, on average, women receive lower unemployment payments and have diminished income streams from sources such as retirement accounts or personal investment accounts when outside the labor force than do men. These alternative revenue streams can be very sensitive to income, and it is likely that earnings differences between employed men and women are heightening this divide.

Table 4: Employment Status by Gender in the Delta Region

Estimated Population						
Gender	Employed	Unemployed	Not in the Labor Force	Gender	Unemployment Rate	Labor Force Participation Rate
Female	2,440,781	163,848	2,229,254	Female	6%	54%
Male	2,551,561	184,727	1,744,760	Male	7%	61%
Total	4,992,342	348,575	3,974,014	Total	7%	57%

Average Annual Income			
Gender	Employed	Unemployed	Not in the Labor Force
Female	\$32,317	\$9,335	\$3,780
Male	\$41,575	\$13,236	\$5,868
Total	\$36,946	\$11,285	\$4,824

The incomes of unemployed women in the DRA are on average 30 percent less than unemployed men – despite experiencing unemployment at virtually the same rate. Women not in the labor force receive 36 percent less than men not in the labor force. As mentioned above, this may be due to lower retirement savings, pension payouts, social security payments, or alternative revenue streams like personal investments in the stock market.

The gender pay gap persists within the DRA, fluctuating state to state but always present. In Alabama, women earn approximately 30 percent less than men on average. Most states fare not much better than Alabama, with Arkansas reporting the lowest pay gap of just 21 percent.

RACE

The Delta Region has a proportionally larger Black population and smaller Asian and Hispanic / Latino populations than the US. The Delta’s White population is proportional to the White population of the rest of the country. Both the Delta Region and the US have proportionally small indigenous populations (American Indian, Alaskan Native, Native Hawaiian, and Pacific Islander), in the tables below, they will be rolled into the “Other” category due to issues of estimate reliability.

While labor force participation rates are similar across different populations by race (Table 5), unemployment rates and income levels diverge. The unemployment rate is six percentage points higher for Black workers, than for White workers. Wages for Black workers are 13.6 percent lower than for White workers. White workers comprise 66.3 percent and Black workers 29.5 percent of the total workforce. Asian workers are 1.6 percent of the total population and have higher labor force participation, lower unemployment rates, and higher wages than any other group. All racial groups have lower labor force participation and higher unemployment within the Delta Region than in the rest of the country.

Black workers are more likely than other groups to be unemployed and experience a lower-than-average LFPR. Income for Black Delta workers is lower than other groups by 15.7 percent on average. The trend of lower compensation continues into unemployment, perhaps due to disparities in payout from unemployment insurance claims or lack of availability to alternate sources of supplemental revenue.

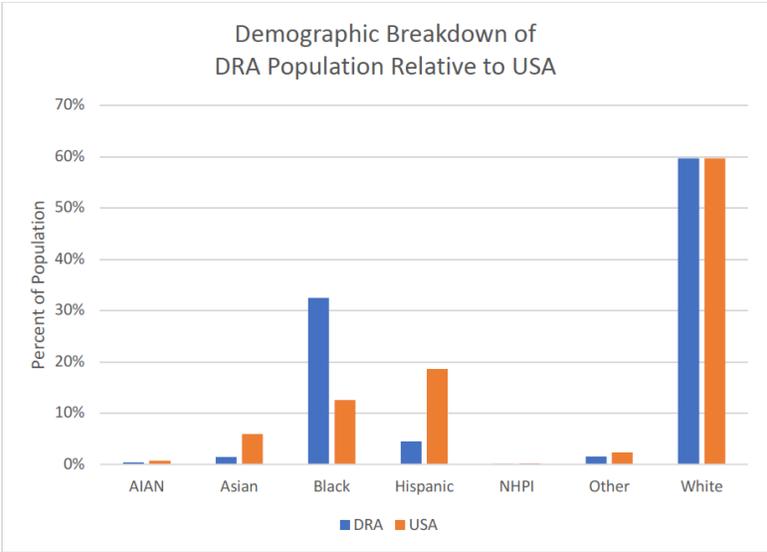


Table 5: Employment Status by Race in the Delta Region

Estimated Population			
Race	Employed	Unemployed	Not in the Labor Force
Asian	84,921	3,621	51,334
Black	1,414,801	166,015	1,191,658
Other	116,368	9,226	85,926
White	3,376,252	169,713	2,645,096
Total	4,992,342	348,575	3,974,014

Race	Unemployment Rate	Labor Force Participation Rate
Asian	4%	63%
Black	11%	57%
Other	7%	59%
White	5%	57%
Total	7%	57%

Average Annual Income			
Race	Employed	Unemployed	Not in the Labor Force
Asian	\$43,800	\$10,264	\$4,534
Black	\$33,319	\$9,461	\$4,908
Other	\$36,251	\$10,276	\$4,427
White	\$38,548	\$13,031	\$4,970
Total	\$37,980	\$10,758	\$4,710

These disparities, while present across all states in the Delta, vary by state. Certain state groups within the Delta Region demonstrate more pronounced disparities in LFPR, UR, and earnings.

Overall, Black workers in the Delta earn substantially less than White workers. The disparity in income between White and Black workers is most apparent in Mississippi, where Black workers earn 23 percent less than White workers. However, these disparities can be observed throughout the region. Black **unemployment** is most pronounced in southern Illinois, where 15 percent of the Black workforce is unemployed. The annual income of unemployed Black Illinoisans in the Delta Region is half that of unemployed White Illinoisans in the Delta Region.

Other groups — predominantly Indigenous communities, but also individuals with two or more racial identities and those whose racial identity is not captured by the three primary Census categories — experience similar earnings disparities to Black residents in the Delta, though the pay disparity varies from state to state. In certain states, such as Mississippi, unemployed Indigenous residents earn a third of what unemployed White residents earn. Overall, the data shows, Black and Indigenous workers earn substantially less and experience higher rates of unemployment than White and Asian workers.

Turning to ethnicity, we see a similar disparity in pay between Hispanic/Latino workers and the rest of the population. This is particularly of note, as Hispanic/Latino workers participate in the labor force at much higher rates than their peers and experience lower unemployment. Nevertheless, they earn substantially less on average.

Table 6: Employment Status. by Ethnicity in the Delta Region

Estimated Population				Ethnicity	Unemployment Rate	Labor Force Participation
Ethnicity	Employed	Unemployed	Not in the Labor Force			
Hispanic/Latino	199,029	11,726	111,211	Hispanic/Latino	6%	65%
Not Hispanic/Latino	4,793,313	336,849	3,862,803	Not Hispanic/Latino	7%	57%

Average Annual Income			
Ethnicity	Employed	Unemployed	Not in the Labor Force
Hispanic/Latino	\$34,447	\$8,008	\$3,836
Not Hispanic/Latino	\$37,146	\$10,331	\$4,386

These disparities in pay are heightened when considering interactions. Tables 7 and 8 explore the interactions of gender and race or ethnicity on labor force participation, employment, and income for Delta residents. For example, Black women earn on average 33 percent less than White men in the Delta Region. The disparity in pay for Black women and White men is consistent with national trends.

Hispanic and Latino men participate in the labor force at higher rates than non-Hispanic or Latino men and have lower rates of unemployment. This difference is not observed for Hispanic and Latino women. Compensation for Hispanic and Latino workers of both genders is lower than for non-Hispanic and Latino workers. The pay gap is larger for Hispanic and Latino men than women, though Hispanic and Latino men do still earn quite a bit more than Hispanic and Latino women.

Table 7: Gender by Race by Employment Status in the Delta Region

Female	Estimated Population			
	Race	Employed	Unemployed	Not in the Labor Force
	Asian	40,588	1,863	32,048
	Black	787,457	81,251	614,882
	Other	47,259	4,463	48,839
	White	1,565,477	76,271	1,533,485

Female	Race	Unemployment Rate	Labor Force Participation Rate
		Asian	4%
	Black	9%	59%
	Other	9%	51%
	White	5%	52%

Female	Average Annual Income			
	Race	Employed	Unemployed	Not in the Labor Force
	Asian	\$36,624	\$6,231	\$3,048
	Black	\$30,025	\$7,922	\$4,446
	Other	\$27,592	\$5,492	\$2,963
	White	\$32,795	\$9,528	\$3,443

Male	Estimated Population			
	Race	Employed	Unemployed	Not in the Labor Force
	Asian	44,333	1,758	19,286
	Black	627,344	84,764	576,776
	Other	69,109	4,763	37,087
	White	1,810,775	93,442	1,111,611

Male	Race	Unemployment Rate	Labor Force Participation Rate
		Asian	4%
	Black	12%	55%
	Other	6%	67%
	White	5%	63%

Male	Average Annual Income			
	Race	Employed	Unemployed	Not in the Labor Force
	Asian	\$54,443	\$11,599	\$4,775
	Black	\$35,933	\$9,731	\$5,058
	Other	\$39,238	\$11,039	\$5,418
	White	\$44,573	\$14,068	\$5,789

Table 8: Gender by Ethnicity by Employment Status in the Delta Region

Female	Estimated Population			
	Ethnicity	Employed	Unemployed	Not in the Labor Force
	Hispanic/Latino	74,341	5,886	66,161
	Not Hispanic/Latino	2,366,440	157,962	2,163,093

Female	Ethnicity	Unemployment Rate	Labor Force Participation Rate
	Hispanic/Latino	7%	55%
	Not Hispanic/Latino	6%	54%

Female	Average Annual Income			
	Ethnicity	Employed	Unemployed	Not in the Labor Force
	Hispanic/Latino	\$23,964	\$3,374	\$1,095
	Not Hispanic/Latino	\$26,510	\$5,304	\$943

Male	Estimated Population			
	Ethnicity	Employed	Unemployed	Not in the Labor Force
	Hispanic/Latino	124,688	5,840	45,050
	Not Hispanic/Latino	2,426,873	178,887	1,699,710

Male	Ethnicity	Unemployment Rate	Labor Force Participation Rate
	Hispanic/Latino	4%	74%
	Not Hispanic/Latino	7%	61%

Male	Average Annual Income			
	Ethnicity	Employed	Unemployed	Not in the Labor Force
	Hispanic/Latino	\$31,460	\$8,190	\$2,742
	Not Hispanic/Latino	\$36,794	\$13,694	\$1,706

The disparity in unemployment rates, particularly those seen by Black men, and the pay gap experienced both by women and Black and Indigenous people in the region, present critical opportunities for action.

DISABILITY STATUS

Disability status represents an often-strong impediment to labor force participation and employment. Obviously, this varies quite widely from person to person, but in general, we know it is often more challenging for individuals with disabilities to enter the workforce and that they experience employment discrimination at much higher rates than able-bodied workers. They are an important part of the Delta's workforce and experience specific employment hurdles that can be eased by direct support.

People with disabilities within the Delta Region participate in the labor force at higher rates than seen in the rest of the country. The difference, around 3 percentage points, represents a 15 percent increase in labor force participation within the Delta Region.

Table 9: Disability Status by Employment Status in the Delta Region

Estimated Population			
Disability Status	Employed	Unemployed	Not in the Labor Force
With a disability	378,312	51,007	1,484,328
Without a disability	4,614,030	297,568	2,489,686

Disability Status	Unemployment Rate	Labor Force Participation Rate
With a disability	12%	22%
Without a disability	6%	66%

Average Annual Income			
Disability Status	Employed	Unemployed	Not in the Labor Force
With a disability	\$32,744	\$7,984	\$3,204
Without a disability	\$37,977	\$10,889	\$4,945

Workers with a disability experience unemployment at twice the rate of able-bodied workers, participating in the labor force at around 1/3 the rate of able-bodied workers. This is in-line with national unemployment rates for workers with disabilities. Additionally, workers with disabilities are paid less, earn less when unemployed, and have lower incomes when out of the labor force than able-bodied workers.

EDUCATION

When compared to national benchmarks, the Delta’s workforce shows significantly lower levels of overall educational attainment (Table 10). Workers in the Delta have spent less time in school and tend to work in industries with lower skill demands. Overall, only 83 percent of Delta citizens hold a high school diploma, slightly lower than the national average of 89 percent. But the educational attainment difference grows at higher education levels: only 24 percent of Delta citizens hold an associate’s degree or higher, compared to 42 percent at the national level.

Table 10: Educational Attainment in the Delta Region for the Population 25 Years and Older

Percent of the Population Aged 25+		
Highest Level of Education	Delta Region	United States
Less than 9th grade	6%	5%
9th to 12th grade, no diploma	12%	7%
High school	38%	27%
Some college	21%	20%
Associate’s degree	8%	9%
Bachelor’s degree	10%	20%
Graduate or professional degree	6%	13%

The relatively low level of educational attainment in the Delta Region may cause many workers to experience challenges in securing high paying, steady employment. However, there is a substantive opportunity in the form of training and education programs targeted at specific groups. With investments in community colleges, workforce boards, and workforce training providers, workers would be able to leverage targeted training to secure quality employment. The specific occupations we believe present the most promise will be discussed in the gap analysis section below. These occupations are all considered “middle skills,” accessible to people with an associate’s degree or the right credentials and training.

Educational attainment is relatively consistent across the various states in the Delta Region. Illinois stands out as having dramatically higher educational attainment than other Delta states, biasing more to some college or higher educational attainment. The Illinois portion of the Delta Region has the highest high school graduation rate at 86 percent. However, this still falls short of the national average of 89 percent. No one state in the Delta Region appears to have a strong competitive advantage in terms of educational attainment. The region falls behind national educational attainment. Investments into one and two-year community college training programs could be beneficial as these programs generally have lower barriers to entry than traditional four-year programs and can be more flexible for workers wishing to learn while still employed.

POVERTY

Turning to poverty, we see in Table 11 that the Delta Region is twice as impoverished as the US national average. The Delta Region total poverty rate is 20 percent, double the national poverty rate. Poverty also impacts Black and Indigenous groups in the region at far greater rates than the White majority. Black Delta residents, particularly, are more than twice as likely to be living in poverty than their White neighbors. Poverty rates remain relatively consistent across the various state cohorts within the Delta Region.

Table 11: Poverty in the Delta Region Service Area by Race

Race	People in Poverty	Total Population	Average % in Poverty DRA	Average % in Poverty US
Asian	17,756	131,556	13%	10%
Black	930,512	3,200,162	31%	21%
Other	46,212	169,666	25%	17%
White	826,187	6,180,532	15%	10%
Hispanic/Latino	99,949	409,201	24%	21%
Total	1,866,186	9,866,781	20%	12%

Consistent with the United States as a whole, Delta Region employers are desperately seeking talent to fill a growing number of available jobs. Employers are seeking available workers but are especially interested in hiring and retaining skilled workers with specialized expertise and credentials. These workers typically obtain essential skills from a wide range of post-secondary institutions and other training programs.

Does the Delta Region have capacity to produce the workforce needed by area employers? Are the essential training programs and investments in place? Below, we examine the education and training landscape across the Delta Region. We examine the number and type of post-secondary institution and the number and type of program by award type and instructional area within the Delta Region. To add further context, we also explore the apprenticeship landscape within the region and finish with a discussion of how well the education system is meeting the needs of critical industry clusters.

Section III.b: Examining Supply Side Dynamics – Education & Training

KEY EDUCATION AND TRAINING INSIGHTS

1. The Delta Region is home to a diverse set of post-secondary providers who are evenly distributed across four-year, two-year, and less-than-2-year institution categories.
2. A large share (60 percent) of training and education programs offered by these institutions are offered at or above the bachelor’s level. This program share is higher than the national average of 40 percent.
3. Meanwhile, a much smaller share of Delta Region workers are using or are eligible for these training programs. The region’s lower-skilled workers may benefit from enhanced access to training programs provided by community colleges or apprenticeship programs, which are better targeted to middle-skill career pathways.
4. Health professions and related programs are the most offered programs in the Delta Region. This is true for four-year and two-year institutions and other workforce training providers.
5. The Delta Region’s 296 apprenticeship programs are primarily offered by construction industry businesses and employ almost no women.

TRAINING PROVIDER LANDSCAPE

In the Delta, and across the US, local people seeking training and education face a diverse array of choices. These include formal classes at two-year and four-year colleges, as well as training programs supported by the public workforce system. In addition, employers and industry intermediaries in the Delta Region may also sponsor apprenticeship programs that provide both classroom and on-the-job training. Our review of registered training providers found 228 institutes of higher education graduating 272,880 students, 297 apprenticeship sponsors graduating 1,559 apprentices, and 57 Eligible Training Providers recognized by the workforce training system.¹¹

Table 12: Completer Information for Various Programs

Program Type	Providers	Programs	Completers
Degree and Certificate Programs	228	8,527	272,880
Apprentice Programs	297	296	1,559
Eligible Training Providers (WIOA)	57	3,493	insufficient data ¹²

COMMUNITY COLLEGES

Our training infrastructure assessment suggests that the Delta Region may be facing a significant structural gap in its training and education programs. Most formal training programs in the Delta focus on the provision of undergraduate and graduate degrees. Yet, because of the region’s low overall educational attainment, the lion’s share of DRA residents may not be effectively utilizing these programs. New investments and new programs targeted to these individuals are needed. There is no one single solution, but additional associate’s degrees and non-degree credential programs are needed. At present, these programs comprise only 40 percent of the overall postsecondary system,

¹¹ The reported count here is likely an underrepresentation of the full range of training providers offering services to Delta citizens and businesses. We only have data on training providers registered with the Department of Labor. Many private training solutions, such as businesses offering internal training to their employees will not be captured in this data.

¹² The source for this data, the Eligible Training Provider List (ETPL) only includes information on the various programs available to prospective trainees. It does not list the number of program completers graduating from each program at a given point in time. This data is included in the DOL’s Participant Individual Record Layout (PIRL) files. This information is publicly available, but unfortunately, due to confidentiality issues, geographic data is not provided to the public, meaning we are not able to provide an accurate count or estimate of participants in Workforce Innovation Opportunity Act (WIOA) sponsored programs for the Delta Region.

compared to 60 percent of postsecondary programs offered in the rest of the country. These programs cater to the needs of incumbent workers, middle-skill workers, and new entrants to the labor market seeking upward mobility. Detailed tables can be found in Appendix C.

TRAINING PROVIDERS PARTNERING WITH WIOA-FUNDED AGENCIES IN THE DELTA REGION

Some training providers, including community colleges, non-profits, and other training organizations, are recognized by state and local workforce boards as eligible to provide training to recipients of the federal Workforce Innovation and Opportunity Act (WIOA) training funds. Information on these Eligible Training Providers (ETPs) is reported to the US Department of Labor and provided here for the Delta Region. Detailed tables can be found in Appendix C. We examined to what extent these programs were prevalent in the Delta Region and surrounding states, and to what extent they aligned with job demand.

In general, most parts of the Delta Region, especially Arkansas and Louisiana, have higher than average concentrations of ETP programs per capita. This concentration of training providers likely results from the region's high poverty rates, and higher demand for various social service programs.

Among the ETPs, community colleges account for more than half of all programs. Of the top ten providers (most programs) within the region, nine are community colleges. The only non-community college provider in the top ten is the University of Louisiana at Monroe, a university offering graduate and undergraduate degrees. Most of the WIOA Eligible Training Programs these colleges offer are certificate programs; associate's degree programs constitute around ten percent. Many of the other credentials offered are unspecified, but likely fall within the non-degree credential category.

Delta Region ETPs are most dedicated to healthcare practitioners and technical occupations training. Management, healthcare support, installation, maintenance, and repair, and educational instruction and library occupations are likewise common training targets for eligible training programs. At the most detailed level, programs specifically targeting training to welders, cutters, soldiers, and brazers, typically employed in manufacturing industries, are most prevalent within the Delta Region.

APPRENTICESHIP PROGRAMS AND APPRENTICESHIPS

In the Delta Region, the construction industry has the highest number of registered apprenticeship programs, followed by manufacturing and then public administration. This matches what is seen at the national level.

Across Delta Region states, registered apprenticeships were generally more concentrated outside the borders of the DRA. The DRA portions of Tennessee, Mississippi, and Louisiana, however, show higher concentrations of registered apprenticeships than the rest of the state. Tennessee, as a state, has a relatively high concentration of apprenticeships compared to the other delta states, as does Illinois, a trend not carried over to the Illinois counties found within the Delta Region.

Eight industries had no completed apprenticeships in 2019 (Table 14). The lack of apprenticeship completions in these eight industries in the Delta Region was also reflected across DRA States. All these industries – except for mining, quarrying, and oil and gas extraction – saw zero apprenticeship completions at the state level. Except for transportation and warehousing and information, these industries fall in the bottom ten industries at the national level by number of active apprentices. In 2019, the real estate and arts, entertainment, and recreation industries only had nine total completers across the entire nation.

TOP FIELDS OF STUDY

Health professionals and related programs are the most common postsecondary field of study offered in the Delta Region and graduate the largest number of students, making up 17 percent of all programs and conferring 22 percent of all awards. Over half of all programs and awards within the health profession were for an associate's degree or certificate, indicating that a large portion of the field relies on a set of skills trainable within a two-year timeframe.

Mechanic and repair technologies and technician programs were the second largest field of study in the Delta Region. Unlike health programs, these programs are offered exclusively at the associate's degree or certificate level, making them a steppingstone for high school graduates looking to quickly enter the workforce or incumbent workers looking to expand their skill sets. Engineering technician programs, offered at both the two- and four-year levels, may offer opportunities for upskilling and further education. The prevalence of mechanic and repair technologies/technicians' programs demonstrates the emphasis manufacturing and repair industries place on middle skills and the high demand for competent, qualified workers in the field in the Delta.

Not all programs in the Delta are occupational or technical in nature. Looking at more detailed fields of study, general studies programs emerge as the largest conferrer of awards, while business administration and management offers the largest number of individual programs. Narrowing scope to associate's and certificate level programs, welding technology and welder programs replace business administration and management as the most numerous programs, though general studies remain as the primary conferrer of awards.

APPRENTICESHIP COMPLETION AND CONCENTRATION

In retail trade, professional, scientific, and technical services, administrative and support and waste management and remediation services, and accommodation and food services industries, 100 percent of a state's apprenticeships were completed within the Delta Region.

Returning to the industry clusters defined in Section I, the labor-intensive manufacturing cluster employed the highest number of apprentices in 2019, followed by research, engineering, and technology. Labor-intensive manufacturing industries have the highest completers per program ratio at 8.9 completers for every program within the Delta Region.

Kentucky boasts the highest number of completed apprenticeships as well as the highest number of completed apprenticeships **per capita**, indicating this high completer count is not a factor of population. Apprenticeship completions are more highly concentrated within the boundaries of the DRA than without, except for Louisiana parishes, which have the lowest completer concentration of anywhere in the DRA.

APPRENTICESHIP DEMOGRAPHICS

Women were barely included in the Delta Region apprenticeship system in 2019. Despite women making up 49 percent of employed workers in the Delta Region, only 4.8 percent of apprenticeship completers were women. While some of the disparity can be explained by the gender demographics of top apprenticing industries (construction and manufacturing) this does not account for the entire gap. The underrepresentation of women in apprenticeship programs could potentially lead to a cyclical state where male-dominated critical occupations continue to be male-dominated, with women being excluded from the economic opportunities offered by apprenticeship programs.

Table 16: Demographics of Apprenticeship Completers in the Delta Region and Delta Region States, by Gender

Gender	Delta Region	States
Total	1,559	4,579
Male	1,484	4,371
Female	75	208
Percentage Female	4.8%	4.5%

Most apprenticeship completers in 2019 were White. While the Delta Region cohort was slightly more diverse compared to the DRA states, the group of 2019 completers was still disproportionately White. As shown in Table 17, the employed non-White population in the Delta Region is about 32 percent, therefore the Delta Region's apprenticeship system underserves the non-White population by a wide margin. Likewise, Hispanic and Latino workers are disproportionately underrepresented in apprenticeship programs in the Delta Region.

Table 17: Demographics of Apprenticeship Completers in the Delta Region and Delta Region States, by Race

Race	Delta Region	States
Total	1,392	4,017
White	1,174	3,503
American Indian or Alaska Native	5	17
Asian	2	19
Black or African American	207	469
Multiple-Race Selected	1	1
Native Hawaiian or Other Pacific Islander	3	8
Non-White (Sum of rows 2-6)	218	514
Percentage Non-White	16%	13%

Table 18: Demographics of Apprenticeship Completers in the Delta Region and Delta Region States, by Ethnicity

Ethnicity	Delta Region	States
Total	1,118	3,472
Non-Hispanic	1,055	3,010
Hispanic	63	462
Percentage Hispanic	5.6%	13.3%

TRAINING PROVIDER ALIGNMENT

Education and training programs are not well aligned to the needs of the Delta Region's workforce or industry. This dynamic is most apparent with apprenticeship programs, which serve almost no women, few people of color, and are mainly concentrated in the construction industry. Postsecondary education, while wider reaching in terms of the industrial needs it serves, primarily provides training at the bachelor's level.

The postsecondary education system is misaligned with the educational needs of the Delta's workforce. Unlike at the national level, where the majority (60 percent) of programs are one- or two-year certificate or associate's degree programs, only 40 percent of the Delta's postsecondary programs are offered below the bachelor's degree level. This imbalance is compounded by the relatively low level of educational attainment in the Delta compared to the rest of the country. Delta residents have lower levels of associate's degree attainment, lower rates of high school graduation, and a higher proportion of people with no formal educational attainment. Short term, one- or two-year programs can serve as excellent pathways into employment or stepping stones for workers wishing to return to school and achieve an associate's or bachelor's degree. Associate's and bachelor's degree programs can be made far more accessible to incumbent workers by offering course credit for prior experience. This practice lowers the barrier to entry for incumbent workers and rewards students for seeking professional development opportunities while enrolled in school.

The education and training system does appear to do a relatively good job of providing services to health-care and related fields. Mechanic and repair technology programs are common as well, but there are few courses or programs aimed at addressing the needs of transportation and material moving or agriculture workers, two of the region's most critical industrial and occupational groups. The extent of this deficit is explored in the gap analysis below. Based on our research, we now have a baseline understanding of the Delta Region's industrial mix, population demographics, and education and training system. And we can fit these pieces together to assess the extent to which business needs are met by the education and training pipeline, and in turn, how well that pipeline serves the specific needs of the Delta population.

Section III.c: Examining Supply Side Dynamics – Gap Analysis

Based on our research, we now have a baseline understanding of the Delta Region’s industrial mix, population demographics, and education and training system. And we can fit these pieces together to assess the extent to which business needs are met by the education and training pipeline, and in turn, how well that pipeline serves the specific needs of the Delta population.

KEY GAP ANALYSIS INSIGHTS

1. The supply of graduates from certificate and degree programs lags the number of job openings in most critical occupations, but most concerning is the lack of training and upskilling for the incumbent workforce.
2. Critical occupations facing training shortages are predominantly either male or female and Black, Asian, and Other Race workers are underrepresented in these occupations. There may be an opportunity to fill these positions by making sustainable, quality job opportunities in these fields more accessible to women and people of color.

CRITICAL OCCUPATIONS GAP ANALYSIS

In any given labor market, we can estimate the demand for and the supply of workers based on a combination of federal statistical and administrative data. The primary goal of a supply-demand or education “gap” analysis is to assess and improve the alignment between supply and demand. Typically, we estimate the difference between the number of job openings and the number of new entrants to the workforce for a single labor market or commute shed. There are two typical data sources: 1) annual job opening estimates representing demand for workers, and 2) higher educational completions, representing the supply of new workers. The education gap is the difference between these two data sets.

The emphasis on formal education is important due to the strong association between formal credentials and wage gains: Overall, formal credentials have a stronger relationship with wage gain compared to **non**-credential training. Training through more formal programs additionally links trainees to other opportunities for further education, sometimes increasing access to related support services provided by colleges. This additional support is more typical of degree-granting than non-credit programs.

For these analyses, including the analysis provided below, we assume new workers entering the labor market with credentials will fill job openings. But it is important to note that gaps between demand and supply may also be reduced if incumbent workers are training and upskilling into or invited to make lateral movements into open positions. Unemployed workers seeking to secure employment may also fill these open jobs.

While a typical supply-demand analysis applies to a single labor market or commute shed, the supply and demand gap analysis below applies to the entirety of the Delta Region, including multiple labor markets across urban and rural areas. This exercise identifies potential shared pain points across the region. Any potential training opportunities and real gaps or pain points should be verified by a local labor market analysis, including review by local education providers with employers who are seeking to hire program graduates.

SELECTING TARGET INDUSTRY CLUSTERS AND CRITICAL OCCUPATIONS

We chose to focus on three industry clusters critical to the Delta Region’s economy: high-tech infrastructure, agriculture and resource extraction, and labor-intensive manufacturing industries. Descriptions of these industry clusters can be found in Section I of this report. Below we succinctly describe why these industry clusters were selected for additional analysis here. For example, the high-tech infrastructure cluster represents many jobs in the region.

We selected a subset of occupations critical to each of the target industry clusters based on training and education requirements (“middle skill”), normalized payroll (excluding positions with high income levels but few job opportunities) and employment levels (occupational fields well represented across the region).

The training and education criteria included those occupations that typically do not require a bachelor’s degree but do require some post-secondary training. Many of these “middle-skill” occupations provide good wages and are increasingly in demand. “Middle-skill” occupations serve as promising entry points for college graduates entering new fields and as target occupations for workers seeking to advance from low wage less skilled positions. We further limited to occupations normalized average annual payroll fell above the industry cluster median, to ensure discovery of all pathways to relatively well-paying jobs that employ a relatively high number of individuals. Finally, to ensure that examined occupations represented a relatively large labor pool, we selected only those occupations that employ above the average occupational employment level for each industry cluster.¹³ The research process resulted in 45 critical occupations for the three industry clusters, listed in Tables 25, 26, and 27 in Appendix E.

The top three critical occupations for the high-tech infrastructure industry cluster (with the most unfilled job openings) are found in every other industry cluster.

These three occupations play an important role in all clusters:

- Bookkeeping, accounting, and auditing clerks
- Maintenance and repair workers
- First-line supervisors of office and administrative support workers

The gap analysis described above (difference between the number of openings and the number of training program graduates) was conducted for all middle-skill occupations. Results for each of the three target industry clusters are presented in Appendix E and further details are provided below for five occupations critical to most industry clusters.

There are six occupations critical to all three target industry clusters:

- Industrial Machinery Mechanics
- Bookkeeping, Accounting, and Auditing Clerks
- Maintenance and Repair Workers, General
- First-Line Supervisors of Mechanics, Installers, and Repairers
- First-Line Supervisors of Production and Operating Workers
- First-Line Supervisors of Office and Administrative Support Workers

Together, these critical occupations represent a gap of 19,233 open jobs.

¹³ The occupations presented here will be those with a high employment capacity, ensuring there is adequate volume to accommodate an influx of workers. This decision will remove some positions typically considered to be “critical” because there are few opportunities and the roles are difficult to fill. The “critical” occupations identified in this research could help to feed and fill those more specialized positions with additional training or marketing by employers seeking to staff hard-to-fill positions.

THE ECONOMY AS A WHOLE

In total, there are just under 77,000 unfilled positions in critical occupations across the Delta Region. The gap in unfilled positions in critical occupations represents a relatively small proportion of the Delta's workforce. These openings may be filled by current employees or people receiving training from programs not counted here.

However, about half of the unfilled positions are critical to one or more of the three target industry clusters and they deserve attention. These critical jobs generally require some degree of higher education or specialized training and credentialing, meaning most high school students are ineligible to apply. Given the small number of training programs observed in the Delta Region for these specific positions, it is likely that training for these jobs, including on-the-job training and upskilling, could be expanded. Connection to these openings could be strengthened with better and clearer upskilling and education pathways.

Only six critical occupations display a surplus of incoming program completers. In total, they represent a surplus of approximately 2,000 prospective workers. This surplus may represent college program graduates leaving the region for work, including those that may have located in the region only for the training period. The surplus could also represent workers who do not find jobs or whose skills may be relevant to jobs that are not typically associated with their training programs.

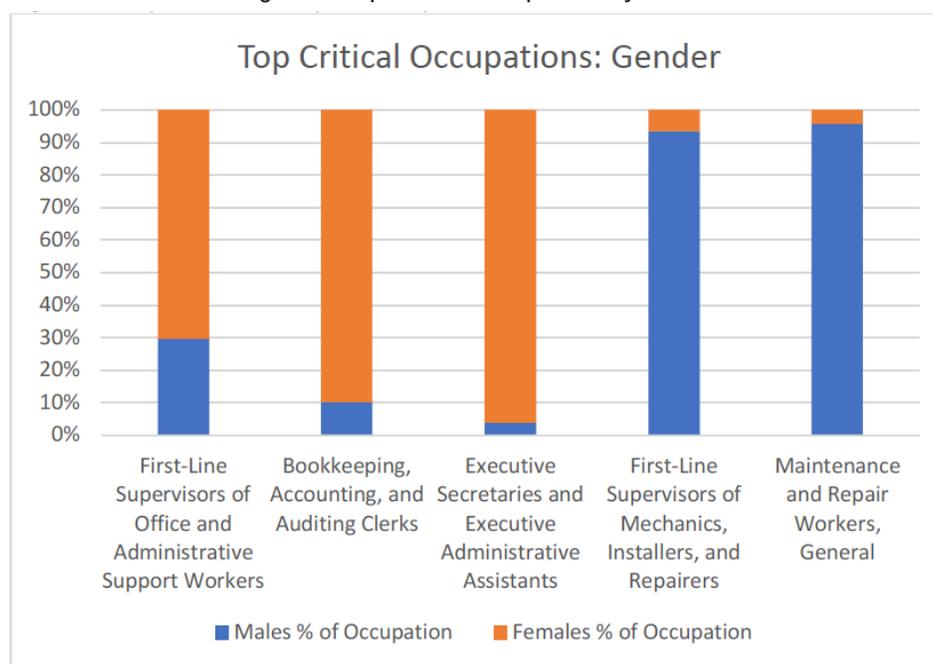
ANALYSIS OF FIVE "CRITICAL" OCCUPATIONS RELEVANT TO MOST INDUSTRY CLUSTERS

Five occupations meet our criteria as "critical" to almost every industry cluster in the Delta Region.¹⁴ Together, these top five critical occupations represent a gap of over 16,000 jobs, about 20 percent of the total gap seen across all critical occupations. Three occupations included here are common to every industry cluster: bookkeeping, accounting, and auditing clerks, maintenance and repair workers, and first-line supervisors of office and administrative support workers. Two occupations are common to most industry clusters (ten and nine of 11 total, respectively): executive secretaries and executive administrative assistants, and first-line supervisors of mechanics, installers, and repairers.

A detailed examination of the demographics of these occupations, their gender, age, and racial diversity is available in Appendix E. When considering training interventions, attention should be paid to historical patterns of discrimination and current bias to ensure new programs improve the diversity, equity, and inclusivity of these occupations.

The data suggests these top occupations are either predominantly male or female. Women are more typically employed in office and administrative roles and men are more typically employed in maintenance and repair roles. Of the two supervisory occupations, the office and administration role, disproportionately staffed by women, earns around \$7 / hour less than the mechanics and repair role, disproportionately staffed by men. If the DRA or its partners wish to expand job opportunities for women in critical and growing occupations, first-supervisors of mechanics, installers, and repairers, and maintenance and repair occupations would be excellent candidates.

Figure G: Top Critical Occupations by Gender



These five top occupations are not particularly racially or ethnically diverse, compared to the rest of the Delta workforce. Black, Asian, and Other workers are underrepresented in these occupations. First-line supervisors of mechanics, installers, and repairers employ Black workers at about half the rate of their presence in the overall labor force. Creating more opportunities for workers of color in these occupations could be an excellent way to address businesses' need for qualified workers and open new pathways to upward mobility for a wide range of the Delta's workforce.

Many workers aged 35 to 54 fill these occupations, indicating that the region will avoid a retirement shortage in these positions after baby boomers retire. To avoid a future shortage, employers must continue to recruit and employ younger workers to replace retiring workers.

First-line supervisors of office and administrative support workers are the only occupation of the five that appears to have any demonstrably growth over the last five years. Even executive secretaries and executive administrative assistants have seen employment reductions over that time, indicating their strong employment growth (in comparison to national trends) does not outweigh the overall contraction of the occupation. First-line supervisors of mechanics, installers, and repairers have shown only minor growth over the past five years, adding 31 jobs across the entire region. The growth of first-line supervisors of mechanics, installers, and repairers is much slower than what has been seen at the national level. If the region had grown on par with national trends, this occupation would have gained approximately 1,342 new jobs between 2015 and 2019.

These high demand occupations, specifically the two managerial occupations, are likely to pull in workers from related, entry level positions. First-line supervisors of office and administrative support workers, for example, may be staffed by workers formerly employed in office and administrative support. Maintenance and repair workers may be promoted to fill positions in the first-line supervisors of the mechanics, installers, and repairers' occupation. Approximately 486,000 people were employed in office and administrative support occupations in the Delta Region in 2019. It is highly likely that some if not all the first-line supervisors of office and administrative support openings will be filled by people from these occupations with the requisite experience.

Most of the occupations highlighted here require just a high school diploma, and as such, may be able to find enough incoming high school graduates to meet their need (Table 30 in Appendix E). However, most also require prior

¹⁴ Occupations earning above industry cluster median wages, employing above average numbers of workers, and not requiring a four-year degree.

work experience, meaning that high school students are unlikely to qualify to the same extent as incumbent workers from other, related professions. When filling these positions, either with recent high school graduates or incumbent workers, employers will need to determine whether a potential hire possesses the skills required to help their businesses grow. The skills gap requirement for high school graduates may not be filled simply by education and on the job experience in another profession. Often workforce training boards and partner training organizations will need to step up to fill industry needs and help upskill prospective hires.

We observed a high level of demand for qualified workers across the Delta Region and particularly in occupations critical to the success of the region's industry clusters. Training programs aimed at filling the demand for qualified workers are in a unique position to address diversity, equity, and inclusion issues in the Delta's workforce. These critical professions do not display representative hiring patterns, and by tailoring job training and placement efforts to address this disparity, workforce development agencies may be able to shift the needle on employment discrimination in the Delta. The high level of demand for qualified workers in these occupations puts prospective hires in an advantaged position. Delta workforce development agencies may be able to take advantage of this situation by targeting training and support programs to women and people of color to help them secure employment in these sought after and in demand jobs.

To that end, we identified several promising workforce development programs over the course of our research that are seeking to close the "critical occupation gap." These programs use innovative design methods to connect workers to training opportunities tailored to specific industry needs while also addressing labor force participation inequities. Many of these programs recognize the unique needs of various underutilized workers and have designed program components to specifically address those needs, increasing the likelihood that workers will succeed. For example, one pilot workforce training program identified over the course of our research recognized that underutilized rural workers lacked adequate transportation to attend courses to receive in-demand skill and workforce training, so to address the challenge of a lack of transportation by rural residents, program designers dispatched a van to drive to rural areas and offer training.

With special attention paid to the needs of workers, as well as the specific skills needed by industry, Delta workforce development agencies can design programs that support hiring more women, people of color, low-income rural residents, and other underutilized workers in critical occupations while also increasing industry productivity. In the next section of this report, we outline the exemplary programs identified during our research, note commonalities

Section IV: Case Study Analysis

Program Components of All Case Studies	
Community College Involvement	✓
Partnership Across Levels of Government	✓
Created in Response to Specific Private Industry Need	✓
Private/Public Sector Collaboration in Program Design	✓
Available to New Workers	✓
Available to Incumbent Workers	✓
Federal Grant Funding	✓

across programs, and identify reasons the programs were so successful.

CREC conducted a series of in-depth case studies to address the need for connecting workers to critical occupations and identify promising practices. Five programs were approached, the MCC Lineman Training program in Kentucky, the Greater New Orleans, Inc. Mechatronics Apprenticeship program in Louisiana, the University of Western Alabama's LINC program in Alabama, Base Camp Coding Academy in Mississippi, and Marquette Tech District's workforce development efforts in Cape Girardeau, Missouri.

KEY CASE STUDY INSIGHTS

1. All five programs are administered with support and involvement from community colleges and partners at all levels of government: local, state, and federal; were created in response to specific private industry needs and involve some degree of public-private collaboration and partnership in program design; and are available to both new and incumbent workers.
2. Strong local, regional, and federal levels partnerships are essential for early and long-term program success
 - a. Rely on industry partners to develop industry-driven curricula,
3. Embracing hands-on, experimental program design
 - a. Strong wrap around services identified as crucial for supporting participants through the program

These findings, and those presented below, can be adapted and adopted by workforce development professionals and training providers. They can help guide the development of programs aimed at addressing the talent gaps identified by our quantitative research, as well as furthering diversity, equity, and inclusion goals by targeting training to women, people of color, and other underutilized workers.

PROGRAM OUTCOMES

Between 2018 and 2021, the MCC Lineman program supported 117 graduates. Attrition rates were low, and many students earned an average starting salary of around \$45,000 upon graduating. Roughly 85 percent of graduates were placed in full-time positions within two to three months of program completion. The program will be expanding rapidly this year when the new training facility opens in early 2022, allowing MCC to train up to 90 students per year.

While it is too early to fully assess this program, early results from the GNO Mechatronics Apprenticeship are promising. Demand for the training is strong among students and employers. GNO Inc. expects to engage several

new business partners in the coming months. All program completers will transition into full-time employment, with average annual salaries in the range of \$45,000 to \$55,000. These salary levels are much higher than the region's median salary levels, and median salaries for other middle skill positions in the Greater New Orleans region. GNO, Inc. will begin tracking additional program metrics when the first cohort completes the program in summer 2021.

UWA LINCS's three Skills on Wheels mobile learning labs have been in the field for only a few months, but early results are promising. One unit operated in the town of Butler (with a population of 1900) for four weeks offering training on career essentials and an introduction to a manufacturing course. Five local students completed the program, and, as a group, they gained 23 certifications during that month. Several other pilot projects are underway.

Since opening for business in 2016, the Academy has graduated four cohorts of students, with an average class size of 10 to 15 students. The 2021 class, with 15 students, is currently underway after a delayed start due to the COVID 19 pandemic. More than 90 percent of students have been placed in full-time jobs that pay an average of \$50,000 per year, far exceeding the region's median wage and closely mirroring local salaries for college-trained IT professionals. Nearly all the graduates have remained in the region, providing a strong, and growing, base of home-grown tech talent.

Cape Girardeau's Youth Coding League has expanded from 17 Missouri schools and 350 students in 2018 to nearly 80 schools and 1500 students in 7 states in the 2021-2022 school year. Roughly 2/3 of students live in rural regions or are enrolled in free or subsidized school lunch programs. Student participants are diverse, with young girls making up 50 percent of participants and minority students comprising 25 percent of Youth Coding League participants. Codefi has supported the training of approximately 150 software developers and has plans to train over 350 additional adults in the next three years.

PROGRAM OVERVIEWS AND TAKEAWAYS

Below, we present the facts of the case studies, key takeaways from our conversations with case study respondents, and the way in which these unique and innovative programs address the critical occupational skills gaps we identified in Section III.c. Full case studies can be found in Appendix G.

MCC LINEMAN TRAINING PROGRAM

In response to stagnant economic growth and declines in key sectors in Madisonville Kentucky (as well as feedback from private industry), the Madisonville Community College (MCC) developed the MCC Lineman Training Program in partnership with local private industry and federal agencies. The MCC Lineman Training Program offers a for-credit training program for workers looking to enter the utility industry. The program costs around \$7,000 per worker, with an average graduation rate of around 85 percent. The average annual salary per worker graduating the MCC Lineman Training Program is around \$45,000. Between 2018 and 2021, the program supported 117 students and has been an overall great success, both in supporting local residents find sustainable employment, as well as attracting students from across the state and country to relocate to Madisonville and participate in the MCC Lineman Training Program. The program is largely successful due to its close coordination and communication with local private businesses, robust support for students, deliberate long-term planning, and embracing hands-on learning opportunities in the classroom.

The MCC Lineman Training Program addresses the skilled trades skills gap, providing training and wrap-around services, like housing, for electrical infrastructure workers in the Delta Region, working closely with industry on program design and addressing the needs of workers. Given that the evidence shows critical occupations related to maintenance and repair of energy infrastructure disproportionately exclude women and people of color, programs like these may provide opportunities for Delta workforce development agencies to make strides in diversity, equity, and inclusion goals. The lessons learned over the course of our case study on the MCC Lineman Training Program are detailed below.

Listen to Industry

MCC's Lineman program has been industry-driven from Day One. The MCC Lineman program was developed in direct response to a local employer's request for help with talent development and retention, and the program itself is fully integrated with leading industry practices. The course instructor is also connected to leading sector trends and program participants train on start-of-the-art equipment donated by area employers. When students graduate, they seamlessly transition into full-time industry employment.

Embrace Hands-on Program Design

Program and curriculum design are essential to ensuring that training meets the needs of students and employers. Because of close industry ties noted above, MCC provides a streamlined program focused on the key skills needed on the job. As Alan Martin, program faculty member, noted: "We cut out the fluff and go straight to the poles." Training is experiential and hands-on, and students use all the tools and equipment on a regular basis. In addition, the program is unique in providing a CDL component, which not only attracts more students, but provides another in-demand skill set for students.

Think Long Term

In a desire to be responsive to industry needs, many training programs get started too quickly and hope to iron out program details along the way. MCC, KCTCS, and its partners took a more deliberative route. The project team opted to develop a for-credit curriculum, which was developed quickly but still slowed the process of program start-up. However, this decision has generated many benefits, especially for program participants. Students now receive academic credits and are eligible for state and federal student aid programs.¹⁵ In addition, the Lineman program benefits from KCTCS academic support, and can be more easily adopted at other schools in the KCTCS system or elsewhere.

Provide Strong Support to Program Participants

The MCC team provides essential help in obtaining financial aid and in finding housing for out-of-town students. The vetting process to enter the program is rigorous, with program administrators ensuring that students are ready for the academic and physical rigors of lineman training. Program administrators also ensure students are "ready to work" and clearly understand the expectations and demands of the field.

GREATER NEW ORLEANS INC. MECHATRONICS APPRENTICESHIP PROGRAM

The Greater New Orleans region has long been a hub of manufacturing, a sector that employs more than 17,000 workers in the region. But in recent years many private companies have been investing in new and complex manufacturing technologies, resulting in a high demand for middle-skill, specialized labor. The technology transformation is changing the regional talent equation as demand for expertise in automation and robotics may soon exceed demand for more traditional skills such as welding and machining, skills that have historically been sufficient to find work.

As a result, the Greater New Orleans Inc. (GNO, Inc) – the region's leading economic development agency – began an apprenticeship program in 2019 to help address the specialized manufacturing worker shortage in the Greater New Orleans region. In response to the private industry demand for highly skilled manufacturing workers – specifically, in the field of **mechatronics** – GNO, Inc partnered with local private manufacturing businesses and three community colleges (with Workforce Opportunity for Rural Communities (WORC) funding) to create the **Mechatronics Apprenticeship Program**, a program tailored to specific industry demands. Three community colleges – Delgado Community College, Nunez Community College, and Northshore Technical Community College – came together in a unique partnership to leverage the strengths of each individual college and maximize student success, while always keeping in close communication with private industry to tailor the program to specific industry needs.

¹⁵ Students also earn academic certificates in Pole Top Rescue, Utility Technician, and a Climbing Certification. They receive non-credit certification in Adult First Aid/CPR/ Blood Borne Pathogens; Basic Lifting & Rigging; Bucket Truck Operator Trainee; Chainsaw Safety; and Digger/Derrick Operator Trainee.

Successful graduates of the Mechatronics Apprenticeship Program enjoy an average salary between \$45,000 and \$55,000 per year, along with no student debt. Graduates also receive approximately 20 industry credentials and a certification of completion. Overall, program attrition is low, the cohort retention rate is high, and the program has matriculated a diverse cohort of apprentices regarding age, race, and gender. Program administrators note the program's success is due to the targeting of specific employer needs, acquiring diverse funding sources, leaning on workforce intermediaries (in this case, GNO, Inc), and targeting specific workforce gaps.

Like the MCC Lineman Training Program, the Greater New Orleans Inc Mechatronics Apprenticeship Program addresses the demand for qualified manufacturing workers in the Delta Region, while also increasing apprenticeship participation by women and people of color, demographic groups traditionally underrepresented in Delta Region apprenticeship programs. The initial pilot phases of GNO's Mechatronics Apprenticeship Program have been highly successful, generating a positive response from employers, program participants, and the wider economic and workforce development community in New Orleans and across Louisiana. Project managers identified several important factors that have contributed to this success, which are detailed below.

Create regular opportunities to identify employer “pain points”

GNO, Inc. and its community college partners manage several initiatives that regularly assess employer needs and problem areas. The community colleges operate advisory boards that offer input on curriculum and insights on industry trends. In addition, the GNOu program serves as a regular convening venue to build partnerships between employers and higher education institutions. To date, this work has led to the creation of the mechatronics initiative and new statewide program in AWS Cloud Computing and Web Services. Finally, these efforts are further supplemented by business retention and expansion programs led by GNO, Inc. and by local economic development agencies. These business visitation programs also identify gaps in workforce development programs.

Target diverse funding sources

Most program costs are supported by employers and by GNO, Inc., though outside funding was needed to support start-up costs and to purchase needed equipment and training materials. Reaching out to federal, regional, and state partners allowed program managers to access these critical seed investments. DRA's support for the initial program design work was essential to its success. And with public base funding in place, private sector investments can focus on the important work of developing a new generation of mechatronics talent.

Workforce intermediaries matter

While GNO, Inc. does not deliver this program, it played an essential intermediary role. GNO, Inc. initially identified the workforce challenge. Today, GNO, Inc., connects business and education partners, publicizes the program, assists in fundraising, and most importantly, holds key partners accountable. The GNOu team led by Josh Tatum, is widely lauded for ensuring that the program remains on track and that all the key partners are fully engaged.

Target gaps

GNO Inc. is an economic development agency; it is not a WIB or an “official” part of the state or federal workforce training system. As a result, GNO, Inc. has made a conscious decision to target its work on key gaps in the regional workforce development system. This targeting allows more effective and efficient use of resources, while also providing clear and tangible benefits to local employers.

UNIVERSITY OF WEST ALABAMA AND LINCS

The University of West Alabama (UWA) serves a heavily rural region of southwest Alabama, including the Alabama Black Belt, an area characterized by some of the highest rates of poverty in the United States, as well as an extremely low level of educational attainment. Smaller communities within the Alabama Black Belt evidentially face many economic and workforce development challenges, particularly because many individuals residing in Black Belt rural communities lack access to reliable broadband and transportation. In response to these challenges, UWA created the Leveraging Integrated Networks for Challenge and Sustainability (LINCS), in partnership with the private company BetaBox Learning, to send mobile learning labs into rural communities and provide hands-on job skills training.

The BetaBox mobile learning labs are outfitted with state-of-art equipment, such as virtual reality headsets and simulation software, providing excellent hands-on and distance learning capabilities. The LINCS program was developed with support from the Alabama Forestry Association and a former CEO of the Westervelt Company and chair of DEWD's employer advisory council, one of the area's largest employers. The program is largely funded through a grant from the Delta Regional Authority. Early results from the "Skills on Wheels" mobile learning labs are promising, with UWA crediting the program's success to using customized solutions (tailored to private industry needs), the use of anchor institutions (i.e., UWA), and embracing a pro-active regional approach.

The LINCS pilot program is an exemplary Delta Region workforce program, identifying the needs of specific underutilized workers, and providing an innovative solution to address those needs and empower workers to succeed, while also addressing industry workforce needs. In conversation with LINCS program administrators, we identified several takeaway lessons for practitioners looking to address equity gaps in their region's workforce (e.g., such as low-income rural residents). See below for those takeaway lessons.

Be Proactive

The entire LINCS effort embraces a proactive approach. Since many training programs led by UWA and its key partners could not be accessed due to long travel and transportation challenges, the LINCS team opted to bring the training on-site to rural towns in Alabama's Black Belt. On-site accessible learning opportunities can bring new experiences and critical skills training to at-risk populations and help to develop a more diverse and capable local workforce.

Provide Customized Solutions

The LINCS Mobile Labs are well designed to serve rural communities not only because they are mobile, but also because their systems and training programs can be customized for multiple uses. The labs can be used for varied audiences and for varied training needs. For example, they have already been utilized to deliver soft skills and career essentials training, as well as more specialized on-the-job training for local employers.

The Power of Anchor Institutions

The LINCS effort benefits greatly from its home at UWA. UWA is widely recognized as a leader in regional economic development, and as a strong advocate for the Black Belt Region and rural Alabama more generally. This strong reputation helps open doors, with community partners, employers, and residents. In addition, the expertise found at UWA has supported the project with technical help, personnel, research support, and a stable and welcoming institutional home.

BASE CAMP CODING ACADEMY

In recent years the small town of Water Valley, Mississippi has focused its efforts on attracting tourists and new residents to the town's revitalized downtown, known for its good restaurants and shopping. Additionally, the town is focused on growing its young workforce in the face of an increasingly aging population, as well as attracting young new talent from outside the border of the town. To this end, the town created the **Base Camp Coding Academy**, in partnership with private industry and the local community college. Base Camp Coding Academy coordinates with Mississippi's technology sector to identify workforce needs and provide classroom training tailored to the specific needs of technology companies in Mississippi. Private companies involved with the project, such as CoreLogic and other technology firms, are happy with the result, as they are receiving highly qualified candidates without having to spend company money on costly in-house training.

The typical Base Camp Coding Academy candidate is a recent high school graduate that is hardworking, but unlikely to go away to college due to financial limitations or family commitments. Academy students are engaged in an 11-month curriculum that operates as a full-time job (40 hours per week). The program is free to students, with total costs per student (of around \$15,000) supported by program partners. In addition to training, mentoring, and career services, students also receive support for food, transportation, and other needs. The program operates with an annual student cohort of approximately 15-20 students per year. Upon completing the program, more than 90 percent of students have been placed in full-time jobs that pay an average of \$50,000 per year, far exceeding the region's median wage and closely mirroring local salaries for college-trained IT professionals. And importantly, **nearly all graduates have stayed in the region**. The program has largely been successful due to its dedication to flexibility, communication and response to private industry needs, strong partnerships, and an engaged group of stakeholders and board of directors.

The Base Camp Coding Academy program serves as an example to other Delta Region workforce development agencies looking to connect low-skill or entry level workers to in-demand and high paying jobs, while also addressing the problem of an aging workforce and the potential out-migration of young workers. The Base Camp Coding Academy is also inclusive of low-income workers and rural residents by providing food and transportation support. Overall, the Base Camp Coding Academy has enjoyed great success, and the project team attributes this success to several factors, which are detailed below.

Think Like a Business

Base Camp Coding Academy has always operated with a laser-like focus on the needs of local employers. Its program operations are fully funded by private contributions, and its primary mission is similarly business-focused: to provide coding talent to local employers. Base Camp supports other goals along the way, including youth retention, regional talent development, and local economic development. However, it measures its impacts related to the business bottom line and makes its case based on its ability to support local employers.

Know Your Sweet Spot

Running like a business also means understanding your core competencies. Base Camp's core competency is providing training to entry-level coders and IT professionals. It remains focused on this central mission and has generally avoided other new program directions. As co-founder Coughlin advises: Stay focused and ask for help when needed. Base Camp has always kept its mission tightly focused. When new missions or tasks arise, the program team relies on partners and other outside experts.

Be Flexible

While program focus is essential, so is flexibility. This flexibility is most evident in Base Camp's programming and training efforts, which evolve on a regular basis. As Coughlin, we do not "sell a finished product." The Base Camp team works with local businesses to identify pressing talent needs, and designs (often co-designs) new trainings to

help students gain these new skills and competencies. When employers help to design programs and trainings, they become more “bought in” to the process.

Engaged Board of Directors

Many non-profits operate boards of directors that have limited say on program design and operations. Base Camp Coding Academy operates with a different model that expects—and demands—that Board members get actively engaged. Board members currently serve in many active roles, such as mentors, admissions officers, funders, and as community advocates. This active engagement improves program operations, brings in new ideas, and creates real community buy-in for the Academy’s work.

Embrace Partnerships

All effective workforce programs are built on strong community partnerships, and Base Camp Coding Academy is no exception. In addition to engagement with the Board and local employers, the Academy has benefited from many partnerships at the local (the City of Water Valley owns the Everest Innovation Hub building), regional (funding support from DRA and NWMCC), and federal (funds from Department of Labor) levels.

MARQUETTE TECH DISTRICT, CAPE GIRARDEAU, MISSOURI

Located in Missouri’s Southeast corner, Cape Girardeau, with nearly 40,000 residents, anchors a wider region of nearly 218,000 people. The region is rural, with an economy driven by anchors of manufacturing, healthcare, and travel/tourism. The region’s economic and workforce development challenges are like those found in other parts of the Delta Region. The area’s workforce is aging and shrinking, and local employers face major difficulties in accessing talent. Limited local housing options and poor transportation connectivity to other regions complicates the process of talent recruitment. As a result, current regional economic development plans place great emphasis on home-grown business opportunities. Other current regional strategies include promoting entrepreneurship and Main Street business growth, promoting farm-to-table food business opportunities, and supporting the expansion of local tourism assets.

To this end, two local entrepreneurs (with support from local workforce development agencies and other partners) named Chris Carnell and James Stapleton, started Codefi, a local business with a “mission to eliminate the skills and opportunity gaps preventing workers and entrepreneurs in the region from participating in the digital economy.” Codefi manages a host of programs and initiatives in Cape Girardeau, many of which are delivered in the southern third of Missouri and 16 counties in west Kentucky. Programming is organized around three leading focus areas: Connects, Startups, and Works. Connects refers to a designated coworker space and Startups includes entrepreneurship development programs. The Works component refers to the workforce development and training programs, including three primary programs: a Youth Coding League, working with area youth (grade 5-8); an adult training platform, providing tech education and on-the-job training for software developers in rural Missouri and Kentucky; and (its newest offering), the Rural Source Employment Network, designed to connect rural talent to remote employment opportunities around the US and the world.

The Cape Girardeau, Missouri Codefi initiative serves as a good example of a program closing the critical occupational skills gap within the Delta Region by connecting local youth and incumbent workers to in-demand and high paying occupations. The program also recognizes the needs of workers (e.g., remote jobs for rural workers) and integrates solutions to address those needs through programming. In conversation with program administrators and through research, we identified several lessons that may assist practitioners looking to design innovative programs to address the critical occupational skills gap. Those lessons are detailed below.

Nurture the Ecosystem

The Codefi leadership team always embraced an ambitious mission for their work. They were not simply seeking to deliver good workforce or economic development programs; they were seeking to transform the regional innovation ecosystem in Southeast Missouri (and beyond). In keeping with this mission, Codefi developed a diverse mix of programs that support business development and talent development, recognizing that talent is the key differentiator in thriving entrepreneurial hotspots. No single Codefi program stands alone, but together they synergistically support an emerging innovation ecosystem in Southeast Missouri and Western Kentucky.

Be Entrepreneurial

Codefi operates like an entrepreneur. The team regularly scans the marketplace to identify opportunities and then amasses the resources needed to capitalize upon them. This entrepreneurial mindset is a core part of all programming at Codefi.

Embrace Partnerships

Codefi has relied on close partnerships throughout its existence. These include close work with Federal funders such as DRA, the US Economic Development Administration, the US Department of Labor, State partners including the Missouri Technology Corporation and long-standing ties with local employers who help to train and eventually hire Codefi program graduates. At the local level, key partnerships include those with SEMO, which has located its SBDC and Business Engagement offices at Codefi. In addition, numerous area banks and the City and County of Cape Girardeau have been close partners and offer free Wi-Fi in the downtown area near Codefi's offices.

Build on Anchor Institutions

Cape Girardeau and Southeast Missouri benefit from their proximity to Southeast Missouri State University (SEMO), which attracts talent to the region and provides important institutional support to Codefi. Many of the region's local employers can trace their origins back to SEMO, and many of Codefi's program leaders and participants also have SEMO connections. For example, Dr. James Stapleton, Codefi's co-founder, previously served on the SEMO faculty. Likewise, Codefi's expansion across southern Missouri has been fueled by a close working relationship with Missouri State University in Springfield, Missouri and its innovation center, eFactory.

Section V: Stakeholder Insights

To dig deeper into leading Delta Region workforce trends, identify challenges, opportunities, and exemplary programs and projects, and corroborate findings from sections I-III.c of this report, the Delta Regional Authority sponsored a series of focus groups with workforce development leaders and experts from across the Delta Region. Participants included DRA State Alternates, education professionals, and representatives from state, regional, and local economic and workforce development agencies. The sessions, held in April 2021, were moderated by the CREC / EntreWorks team and engaged key DRA partners from all eight DRA states. Summary findings from these inputs are presented below, with more detailed survey results provided in Appendix F.

KEY STAKEHOLDER INSIGHTS

1. Talent shortages are the biggest challenge faced by regional stakeholders
2. Workers lack adequate access to transportation, affordable housing and care, and healthcare
3. DRA should continue to support state and local partners via data analysis, technical assistance, and the sharing of effective programs and practices
4. DRA could also consider more active partnership with employers and industry associations to develop more scalable programs to improve the region's talent base and target training opportunities to women and people of color

Focus group attendees corroborated the identified talent shortages, which was without a doubt, the biggest challenge they faced. Area employers cannot find workers in general, cannot find workers with essential soft and technical skills, or cannot retain workers once they have been hired. This talent shortage has forced some employers to forgo new contracts and cut back operations. Employers have become more active and vocal in terms of seeking help from workforce programs, and many promising efforts to close these talent gaps are underway. A related shortage has also been observed in the skilled trades, many rural counties have no plumbers, electricians, or licensed contractors.

Many employers have attributed the shortage to overly generous benefit programs designed to address the COVID-19 pandemic. However, several participants highlighted key structural challenges that prevent many local people from taking full-time jobs. Some of these factors are short-term. Parents and caregivers may be needed at home to care for children or sick relatives. Fear of COVID-19 is also at work.

Other factors are structural. Across the Delta, and especially in more rural regions, workers lack transportation or affordable housing options, which prevent them from traveling to work or living closer to job opportunities. Some employers and communities are now starting to address these problems by providing transportation, childcare, or other needed services. These types of support services will be a necessary part of future efforts to address the region's talent gaps.

These challenges, as well as high costs, also deter many residents from taking advantage of available training and retraining programs. Many focus group participants noted that enrollment and participation in training programs by both individuals and employers has dropped during the pandemic.

Many employers are seeing a rapid turnover of workers, who may leave for slightly higher pay or due to boredom or stagnation on the job. Developing clearer career pathways may offer a means to help upskill incumbent workers and improve employee retention.

Respondents identified four broad industry sectors as most important for current and future talent development efforts: manufacturing, healthcare and social services, transportation, distribution & logistics, and information technology. These sectors share several important characteristics. They operate in most parts of the Delta Region and have been growing in recent years — at least prior to the COVID-19 pandemic. These sectors also provide a good mix of

high-quality skilled jobs and careers, for those with college degrees and for those pursuing middle skill level positions as well. As such, they offer promising talent development opportunities that address some of the long-term structural challenges facing the Delta Region workforce.

As we've seen, many residents of the Delta work in industries that offer low pay, require limited skills and credentials, and which do not offer attractive long-term career opportunities. Stakeholder respondents highlighted the need to create more high-paying jobs. These sectors offer promising growth opportunities across the Delta Region.

Working with local employers, workforce development professionals in the Delta are pursuing multiple approaches to build a stronger talent pipeline. Over the short term, many employers and regions seek to increase the existing pool of available talent. In some communities, manufacturers are developing apprenticeship-like programs that allow high school students to combine their education with on-the-job manufacturing training. We have seen that historically, apprenticeship programs in the Delta have not been equally accessible to all residents. Ensuring these programs actively recruit and train young women and students of color may help develop previously nonexistent pathways into manufacturing industries.

These efforts are being supplemented by second chance and re-entry programs that provide training and employment opportunities to returning citizens or those who are recovering from substance use disorders. This group, often ignored, overlooked, and omitted by automated hiring processes, represent a strong, eager, and plentiful potential workforce for the Delta. Stigma is the main hurdle facing most of these workers, and focused campaigns by workforce development organizations in partnership with local businesses can do a tremendous amount to change public sentiment.

Many employers are also working to improve their own programs for employee recruitment and retention. This may take the form of providing better wages and benefits, or by providing on-the-job training and mentoring programs focused on employee retention and career advancement.

Participants agreed that the region will need to consider importing talent. This talent influx will require publicizing the Delta Region's great career opportunities and quality of life and supporting the development and upgrading of key amenities sought by talented workers. Survey respondents identified quality of life as their area's primary asset for business. At the most basic level, essential infrastructure, like broadband access, must be improved. In addition, investments in quality housing stock, childcare availability, and other quality of life amenities are also needed. These improvements will benefit the current workforce as well, and should be considered on their own merit, not simply as a talent attraction mechanism.

Section VI: Recommendations

When they first unveiled the Delta Workforce Program in 2018, leaders at the Delta Regional Authority viewed the program as a core plank in DRA's wider mission to revitalize local economies in the Mississippi Delta region and Alabama's Black Belt. The program complements other important DRA initiatives focused on health and leadership development as it seeks to build more resilient talent pipelines that help employers compete, help workers pursue rewarding careers, and help communities to become more prosperous.

Early successes are generating momentum, but these efforts face headwinds. Workforce programs in the Delta Region operate in a challenging environment that has been worsened by the effects of the COVID-19 pandemic. Significant talent shortages are affecting all industries, and employers are scrambling to find workers with the necessary skills and credentials. Long-standing conditions make it difficult for employers to find and retain talent and complicate talent development efforts: Industrial development strategies have favored low-wage work and Delta workers are less well-educated than their counterparts elsewhere in the U.S. Employers and workers face significant challenges, such as limited transportation and health care options, that limit their contributions to the Delta economy.

Moving forward, the DRA and its partners can continue to advance innovative and strategic talent development programs while also championing advances in the broader talent development system. The DRA can continue to use grantmaking as a targeted tool to advance promising practices, expanding collaboration with other grant-makers in the region and nationwide, including federal and philanthropic partners. This work should continue to be aligned with state- as well as local-led initiatives that seek to advance education and skills as well as with local capacity-building efforts.

Thus far, the DRA has advanced a coherent and ambitious focus on employer-led, demand-driven programming through its grantmaking, reflecting nationally recognized leading practices, but without a focus on credentialing for workers on the frontline and contributing to the day-to-day operations of the factory or the call center, including those that may be ready to step into roles of greater responsibility. Innovative companies can integrate and leverage credentialing opportunities to help improve talent retention and attraction. Moving forward, DRA can better articulate the roles and contributions of partner organizations in these efforts. A strong feedback loop across the Delta Region, including companies and other stakeholders, will help to accelerate learning about what works for Delta residents and businesses.

Key opportunities include expanding high quality training to help low-wage workers fill critical jobs in the skilled trades, in manufacturing, and in the advancement of agricultural technology and bio sciences. More employer-led training would help the region to avoid skill gaps and talent bottlenecks in the future. Underlying structural challenges must also be tackled. Legacies of discrimination must be recognized and addressed. More robust and pro-active programs targeted to workers at risk of layoffs, offshoring, and technology displacement are needed as are investments in essential infrastructure, such as broadband access, childcare, and improved transportation access. Community-based solutions must be developed and championed by local leaders, with support from state and federal government, drawing inspiration from civic initiatives within and from beyond the boundaries of the region.

Below we offer a series of recommendations that we hope will help the DRA and its partners build world-class workforce development capabilities across the Delta Region. Concerted action by local and state governments, education and training providers, and labor and industry representatives is necessary to strengthen and expand critical talent pipelines. No one organization or community can do this alone, all must work to support one another and grow the Delta's workforce.

RECOMMENDATIONS TO THE DELTA REGIONAL AUTHORITY

- **Increase completion of high school and post-secondary credentials.**
- **Provide more Earn and Learn opportunities to help workers keep their skills up to date and move into high-demand careers.**
- **Champion diversity, equity, and inclusion by defining, measuring, and reporting progress.**
- **Support resident-led Quality of Life initiatives that help to attract and retain talent.**

Increase completion of high school and post-secondary credentials.

Experts have concluded that training and credentialing beyond high school is essential for workers seeking jobs that pay a family-supporting wage. This is especially true where traditional manufacturing and office roles require increasingly sophisticated work with computers or interfacing with new mechanical and digital technology.

While a high school diploma is no longer sufficient to compete for good jobs, it is a necessary milestone. For many residents of the Delta, including young residents that have adult responsibilities, this milestone must be accomplished while working. Leading educational institutions have recognized that they can link learning at work to college credit and credentials, allowing employers seeking to upskill and retain employees to embed learning at the workplace and on the job.

Linking high school completion to post-secondary credentials can prepare workers not only for changes in the job market in the future but also to fill immediate openings at their workplace. Well-designed community- and employer-led initiatives that help workers to complete high school and a degree will prepare the workforce for the next job opening while increasing the employee loyalty and retention that helps businesses to grow.

Delta leaders and employers should closely examine local talent pipelines to assess where credential completion could be improved so that all Delta workers have the skills to succeed. High school completion rates in the Delta Region are lower than nationwide averages making basic education a workforce development issue affecting business development potential in the region. Only 83 percent of Delta residents hold a high school diploma, six percentage points lower than the national average of 89 percent. Rates of high school diploma attainment are 59 percent, 73 percent, and 83 percent for the Hispanic, Black, and White populations in the Delta (vs 60, 80, and 85 percent nationwide) (see Table 31 in Appendix H). And rates of bachelor's degree attainment are nine, seven, and 16 percent (vs 10, 13, and 24 percent nationwide), suggesting more Earn and Learn opportunities are needed to support learning through higher education as well.

Provide more Earn and Learn opportunities to help workers keep their skills up to date and move into high-demand careers.

While it is essential for workers to complete high school and a post-secondary credential, it is also important for workers to keep learning and keep their skills up to date throughout their careers. Keeping the talent pool resilient to change requires employer-provided training that links to industry-recognized credentials. Training can improve worker retention and more productive use of technology and can be supplemented with external educational opportunities that respond to the long-run needs of industry.

This is especially important where education levels are low and may inhibit industry advancement. There are now many examples of Earn and Learn programming that is sponsored by employers and bolsters educational accomplishments by integrating high school and higher education completion into training plans.

The DRA can identify where these programs are most needed by comparing education levels across Delta counties, examining to what degree educational programming helps advance workers to fill job openings. It is also important to examine whether women are completing high quality training programs, such as apprenticeships. According to our analysis, less than five percent of apprenticeships are completed by women. (See Table 16 in report

section III.b.) Other studies have determined that women and people of color have been historically excluded from the best apprenticeship programs.

In the rural areas of the Delta, there may be opportunities for apprenticeships in the agricultural industry where new technology is being introduced, for internships at family farms, or other opportunities to connect farmers and students from area community colleges. Programs will have to be adapted to local needs. Many employers, especially smaller employers and employers in rural areas, will need variations on apprenticeship and internship programs which may not fit the traditional mold.

Champion diversity, equity, and inclusion by defining, measuring, and reporting progress.

Delta Region leaders can rapidly advance their workforce development savvy by increasing their understanding of how demographics intersect with employment and poverty trends in the region. These insights can help direct capacity building to distinct communities and leaders that can advance programming relevant to the communities they serve. In 2005, the Appalachian Regional Commission, responsible for economic development and poverty reduction across Appalachia, partnered with a research and analysis group, the Population Reference Bureau, to focus on providing resources, data, and research reports that analyze demographic and socioeconomic patterns in the region.¹⁶ A similar team or partnership could be established at a university in the Delta region or in collaboration with community colleges.

DRA communications and leadership could also be more inclusive and representative of the Delta's racially and ethnically diverse population to reflect the DRA's vision for poverty reduction and economic mobility. Future talent development in the Delta will need to address legacies of discrimination by race, gender, and ethnicity. What does inclusion and equity mean for the diverse communities across the Delta region? Equity is a top issue for federal economic development authorities (<https://eda.gov/about/investment-priorities/>; <https://www.usda.gov/media/press-releases/2021/09/24/usda-announces-intent-establish-equity-commission-solicits>). Leading financial institutions recognize that inequality limits growth and development (https://www.brookings.edu/wp-content/uploads/2021/09/The-Economic-Gains-from-Equity_Conf-Draft.pdf). Communities across the Delta must define what equity means to them.

Support resident-led Quality of Life initiatives that help to attract and retain talent.

As more people work from home (WFH), the Delta Region must expand efforts to recruit former or new residents to the region. There is a need for an organization that will champion the region as a good place for remote workers and younger families to locate. A shift in DRA marketing could help accomplish this goal by reflecting the Delta's diverse cultural landscape, but quality of life improvements for those working and living in the region are needed as well.

Improving broadband access will be an essential element of this work. Attracting the WFH demographic requires high quality and affordable broadband access. New federal programs are being developed to support broadband expansion. There are also several examples of how community-led Wi-Fi programs help to extend access and create momentum for larger initiatives—for example, see Tulsa Remote.

Home-grown, local-led quality of life initiatives are critical to developing the sense of community that will attract and retain high-skilled workers and their families. These efforts should be inclusive of various professionals, frontline workers, students, and their families, to increase civic engagement and continued quality of life increases. Residents may need strategic investments in infrastructure, social services, and amenities, as well as in beautification and recreation.

Finally, to attract and retain talented workers and employers, the Delta Region needs new transportation solutions and expanded access to affordable and high-quality childcare. These basic services are cost prohibitive to low-income individuals and may stop someone from seeking full employment, training, or upskilling. DRA leaders may be able to investigate and act on these persistent issues to address regional labor shortages now and in the long run.

¹⁶ The Population Reference Bureau is a research group funded by the ARC to prepare reports and analysis on demographic trends, representation, and equity in Appalachia. <https://www.prb.org/projects/appalachiademographic-and-socioeconomic-trends/>

RECOMMENDATIONS TO LOCAL DEVELOPMENT DISTRICTS AND WORKFORCE DEVELOPMENT BOARDS

- **Identify and fill local gaps in pathways to work and higher education by convening and facilitating access to information.**
- **Support resident-led initiatives.**

Identify and fill local gaps in pathways to work and higher education by convening and facilitating access to information.

Local development leaders can help to reveal gaps in local pathways to work and higher education by convening key stakeholders and helping them to access labor market intelligence from each other as well as from federal and state agencies. It is critical to talk to multiple stakeholders—employers, educators, parents, and students—to identify realistic pathways to good jobs and to make sure these pathways are accessible to all job seekers. By identifying and celebrating realistic pathways to good, local jobs, local leaders will help to ensure leading local businesses have a talent pipeline.

Support resident-led initiatives.

When there are many competing needs and limited funds, improvements to education systems and quality of life must be championed by residents whose actions will strengthen the community fabric and lead to continuous improvement. Residents might champion the provision of affordable or no-cost childcare, low-cost or free quality public transportation, outdoor recreation opportunities, or expanded broadband services. For example, The Gig¹⁷ project in Chattanooga was developed by community members with decades of experience leading civic improvement initiatives.

RECOMMENDATIONS TO DELTA EMPLOYERS

- **Work with other business leaders to advance talent development solutions**
- **Work with trusted training providers to upskill the current and future workforce**

Work with other business leaders to advance talent development solutions

Even before the Pandemic, employers were experiencing talent and skill shortages due to limited ability to train in house, unproductive relationships with public education and training providers, stagnating wages and benefits, and decades of deteriorating technical skills training nationwide. Now facing increasing urgency, many business leaders are more willing to take action to improve regionwide training systems.

Often, business leaders face similar challenges and seek similar types of talent or talent solutions but are not coordinated in their response. Businesses in the same location may compete for talent instead of working together to build a bigger talent pipeline.

Large and influential companies, chambers of commerce, industry and trade associations can help to facilitate necessary conversations between employers. Initial conversations should focus on key skill gaps and may lead to joint actions such as engaging middle school and high school learners in career exploration and paid internships, creating an apprenticeship program for young people who need to work while in high school, or expanding a community college program to provide more industry-relevant training and credentials. Initiatives should be targeted, track progress, and be able to correct course when off track.

Work with trusted training providers to upskill the current and future workforce

Companies that can make investments in talent development can take advantage of new opportunities to expand their business, but they may need to work with external training providers to make that possible. Effective training providers can help employers to train and retain employees, adjust job descriptions and postings to ensure

a broader talent pool, set up an internship or apprenticeship and mentorship programs, improve support to workers on the job, and finance continued upskilling and credentialing opportunities. Expanding the talent pool may mean providing justice-involved job seekers or workers with Substance Abuse Disorder with a chance to get back to work. Connecting with support services for transportation, housing, and dependent care will require partnerships with area service providers.

RECOMMENDATIONS TO HIGHER EDUCATION LEADERS

- **Contribute to Earn and Learn programming for working people.**
- **Demonstrate and promote best practices in the use of data.**

Contribute to Earn and Learn programming for working people.

Higher education teachers with industry experience, industry credentials, and/or curriculum design experience may be able to help employers and training providers bridge some of the intimidating gaps between training and higher education credentialing systems. For example, college instructors teaching industry certification courses may be able to assist employers and high schools to craft Earn and Learn curricula that leads to certification and college credit, ensuring that students are qualified to enter good jobs as well as to continue their training and education. These kinds of bridges would greatly improve options for students who do not wish or are unable to enter college immediately after finishing high school or who need to work while pursuing higher education.

To further increase credentialing for people that need to earn while learning, community colleges could look for opportunities to recognize and give credit for work experience and industry-recognized certifications. These credits could encourage new and returning students to seek out higher education, lowering the overall time and costs. Students would also increase their employability and expand their skill set, bringing the skills of graduating students more closely in line with industry needs. For example, prior learning assessments available to veterans help veterans on their career paths. Programs like the Veteran PLA initiative in Tennessee¹⁸ could provide a model for expanding options for all students, allowing any student to apply prior learned experience to their educational pathway and receive course credits.

Demonstrate and promote best practices in the use of data.

Community colleges and universities work with a variety of data sources to evaluate student progress and student outcomes and to plan future programming. Leading colleges and programs track student participation and outcomes by gender, race, and ethnicity; examine broader demographic trends to understand how the student population may be changing over time; and track the demand for graduates based on trends in employer hiring and skill requirements. College leaders in this space can demonstrate how the information they gather is used to improve programming. This could provide a model and encourage others to use data in decision making. Inviting students, area employers and other community members into the process could lead to co-designing responses to challenges.

RECOMMENDATIONS TO POLICYMAKERS

- **Ensure state-led programs effectively serve Delta communities.**
- **Support worker upskilling and industry modernization.**

Ensure state-led programs effectively serve Delta communities.

Existing state-led programs may be well suited to address the unique challenges of the high-poverty areas within the Delta Region, but more information is needed on whether these programs (including apprenticeship expansion, small business supports for equipment upgrades and job training, incentives to complete education programs) effectively serve Delta communities and strengthen local talent development and business development initiatives. Where services are being provided, state program leaders may partner with Delta communities to examine where they

¹⁸ Tennessee's evaluation of credit for military service (Veteran PLA) initiative: <https://www.tn.gov/the/bureaus/academic-affairs-and-student-success/veterans-education/redirect-veteranseducation/veteran-pla-resources.html>

are most effective. For example, we found that a greater number of WIOA-funded training programs were available in the Delta communities of Arkansas and Louisiana, but we were not able to assess the quality of these programs. Local stakeholders might have a sense of how well these programs are working or may need state agencies to help them to examine the effectiveness of local programs.

Support worker upskilling and industry modernization.

State business incentives can include financing for new machinery and other capital improvements in tandem with financing for training and employee upskilling to improve technology adoption and deployment. For example, the Massachusetts Workforce Skills Capital Grant¹⁹ program awards grants to businesses for the purchase and installation of equipment and related improvements and renovations necessary for installation and use of such equipment to support vocational and technical training. The program facilitates collaboration to provide students training pathways to career opportunities in high-skill, high-demand industry sectors.

State business incentives can also help get people back to work by helping to address some of the many barriers to work for low-income earners. Key barriers include housing, transportation, dependent care, and health issues. Georgia has a childcare tax credit for employers who purchase or build qualified childcare facilities or who provide or sponsor childcare for employees. (See page 14 - https://www.georgia.org/sites/default/files/2021-03/jan2021_business_incentives.pdf) The District of Columbia also has a child care subsidy program (<https://osse.dc.gov/service/child-care-subsidyvoucher-program>). States can invest in early head start/head start programs that serve children from birth to 2 years old or invest in a state-funded Pre-K program. These programs can be targeted to the Delta businesses and employees that would benefit most from these types of support.

Appendix A: Industry Cluster Analysis

DATA ADDENDUM

Labor-intensive manufacturing

The supply of labor-intensive manufacturing industry jobs dropped slightly from 2019 through 2020. The drop of approximately 18,000 jobs corresponds to a roughly six percent decrease from 2019 levels and is in line with the decline seen at the national level.

Industry worker unemployment, which had declined steadily since January 2017, spiked to record highs in April 2020. This spike rapidly declined, though pandemic unemployment remained higher than previous levels. In the last month, as the Delta variant has caused new case surges, industry cluster unemployment has once again begun spiking in the region. Gross regional product generated by this industry cluster has grown substantially since the 2008 recession, COVID appears not to have impacted that growth in any major way, with 2020 GRP exceeding 2019 levels.

The largest employers actively recruiting for this industry cluster are in or related to the food services sector, PepsiCo, Tyson Foods, and Cintas.

Agriculture and resource extraction

Employment in agriculture and resource extraction industries dipped in 2020. This dip was mirrored at the national level as the pandemic impacted many occupations within the cluster. The drop corresponds to around 4,000 jobs, or around seven percent of the cluster's total employment.

Unemployment for this cluster is highly cyclical and had been on the decline for the years leading up to the pandemic. In 2020, unemployment in this industry cluster stabilized somewhat and the customary spike in unemployment around the new year generally seen in the industry cluster's past was substantially diminished in January 2021. This indicates that while unemployment in general was higher for industry workers in this cluster through 2020, the same cyclical spike in layoffs was not seen around the new year.

Gross regional product for the industry cluster tanked in 2020, dropping by half from \$18B to just over \$9B in one year.

High-tech infrastructure

The High-tech infrastructure industry cluster saw a barely noticeable decline in job numbers during 2020, dropping just over two percent. Small though it is, relative to the other two top industry clusters in the Delta Region, this drop is far larger than the barely perceptible change seen in the cluster's national employment numbers.

Like agriculture and resource extraction, the high-tech infrastructure cluster displays regular cyclical unemployment spikes, typically around late spring to early summer. This pattern continued during the pandemic, but at a much more heightened scale, with the lowest rates of industry cluster unemployment seen during 2020 and 2021 falling above the highest rates seen in previous years.

Gross regional product generated by this cluster has grown steadily over the last decade and a half. The pandemic appears to have diminished the recent growth rate seen over the last four years, though GRP still grew from 2019 through 2020.

Table 1 Industry Cluster Statistics

Industry Cluster	2019 Jobs	2015 - 2019 Employment % Change	Average Annual Earnings	2019 Location Quotient
Delta Region	3,861,882	-3%	\$68,282	NA
High-tech infrastructure	671,067	5%	\$67,504	1.11
Healthcare	491,180	7%	\$61,480	1.32
Labor-intensive manufacturing	396,916	20%	\$63,180	1.35
Finance, investment, and real estate ("FIRE")	260,714	19%	\$101,925	0.78
Knowledge-intensive business services	178,938	-4%	\$74,244	0.52
Government	170,918	-1%	\$82,507	1.26
Media, entertainment, and recreation	136,966	4%	\$49,566	0.62
Agriculture and resource extraction	134,709	11%	\$67,517	1.62
Research, engineering, and technology	125,631	9%	\$78,794	0.89
Higher education	110,408	-4%	\$65,982	0.96
Corporate management and administration	65,022	9%	\$124,057	0.70

Source: Emsi, county data aggregated to summarize trends across the Delta Region

Appendix B: Occupation Cluster Analysis

Table 2 Occupation Cluster Statistics

Industry Cluster	2019 Jobs	2015 - 2019 Employment % Change	Average Annual Earnings	2019 Location Quotient
Delta Region	3,652,697	2%	\$23.90	NA
Semi-skilled service	892,097	1%	\$13.04	0.99
Management and finance	568,057	7%	\$25.72	0.90
Machine operation and repair	338,875	0%	\$15.53	1.12
Engineering technologists	188,410	0%	\$21.34	1.13
Medical science and health services	182,968	25%	\$40.22	1.16
Legal, clerical, administrative, and technicians	153,207	9%	\$18.39	0.96
Construction and specialized mechanical	148,712	-13%	\$19.21	1.04
Transportation	146,161	11%	\$20.00	1.16
Education	119,346	15%	\$13.73	1.11
Engineering and architecture	42,669	1%	\$36.42	0.66
Counseling, specialized education, and therapy	40,062	3%	\$15.10	1.17
Information technology and communications	18,566	-4%	\$13.43	0.54
Agricultural, life and natural sciences	9,598	14%	\$22.20	0.63

Source: Emsi, county data clustered and aggregated to the region level

Appendix C: Supply Side Dynamics

Table 13: Educational Attainment in Delta Region Counties by State

State	Less than 9th grade	9th to 12th grade, no diploma	High school	Some college	Associate's degree	Bachelor's degree	Graduate or professional degree
Alabama	5%	13%	40%	19%	8%	9%	6%
Arkansas	5%	11%	40%	22%	7%	10%	5%
Illinois	4%	9%	34%	26%	11%	11%	6%
Kentucky	6%	9%	40%	21%	9%	9%	7%
Louisiana	6%	13%	40%	19%	6%	11%	5%
Mississippi	7%	13%	33%	21%	9%	11%	7%
Missouri	6%	12%	41%	20%	7%	9%	5%
Tennessee	6%	11%	41%	20%	6%	10%	6%
US	5%	7%	27%	20%	9%	20%	13%

Table 14: Top Industry by Number of Completed Apprenticeships in the Delta Region in 2019

NAICS	Industry	Delta Region	Percent
23	Construction	1,102	73%
31-33	Manufacturing	278	18%
22	Utilities	93	6%
61	Educational Services	24	2%
81	Other Services (except Public Administration)	21	1%

Table 15: Number of Programs by 2-Digit CIP in the Delta Region

CIP Code	Description	Total Postsecondary Programs	Total Postsecondary Awards	Associate's Degree or Certificate Postsecondary Programs*	Associate's Degree or Certificate Postsecondary Awards
0	Total	6,136	13,644	2,645	61,527
51	Health professions and related programs	1,068	30,115	669	18,341
47	Mechanic and repair technologies/technicians	319	3,878	319	3,878
52	Business, management, marketing, and related support services	638	16,627	282	3,948
12	Culinary, entertainment, and personal services	199	3,973	197	3,917
15	Engineering/engineering related technologies/ technicians	254	4,698	197	3,252
48	Precision production	144	4,790	144	4,790
11	Computer and information sciences and support services	250	3,303	137	1,607
24	Liberal arts and sciences, general studies, and humanities	160	15,612	109	13,483
43	Homeland security, law enforcement, firefighting, and related protective services	173	3,394	103	1,384
46	Construction trades	69	1,224	69	1,224
19	Family and consumer sciences/human sciences	104	1,735	67	1,027
13	Education	572	10,603	59	608
50	Visual and performing arts	259	2,257	49	304
1	Agricultural/animal/ plant veterinary science and related fields	102	1,390	48	346
49	Transportation and materials moving	38	1,820	30	1,583
22	Legal professions and studies	54	1,720	24	320
30	Multi/interdisciplinary studies	88	2,014	22	530

CIP Code	Description	Total Postsecondary Programs	Total Postsecondary Awards	Associate's Degree or Certificate Postsecondary Programs*	Associate's Degree or Certificate Postsecondary Awards
10	Communications technologies/technicians and support services	17	122	16	117
44	Public administration and social service professions	92	2,615	12	103
3	Natural resources and conservation	47	426	11	41
9	Communication, journalism and related programs	123	2,353	11	41
14	Engineering	194	4,526	11	102
16	Foreign languages, literature, and linguistics	67	451	8	66
39	Theology and religious vocation	59	615	7	113
26	Biological/biomedical science	195	4,081	5	127
31	Parks, recreation, leisure, fitness, and kinesiology	77	2,241	5	44
38	Philosophy/religious studies	49	403	5	48
42	Psychology	98	2,773	5	70
45	Social sciences	185	2,391	5	27
41	Science technologies/technicians	6	33	4	25
54	History	73	753	4	16
23	English language and literature/letters	98	1,116	3	18
27	Mathematics and statistics	79	672	3	10
40	Physical sciences	139	1,077	3	14
4	Architecture/services	21	417	1	1
29	Military technologies and applied sciences	3	37	1	2
5	Area, ethnic, cultural, gender, and group studies	19	72	0	0
25	Library science	4	113	0	0

*Table sorted on third column.

Table 7: Number of Eligible Training Providers in the Delta Region compared to Eligible Training Provider programs in States that are part of the Delta Region

	Total	AL	AR	IL	KY	LA	MS	TN
ETP count - Macro Region Totals	1,120	109	121	281	85	224	105	195
# of ETPs per 1,000 people - Macro Region Level	0.028	0.022	0.040	0.022	0.019	0.048	0.035	0.029
ETP count - Delta Region Totals	393	7	83	12	9	170	56	56
# of ETPs per 1,000 people - Delta Region Level	0.045	0.011	0.062	0.031	0.022	0.057	0.032	0.045

Table 8: Number of Eligible Training Provider programs in the Delta Region compared to Eligible Training Provider programs in States that are part of the Delta Region

	Total	AL	AR	IL	KY	LA	MS	TN
# of ETP programs - Macro Region Totals	11,827	842	491	2,768	1,443	2,394	872	3,017
# of ETP programs per 1,000 people - Macro Region Level	0.299	0.172	0.163	0.218	0.323	0.515	0.293	0.442
# of ETP programs - Delta Region Totals	3,493	45	316	112	163	1,778	456	623
# of ETP programs per 1,000 people - Delta Region Level	0.399	0.069	0.237	0.291	0.403	0.593	0.263	0.498

Table 9: Top ETP programs in the Delta Region by Occupational Field (2-Digit SOC Code)

2-Digit SOC	Title	Number of programs
29	Healthcare Practitioners and Technical Occupations	521
11	Management Occupations	478
31	Healthcare Support Occupations	345
49	Installation, Maintenance, and Repair Occupations	308
25	Educational Instruction and Library Occupations	307

Table 10: Most Prevalent Occupations (6-Digit SOC Code) for Training Programs by ETPs in the Delta Region

O*NET-SOC Code	Title	Number of programs
51-412100	Welders, Cutters, Solderers, and Brazers	168
29-206100	Licensed Practical and Licensed Vocational Nurses	102
11-102100	General and Operations Managers	101
29-114100	Registered Nurses	81
31-909200	Medical Assistants	78

Table 12: Count of Apprenticeship Programs in the Delta Region Service Area and Delta Macro Region by Industry Cluster

Row Labels	Delta Region	Percent
Grand Total	83	100%
High-tech infrastructure	29	35%
Labor-intensive manufacturing	21	25%
Research, engineering, and technology	19	23%
Knowledge intensive business services	7	8%
Higher Education	4	5%
Agriculture and resource extraction	1	1%
Corporate management & administration	1	1%
Healthcare	1	1%
FIRE	0	0%
Media, entertainment, and recreation	0	0%

Table 13: Number of Apprenticeship programs in the Delta Region compared to Apprenticeship programs in States that are part of the Delta Region.

Providers	All Regions	TN	AR	MS	LA	KY	IL	AL
Delta Region	297	82	67	50	38	33	16	11
Macro Region	1,657	379	141	84	72	321	522	138
# of Apprenticeship Programs per 1,000 - Delta Region	0.03	0.13	0.05	0.13	0.09	0.01	0.01	0.01
# of Apprenticeship Programs per 1,000 - Macro Region	0.04	0.08	0.05	0.01	0.02	0.07	0.18	0.02

Table 15: Count of Apprentices in the Delta Region and States in the Delta Region by Industry Cluster

Cluster	Delta Region	Percent
Grand Total	331	100%
Labor-intensive manufacturing	187	56%
Research, engineering, and technology	85	26%
High-tech infrastructure	49	15%
Higher Education	9	3%
Knowledge intensive business services	1	0%
Healthcare	0	0%
Government	0	0%

Table 16: Apprenticeship Completers in the Delta Region by State Compared to Completers in the State Writ Large

Completed Apprenticeships	Total	AL	AR	IL	KY	LA	MS	TN
Macro Region Count	4,579	315	334	2,155	453	323	216	783
# of Apprenticeship Completers per 1,000 people – Macro Region Level	0.12	0.06	0.11	0.17	0.10	0.07	0.07	0.12
Delta Region Count	1,559	193	223	154	373	162	190	264
# of Apprenticeship Completers per 1,000 people - Delta Region Level	0.18	0.30	0.17	0.40	0.92	0.05	0.11	0.21

Table 19: Number of ETP programs in the Delta Region by Occupational Field

2-Digit SOC	Title	Number of Programs
00	Total	3,482
13	Business and Financial Operations Occupations	80
29	Healthcare Practitioners and Technical Occupations	521
19	Life, Physical, and Social Science Occupations	72
11	Management Occupations	478
27	Arts, Design, Entertainment, Sports, and Media Occupations	46
31	Healthcare Support Occupations	345
21	Community and Social Service Occupations	45
49	Installation, Maintenance, and Repair Occupations	308
39	Personal Care and Service Occupations	38
25	Educational Instruction and Library Occupations	307
35	Food Preparation and Serving Related Occupations	32
51	Production Occupations	288
33	Protective Service Occupations	31
47	Construction and Extraction Occupations	192
23	Legal Occupations	26
43	Office and Administrative Support Occupations	183
45	Farming, Fishing, and Forestry Occupations	11
15	Computer and Mathematical Occupations	166
41	Sales and Related Occupations	9
17	Architecture and Engineering Occupations	155
37	Building and Grounds Cleaning and Maintenance Occupations	0
53	Transportation and Material Moving Occupations	149

Table 20: Most Prevalent Occupations for Training Programs by ETPs in the Delta Region

O*NETSOC Code	Title	Count
51-412100	Welders, Cutters, Solderers, and Brazers	168
29-206100	Licensed Practical and Licensed Vocational Nurses	102
11-102100	General and Operations Managers	101
29-114100	Registered Nurses	81
31-909200	Medical Assistants	78
53-303200	Heavy and Tractor-Trailer Truck Drivers	74
11-302100	Computer and Information Systems Managers	68
49-904100	Industrial Machinery Mechanics	67
49-902100	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	66
43-601100	Executive Secretaries and Executive Administrative Assistants	55
47-211100	Electricians	52
47-101100	First-Line Supervisors of Construction Trades and Extraction Workers	44
29-205200	Pharmacy Technicians	43
31-909700	Phlebotomists	39
31-909100	Dental Assistants	35
51-906100	Inspectors, Testers, Sorters, Samplers, and Weighers	35
13-201100	Accountants and Auditors	34
11-902100	Construction Managers	33
25-108100	Education Teachers, Postsecondary	33
49-302300	Automotive Service Technicians and Mechanics	32

Table 21: Number of Apprenticeship Programs in the Delta Region and States in the Delta Region by 2-Digit North American Industry Classification System (NAICS) Code.

NAICS	Definition	Delta Region	Macro Region
00	Total	296	1,653
56	Administrative and Support and Waste Management and Remediation Services	4	32
23	Construction	117	589
44-45	Retail Trade	2	18
31-33	Manufacturing	44	510
72	Accommodation and Food Services	2	11
92	Public Administration	42	113
21	Mining, Quarrying, and Oil and Gas Extraction	2	4
61	Educational Services	28	96
51	Information	0	9
22	Utilities	20	83
52	Finance and Insurance	0	5
81	Other Services (except Public Administration)	14	53
11	Agriculture, Forestry, Fishing and Hunting	0	3
54	Professional, Scientific, and Technical Services	7	29
53	Real Estate and Rental and Leasing	0	1
42	Wholesale Trade	5	30
55	Management of Companies and Enterprises	0	0
48-49	Transportation and Warehousing	5	26
71	Arts, Entertainment, and Recreation	0	0
62	Healthcare and Social Assistance	4	41

Table 22: Number of Completed Apprenticeships in the Delta Region and States in the Delta Region by 2-Digit North American Industry Classification System (NAICS) Code in 2019

NAICS	Definition	Delta Region	Macro Region
00	Total	1,559	4,579
53	Real Estate and Rental and Leasing	0	0
11	Agriculture, Forestry, Fishing and Hunting	0	0
54	Professional, Scientific, and Technical Services	1	1
21	Mining, Quarrying, and Oil and Gas Extraction	0	7
55	Management of Companies and Enterprises	0	0
22	Utilities	93	141
56	Administrative and Support and Waste Management and Remediation Services	7	7
23	Construction	1,102	3,413
61	Educational Services	24	71
31-33	Manufacturing	278	740
62	Healthcare and Social Assistance	5	9
42	Wholesale Trade	5	61
71	Arts, Entertainment, and Recreation	0	0
44-45	Retail Trade	2	2
72	Accommodation and Food Services	4	4
48-49	Transportation and Warehousing	0	0
81	Other Services (except Public Administration)	21	86
51	Information	0	0
92	Public Administration	17	37
52	Finance and Insurance	0	0

Table 23: Top 20 CIPs in the Delta Region sorted by number of Associate Degree or Certificate Postsecondary Awards

CIP Code	Description	Total Postsecondary Programs	Total Postsecondary Awards	Associate's Degree or Certificate Postsecondary Programs*	Associate's Degree or Certificate Postsecondary Awards
240102	General Studies	74	9,081	50	7,387
240101	Liberal Arts and Sciences/ Liberal Studies	69	6,088	49	5,691
480508	Welding Technology/Welder	97	4,387	97	4,387
513901	Licensed Practical/Vocational Nurse Training (LPN, LVN, Cert., Dipl, AAS)	62	3,652	62	3,652
513801	Nursing/Registered Nurse (RN, ASN, BSN, MSN)	96	6,861	51	3,096
510801	Medical/Clinical Assistant	45	1,937	45	1,937
120401	Cosmetology/Cosmetologist	77	1,634	77	1,634
513902	Nurse/NursingAssistant/Aide and Patient Care Assistant	32	1,468	32	1,468
490205	Truck and Bus Driver/ Commercial Vehicle Operation	17	1,383	17	1,383
520201	Business Administration and Management,General	142	5,712	46	1,016
520101	Business/Commerce, General	46	1,616	35	938
510904	Emergency Medical Technology/Technician (EMT Paramedic)	68	922	67	918
470201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/ Technician	64	863	64	863
470604	Automobile/Automotive Mechanics Technology/ Technician	62	856	62	856
460302	Electrician	30	783	30	783
190709	Child Care Provider/Assistant	42	771	42	771
110101	Computer and Information Sciences, General	56	1,223	31	764
510601	Dental Assisting/Assistant	21	748	21	748
470303	Industrial Mechanics and Maintenance Technology	52	716	52	716

Table 24: Top Critical Occupations by ETP Count

6-Digit SOC	Title	ETP Count
43-6011	Executive Secretaries and Executive Administrative Assistants	60
43-3031	Bookkeeping, Accounting, and Auditing Clerks	21
43-1011	First-Line Supervisors of Office and Administrative Support Workers	19
49-9071	Maintenance and Repair Workers, General	12
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	2

Appendix D: Identifying Industrial and Occupation Clusters

METHODS

Local industry analysis is based primarily on county level industry data drawn from Emsi and sourced at the six-digit NAICS code. This dataset contains a robust estimation of regional industrial employment and serves as the basis for all industry observations in this report. To draw coherent and useful conclusions from the data, we chose to cluster industries by primary function. This allowed us to make more general statements about changes across various sectors of the Delta Region's economy, rather than being restricted to speaking about changes observed within the NAICS framework. Our belief is that by using clusters rather than traditional NAICS classifications, we will be able to draw deeper and more actionable insights rooted in how industries relate to and interact with one another.

Industry cluster typology is drawn from Feser's work with the Council for Community and Economic Research (C2ER) to construct the Diversity Index model originally employed for studying the Appalachian region. The clusters were developed by hand using a combination of literature and firsthand knowledge of how various industries interweave and interrelate. This analysis drew primarily from the work of Lawrence (1984) and Noyelle (1983) to categorize industries according to functional types. To focus on the economic base of counties, industries that often serve local populations, such as retail trade, personal services, doctor's offices, local government, and construction, were excluded from the analysis of functions.

Using a set of knowledge products taken from O*NET, we clustered occupations based on shared knowledge areas. This agglomerative clustering was performed using Ward's method. The results have not been altered or adjusted and are entirely derived from the variation observed in the O*NET data. We chose to use thirteen clusters based on prior work by Feser (2003).

The information presented here is derived from data collected from 2015 through 2019. Our analysis will not consider the changes observed over the last year during the COVID pandemic. This omission is due primarily to a lack of available timely data.

Appendix E: Examining Supply Side Dynamics

METHODS

Diversity data was gathered from two primary sources, the 2019 1-year ACS tables and the ACS PUMS. Table data was left relatively unchanged. PUMS data, on the other hand, was tabulated to construct many of the various diversity tables presented above. This tabulation process is straightforward. PUMS data contains a sample of individual-level observations from respondents to the ACS. These observations are given a weight, conveying approximately how many people each respondent represents in the total population. By summing these weights across various variable categories like race, gender, or labor force status, we can create our own custom tables estimating various populations of interest. Wage data was produced through a similar process, with the primary exception being the use of a median, rather than a proper sum. These estimates should be taken with some degree of skepticism, especially as they concern smaller populations. These data are approximations and not meant to convey the true or absolute state of employment in the Delta Region. Rather, they guide our understanding and help us identify further areas for study, intervention, and analysis.

METHODS, CONTINUED (TRAINING AND EDUCATION)

ETPL – Analysis

The Eligible Training Provider Lister (ETPL) is a list of all program providers registered in the United States that qualify for funding under the Workforce Opportunity Innovation Act (WIOA). The list is produced by the Department of Labor and is constructed from data submitted each year from states through the states' Eligible Training Provider (ETP) Performance Reports (Form ETA-9171).

National ETPL data was filtered by state in Excel and data pertaining to only states within the Delta Region was extracted. That data was then run through a python script for analysis. The script used longitudinal and latitudinal data found within the ETPL and run through the Federal Communications Commission's Area API to assign a county, Federal Information Processing Standard (FIPS) code, and State. This data was then put back into Excel where an IF (COUNTIF ()) statement was used in conjunction with a list of all counties under the purview of the Delta Regional Authority, to note if the assigned county was in the Delta Region. The number of ETPs were counted by filtering by state, and then deduplicating the list of ETPs to leave a count of unique providers by state, and then this process was duplicated for ETPs marked as inside the Delta Region. The number of ETP programs was then counted using Excel's filter function and recorded in Excel. Percentage numbers were calculated using a simple division calculation using Excel.

SOC code counting was done by importing BLS's list of 2-Digit 2017 SOC codes and 8-Digit SOC codes from O*net. A new column was then created using the Excel LEFT () function to extract the 2-digit SOC code from the 8-Digit SOC codes listed in the ETPL. Then the Excel COUNTIF () function was used on the list of SOC codes already assigned to ETPs in the ETPL to count the number of instances a SOC code appeared in the ETPL. Population data was derived using data from the American Community survey with the DRA specific data being pulled from ACS's Public use Micro Data Sample (PUMS). The Delta Region population data was divided by the State level data to create the percentage results used in making table 20. The number of ETPs per 1,000 people in the selected regions was derived from those two lists using simple algebra through Excel's mathematical functions.

As for the outcomes for participants going to the ETPs, that data is still lacking within the ETPLs. Of the 3,493 ETPs in the Delta Region only 113 reported completion statistics. Of those 133, the ETPs reported an average completion percentage of 70.2%. While this figure is promising, it cannot be considered an accurate representation

of Delta Region ETPs until we have more data to confirm that statistic. The potential for bias in the information is that potentially only ETPs with high completion rates are reporting that data out, thereby skewing the completion percentage average.

Apprenticeship and Apprenticeship Programs

The apprenticeship data was constructed using the Employment and Training Administration's Registered Apprenticeship Partners Information Database System (RAPIDS). The database contains information on both apprenticeship programs and apprenticeship data on the individual level. RAPIDS data includes the NAICS codes associated with each apprenticeship allowing us to focus on the breakdown by industry.

The Apprenticeship and Apprenticeship program counts were derived from the Department of Labor's RAPIDS. The apprenticeship data came in three separate Excel files. Those files were combined into a single excel file containing only data on states in the Delta Region. The apprenticeship file was then subsequently narrowed to only include apprentices marked as completed. Once the data was set, two columns were created. One for start year and one for expected completion year. These two variables were created by extracting the year from the "startDt" and "expectedCompleteDt" columns, respectively. The data was then filtered again to be only programs with expected completion dates in 2019. An IF (COUNTIF ()) function was then used to mark which programs were from counties within the Delta Region. The function compared the county variable in the apprenticeship data with a list of all counties under the DRA's purview. Counts of the completed apprenticeships in each state were conducted using Excel's filter tool. Percentage calculations were done by dividing the Delta Region counts by the state level counts.

NAICS code analysis was done by creating an additional column in the data that extracted the 2-digit NAICS code from the column containing a 6-digit NAICS code already assigned to the apprenticeship. The extraction was done by using Excel's LEFT () function. Like the ETPL, the filter tool and COUNTIF () function were used to create the final counts. NAICS information was taken from the 2017 NAICS summary table to have access to the definitions of 2-digit NAICS codes.

The NAICS code counts were then used to create the cluster analysis which assigned each NAICS code to a cluster by matching the NAICS to a cluster in the cluster list, mentioned earlier in this document. The Excel VLOOKUP () function was used to accomplish this task. When creating the table, NAICS codes marked as "Excluded" or "N/A" were dropped, since they were considered outside the clusters of interest.

The process of analyzing Apprenticeship programs data was almost identical to how it was done for the apprenticeship data. The data file used as a base for the analysis was the RAPIDS's "All Program Data" file. The data was then filtered to just states in the Delta Region. using the same process as used in the apprenticeship analysis, each program was checked and then subsequently marked if it was from a county inside the Delta Region. using the same counting system as in the apprenticeship data, the number of programs per region and per state we counted and then were counted again by NAICS code. The difference in the number of total programs and the number of total programs by two-digit NAICS code is the result of a very few programs lacking NAICS codes. These programs were included in the total count of programs.

Demographics data was constructed using the modified RAPIDS Apprenticeship data, as described recently. using Excel's COUNTIF () function, the number of apprentices by gender, race, and ethnicity were counted. No data was dropped from the gender calculations. Any apprenticeship that had a race column marked blank or "Do not wish to answer" was dropped, when creating table 24 and making the percentage calculations shown in that table. Any apprenticeship that had an ethnicity column marked "NP" was dropped when creating table 25 and the percentage calculations shown in that table.

Of apprenticeships in the Delta Region, 1,559 had data on the gender of the apprentice. Of apprentices completed in 2019, 1,392 apprenticeships in the Delta Region had data on the race of the apprentice, while at the state level 4,017 apprentices had race data. Compared to the previous two demographics categories, ethnicity had the least amount of information. This is the result of it being the category with the highest number of apprentices marking either

yes or no. Only 1,118 completed apprenticeships had ethnicity marked in the Delta Region, while at the state level that number of completed apprenticeships was 3,472.

METHODS, CONTINUED (GAP ANALYSIS METHOD)

Gap analysis methods

Because IPEDS does not report completer numbers using standard occupational codes, we need to use a crosswalk to match IPEDS data to Emsi data. There is no 1:1 crosswalk matching SOC to Classification of Instructional Programs (CIP) codes, many CIP codes match to multiple SOC codes and many SOC codes match to multiple CIP codes. To maintain an accurate count of total completers, we have evenly distributed observed completions for each CIP code into each SOC code it is connected to. This results in fractional completions for certain occupations but ensures that we do not overcount the total number of completers entering the workforce.

Our gap analysis began by pulling completion counts by 6-digit CIP code from all educational institutions in the Delta Region service area. These CIP codes were then matched to 6-digit SOC codes using a NCES crosswalk file.

We then pulled in occupational projections from Emsi. These projections include an annual average openings count, which served as our “demand” estimate. Emsi staffing patterns were used to connect occupation demand estimates to target industry clusters. Using the staffing patterns, we were able to identify a set of critical occupations for each cluster. Critical occupations were selected along three criteria:

- Considered Job Zone 3 (middle-skill) by ONET
- Above median normalized payroll for the cluster of interest
- Above average employment for the cluster of interest

Normalized Payroll

To cut down on the influence of high paying, but relatively scarce occupations, such as CEOs, hedge fund managers, and neurosurgeons, we scale annual payroll for each occupation before making a comparison. This is achieved by multiplying the average income of a given occupation by its relative share of an industry cluster’s employment base. This has the effect of varying the prominence of various occupations across industry clusters and ensures that our analysis is not dominated by a handful of high paying, low-employing jobs.

Once identified, we were able to connect these critical occupations to available IPEDS data and generate a gap measure, subtracting the number of annual completers from the expected average annual growth for each occupation.

Occupations were then connected to industry clusters using industry / occupation employment matrices produced by Emsi and modelled off national staffing patterns produced by BLS. The occupations presented are not unique to one cluster, many are critical to two or more clusters. For that reason, the gap analyses produced for target industry clusters represent interwoven and overlapping labor pools. To mitigate confusion and double counting, we present gap analyses one at a time and always at the occupation level.

As of 2019, there were only 1,559 active apprentices in the region found in the database. Due to difficulties associated with mapping these apprenticeships to specific occupations, we present results separate from the gap analysis.

The Eligible Training Provider List (ETPL) contains a comprehensive accounting of all Workforce Innovation Opportunity Act (WIOA) approved training programs within the Delta Region service area. The ETPL contains

sparse data about completion numbers from a handful of programs, but currently, the data is not high quality enough to merit inclusion. This is the first year that the data has been made publicly available in this format, and it is likely that data quality will improve somewhat in future, potentially opening the possibility for this data source to be included alongside IPEDS in future gap analyses. Both the RAPIDS database and the ETPL are detailed in their own sections later in this report.

HIGH-TECH INFRASTRUCTURE

The High-tech infrastructure industry cluster was selected due to its high level of employment in the Delta Region, high concentration of employment in this region compared to the rest of the US, and modest growth. According to our criteria and analysis, there are 26 critical occupations in the high-tech infrastructure cluster, including construction & specialized mechanical, engineering technologies, machine operation and repair, management & finance, and semi-skilled service. (All 26 occupations are listed in Table 42 in Appendix E.)

Quite a few of the critical occupations in the high-tech infrastructure cluster have no active college completers entering their ranks whatsoever. Occupations with no college programming generally center around the use of heavy industrial equipment and require specific, specialized training to perform. In total, these occupations represent just under +15,000 unfilled annual job openings, or 45% of the total gap for the high-tech infrastructure industry cluster. Due to the projected growth of the cluster over the next decade, likely accelerated by the pandemic, these occupations represent key opportunities for educational investment and upskilling.

The largest gap between openings and educational program completions for occupations in this industry cluster was observed for bookkeeping, accounting, and auditing clerks (+4,682 unfilled job openings). First-line supervisors of office and administrative support workers and maintenance and repair workers are likewise in short supply at +4,501 and +4,204 unfilled job openings, respectively. Most critical occupations have gaps numbering only in the hundreds, rather than the thousands.

No critical occupation in the high-tech infrastructure cluster has a surplus of new talent in our regional analysis. However, there may be cases at the local level where education and training are over-provided, or the local labor market is not absorbing the talent it produces. Our analysis obscures these important local dynamics.

AGRICULTURE AND RESOURCE EXTRACTION

The agriculture and resource extraction cluster was selected due to its prominence in rural counties throughout the DRA, particularly those around the Mississippi river. The cluster has a high average LQ, making it one of the Delta Region's comparative advantages.

Agriculture and resource extraction industries share many of the same critical occupations as high-tech infrastructure industries, though the overall list of critical occupations is smaller at only 17 (Table 43 in Appendix E).

The list is dominated by the same three critical occupations: bookkeeping, accounting, and auditing clerks, first-line Supervisors of office and administrative support workers, and maintenance and repair workers.

There are, however, fewer occupations left unserved by the Delta's higher education system. These five occupations—first-line supervisors of production and operating workers, industrial machinery mechanics, first-line supervisors of mechanics, installers, and repairers, mobile heavy equipment mechanics, and machinery maintenance workers—all center around the use and maintenance of heavy industrial equipment, and total just over +7,000 annual openings (approximately 25% of the cluster's total gap), indicating the higher education system in the Delta is better equipped to provide training to workers in the agriculture and resource extraction industries than in the high-tech infrastructure cluster.

We did not observe any training surplus in the data, meaning that for each critical occupation, the postsecondary education system was not graduating enough students to fill all open positions. It is likely that openings will be filled either by workers migrating or commuting into the region from elsewhere or transitioning from a different industry cluster within the region. This may put pressure on other areas of the labor market as workers transition to fill demand in these critical occupations and represents an excellent opportunity for workers wishing to transition upward in a career ladder or jump to a new occupation.

LABOR-INTENSIVE MANUFACTURING

Labor-intensive manufacturing industries are the highest employing industries in most counties throughout the Delta Region. The Labor-intensive manufacturing cluster has a high LQ and leads national growth rates and is particularly concentrated in the Alabama portion of the Delta Region.

Labor-intensive manufacturing is the only target industry cluster containing a critical occupation where more students are graduating than there are open jobs. This critical occupation, industrial engineering technologists and technicians, has 1,228 surplus graduating students entering the labor market. The worker surplus will likely be resolved in several ways. For example, graduates unable to find work in this occupation may leave the Delta Region to pursue careers elsewhere or seek employment in related occupations either within the labor-intensive manufacturing cluster or in other clusters.

Despite the large size of the labor-intensive manufacturing supply surplus, overall, the cluster still has a deficit of graduates. Seven occupations have no incoming graduates. As with the other two target industry clusters, these occupations deal with heavy industrial manufacturing and machine operation, most fall within the engineering technologies occupation cluster. Data on occupations critical to the labor-intensive manufacturing cluster can be found in table 44 in Appendix E.

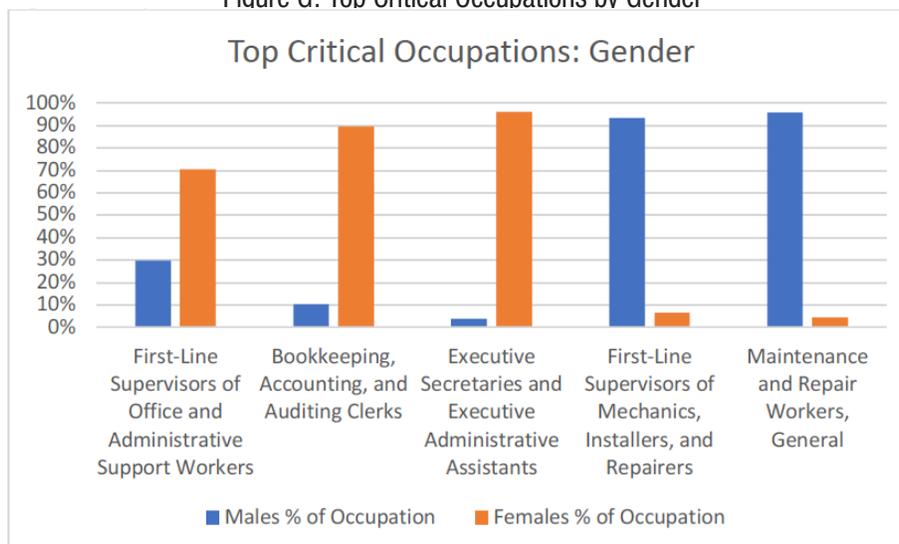
ANALYSIS OF FIVE “CRITICAL” OCCUPATIONS RELEVANT TO MOST INDUSTRY CLUSTERS

Five occupations meet our criteria as “critical” to almost every industry cluster in the Delta Region.²⁰ Together, these top five critical occupations represent a gap of over 16,000 jobs, about 20 percent of the total gap seen across all critical occupations. Three occupations included here are common to every industry cluster: bookkeeping, accounting, and auditing clerks, maintenance and repair workers, and first-line supervisors of office and administrative support workers. Two occupations are common to most industry clusters (ten and nine of 11 total, respectively): executive secretaries and executive administrative assistants, and first-line supervisors of mechanics, installers, and repairers.

Below, we examine the demographics of these occupations, their gender, age, and racial diversity. When considering training interventions, attention must be paid to historical legacies of discrimination and address current biases to ensure new programs improve the diversity, equity, and inclusivity of these occupations.

The data suggests these top occupations are either predominantly male or female. Women are more typically employed in office and administrative roles and men are more typically employed in maintenance and repair roles. If the DRA or its partners wish to expand job opportunities for women in critical and growing occupations, first-supervisors of mechanics, installers, and repairers, and maintenance and repair occupations would be excellent candidates.

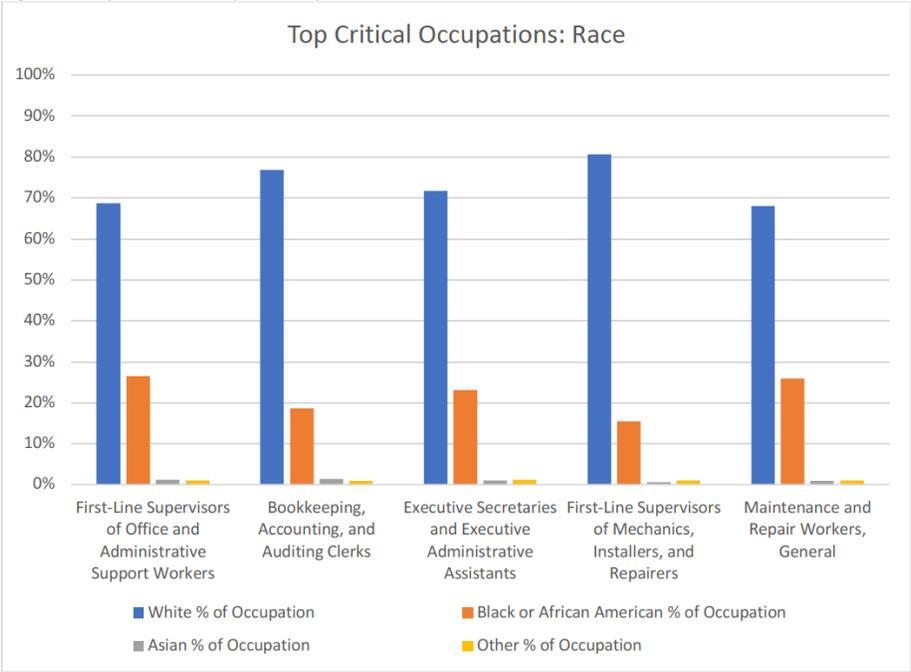
Figure G: Top Critical Occupations by Gender



78 ²⁰ Occupations earning above industry cluster median wages, employing above average numbers of workers, and not requiring a four-year degree.

These five top occupations are not particularly diverse, compared to the rest of the Delta workforce. The Delta's workforce is approximately 66% White, 30% Black, 2% Asian and 2% other (predominantly indigenous people, but also including individuals identifying as more than one race and individuals whose racial identity is included in the Census questionnaire). As we can see from Figure H, Asian and other workers are underrepresented, rarely rising above 1% representation in each top occupation. Black workers are likewise underrepresented in these occupations. First-line supervisors of mechanics, installers, and repairers employ Black workers at about half the rate of their presence in the overall labor force. Creating more opportunities for workers of color in these occupations could be an excellent way to address businesses' need for qualified workers and open new pathways to upward mobility for a wide range of the Delta's workforce.

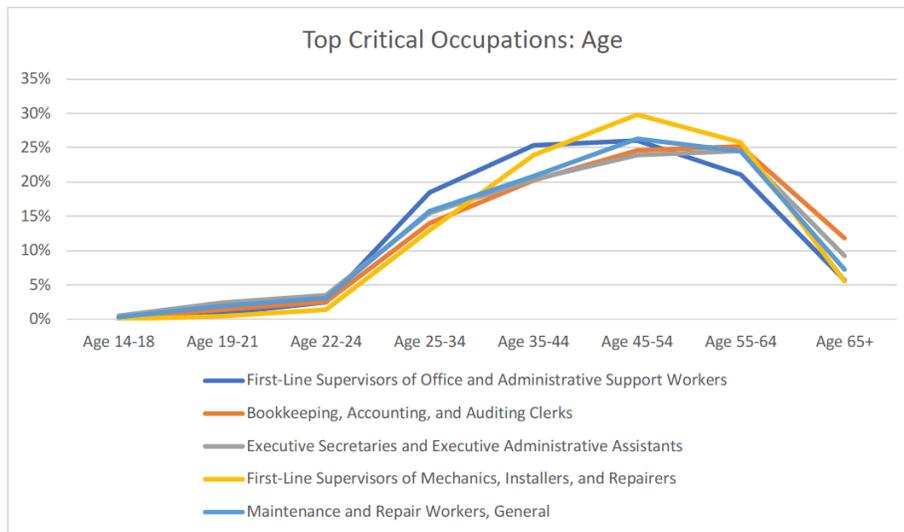
Figure H: Top Critical Occupations by Race



The occupations all have a similar distribution of workers by age, with most of the workforce comprised of workers aged 35 to 64. First-line supervisors of office and administrative support workers, and first-line supervisors of mechanics, installers, and repairers both tend to be younger, while the rest are skewed toward retirement age. These occupations are typically filled by workers above the age of 25.

The large number of workers aged 35 to 54 filling these occupations indicates the region will avoid a retirement shortage in these positions after baby boomers retire. To avoid a future shortage, employers must continue to recruit and employ younger workers to replace retiring workers.

Figure I: Top Critical Occupations by Age



The recent growth, concentration, and wage patterns of these top occupations (Table 46 below) show that the Delta Region has a potential comparative advantage in the first-line supervisors of mechanics, installers, and repairers. Both first-line supervisors of office and administrative support workers, and executive secretaries and executive administrative assistants have grown at rates exceeding those seen at the national level over the last five years. All other top critical occupations have lagged national growth trends, particularly maintenance and repair workers, a group which has grown substantially slower in the Delta Region than nationwide.

First-line supervisors of office and administrative support workers are the only occupation that appears to have any demonstrably growth over the last five years. Even executive secretaries and executive administrative assistants have seen employment reductions over that time, indicating strong employment growth (in comparison to national trends) does not outweigh the overall contraction of the occupation. First-line supervisors of mechanics, installers, and repairers have shown only minor growth over the past five years, adding 31 jobs across the entire region. The growth of first-line supervisors of mechanics, installers, and repairers is much slower than what has been seen at the national level. If the region had grown on par with national trends, this occupation would have gained approximately 1,342 new jobs between 2015 and 2019.

Maintenance and repair workers are the lowest paying occupation out of the five, about equal with the \$16.37 / hour average wage for the region's occupations. Bookkeeping, accounting, and auditing clerks likewise earn below the median wage for the region, while the other three critical occupations earn well above it. The earnings spread is likely a result of the experience required to hold these different jobs. Supervisory roles, in general, pay higher than their entry-level analogues.

Interestingly, there is an earnings difference between the two first-line supervisory roles in the list. The office and administration roll, disproportionately staffed by women, earns around \$7 / hour less than the mechanics and repair roll, disproportionately staffed by men. A compounding factor to the demographic differences between the two professions is unionization. Even in areas without a strong union presence, the upward pressure of unionization on wages typically spills over through a given industry, which may explain why the \$7 / hour gap exists between these two similar occupations.

These high demand occupations, specifically the two managerial occupations, are likely to pull in workers from related, entry level positions. First-line supervisors of office and administrative support workers, for example,

may be staffed by workers formerly employed in office and administrative support. Maintenance and repair workers may be promoted to fill positions in the first-line supervisors of the mechanics, installers, and repairers' occupation. Approximately 486,000 people were employed in office and administrative support occupations in the Delta Region in 2019. It is highly likely that some, if not all the first-line supervisors of office and administrative support openings will be filled by people from these occupations with the requisite experience.

Most of the occupations highlighted here require just a high school diploma, and as such, may be able to find enough incoming high school graduates to meet their need (Table 47 in Appendix E). However, most also require prior work experience, meaning that high school students are unlikely to qualify to the same extent as incumbent workers from other, related professions. When filling these positions, either with recent high school graduates or incumbent workers, employers will need to determine whether a potential hire possesses the skills required to help their businesses grow. The skills gap requirement for high school graduates may not be filled simply by education and on the job experience in another profession. Often workforce training boards and partner training organizations will need to step up to fill industry needs and help upskill prospective hires.

We observed a high level of demand for qualified workers across the Delta Region and particularly in occupations critical to the success of the region's industry clusters. Training programs aimed at filling the demand for qualified workers are in a unique position to address diversity, equity, and inclusion issues in the Delta's workforce. These critical professions do not display representative hiring patterns, and by tailoring job training and placement efforts to address this disparity, workforce development agencies may be able to shift the needle on employment discrimination in the Delta. The high level of demand for qualified workers in these occupations puts prospective hires in an advantaged position. Delta workforce development agencies may be able to take advantage of this situation by targeting training and support programs to women and people of color to help them secure employment in these sought after and in demand jobs.

SUPPLY GAP ANALYSIS

Different occupations require different levels of education for new hires. The following color code will be used in the following tables to identify the level of education required for each occupation listed.

Associate's degree
Bachelor's degree
High school diploma or equivalent
No formal educational credential
Postsecondary nondegree award
Some college, no degree

Table 25: Occupations Critical to High-tech Infrastructure Industries

SOC	SOC Description	IPEDS Completers	IPEDS Completers Associate's Degree or Lower	Avg. Annual Openings	Gap	Gap Associate's Degree or Lower Only
43-3031	Bookkeeping, Accounting, and Auditing Clerks	56	56	4,738	4,682	4,682
43-1011	First-Line Supervisors of Office and Administrative Support Workers	287	287	4,501	4,214	4,214
49-9071	Maintenance and Repair Workers, General	20	20	4,204	4,185	4,185
51-1011	First-Line Supervisors of Production and Operating Workers	0	0	2,476	2,476	2,476
49-9041	Industrial Machinery Mechanics	0	0	2,068	2,068	2,068
49-3023	Automotive Service Technicians and Mechanics	340	306	1,971	1,631	1,665
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0	0	1,609	1,609	1,609
43-6011	Executive Secretaries and Executive Administrative Assistants	225	225	1,816	1,592	1,592
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	0	0	1,243	1,243	1,243
53-5021	Captains, Mates, and Pilots of Water Vessels	0	0	989	989	989
43-5061	Production, Planning, and Expediting Clerks	0	0	926	926	926
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	0	0	923	923	923
49-9051	Electrical Power-Line Installers and Repairers	0	0	838	838	838
15-1232	Computer user Support Specialists	41	41	795	754	754
49-3042	Mobile Heavy Equipment Mechanics, (no engines)	0	0	719	719	719
51-8031	Water and Wastewater Treatment Plant and System Operators	18	18	700	682	682
53-7021	Crane and Tower Operators	6	6	508	502	502
49-3031	Bus and Truck Mechanics/Diesel Engine	528	528	1,003	476	476
27-1026	Merchandise Displayers and Window Trimmers	0	0	411	411	411
49-3041	Farm Equipment Mechanics and Service	13	13	362	349	349
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	0	0	285	285	285
49-3011	Aircraft Mechanics and Service Technicians	100	100	383	283	283
51-8013	Power Plant Operators	0	0	269	269	269
53-5031	Ship Engineers	0	0	210	210	210
51-8092	Gas Plant Operators	52	33	232	180	199
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	28	22	177	149	155

Table 26: Occupations Critical to Agriculture and Resource Extraction

SOC	SOC Description	IPEDS Completers	IPEDS Completers Associate's Degree or Lower	Avg. Annual Openings	Gap	Gap Associate's Degree or Lower Only
43-3031	Bookkeeping, Accounting, and Auditing Clerks	56	56	4,738	4,682	4,682
43-1011	First-Line Supervisors of Office and Administrative Support Workers	287	287	4,501	4,214	4,214
49-9071	Maintenance and Repair Workers, General	20	20	4,204	4,185	4,185
51-1011	First-Line Supervisors of Production and Operating Workers	0	-	2,476	2,476	2,476
47-2111	Electricians	196	196	2,556	2,361	2,361
49-9041	Industrial Machinery Mechanics	-	-	2,068	2,068	2,068
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	347	347	2,333	1,986	1,986
47-2152	Plumbers, Pipefitters, and Steamfitters	4	4	1,880	1,876	1,876
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0	-	1,609	1,609	1,609
43-6011	Executive Secretaries and Executive Administrative Assistants	225	225	1,816	1,592	1,592
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	-	-	719	719	719
49-9043	Maintenance Workers, Machinery	-	-	487	487	487
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	528	528	1,003	476	476
41-9022	Real Estate Sales Agents	19	9	441	422	432
45-4011	Forest and Conservation Workers	23	7	267	244	260
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	119	26	350	231	324
11-3051	Industrial Production Managers	504	120	548	44	428

Table 27: Occupations Critical to Labor-Intensive Manufacturing

SOC	SOC Description	IPEDS Completers	IPEDS Completers Associate's Degree or Lower	Avg. Annual Openings	Gap	Gap Associate's Degree or Lower Only
43-3031	Bookkeeping, Accounting, and Auditing Clerks	56	56	4,738	4,682	4,682
43-1011	First-Line Supervisors of Office and Administrative Support Workers	287	287	4,501	4,214	4,214
49-9071	Maintenance and Repair Workers, General	20	20	4,204	4,185	4,185
51-1011	First-Line Supervisors of Production and Operating Workers	0	0	2,476	2,476	2,476
47-2111	Electricians	196	196	2,556	2,361	2,361
49-9041	Industrial Machinery Mechanics	-	-	2,068	2,068	2,068
47-2152	Plumbers, Pipefitters, and Steamfitters	4	4	1,880	1,876	1,876
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0	0	1,609	1,609	1,609
51-4041	Machinists	30	30	1,393	1,364	1,364
43-5061	Production, Planning, and Expediting Clerks	0	0	926	926	926
51-9161	Computer Numerically Controlled Tool Operators	26	26	539	513	513
53-7021	Crane and Tower Operators	6	6	508	502	502
49-9043	Maintenance Workers, Machinery	-	-	487	487	487
51-2041	Structural Metal Fabricators and Fitters	43	43	525	482	482
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	-	-	402	402	402
19-4031	Chemical Technicians	86	6	434	348	428
51-4111	Tool and Die Makers	13	13	310	297	297
51-8021	Stationary Engineers and Boiler Operators	-	-	228	228	228
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	57	57	260	204	204
51-5111	Prepress Technicians and Workers	11	11	152	141	141
11-3051	Industrial Production Managers	504	120	548	44	428
17-3013	Mechanical Drafters	141	96	183	42	87
17-3026	Industrial Engineering Technologists/Technicians	1,523	1,112	295	(1,228)	(817)

Table 28: Most Common Critical Occupations

SOC	43-3031	49-9071	43-1011	43-6011	49-1011
SOC Description	Bookkeeping, Accounting, and Auditing Clerks	Maintenance and Repair Workers General	First-Line Supervisors of Office and Administrative Support Workers	Executive Secretaries and Executive Administrative Assistants	First-Line Supervisors of Mechanics Installers and Repairers
Critical to Industry Clusters	11	11	11	10	9
industry: Labor-intensive manufacturing					
industry: Government					
industry: Agriculture and resource extraction					
industry: Healthcare					
industry: Higher Education					
industry: FIRE					
industry: Corporate management & administration					
industry: High-tech infrastructure					
industry: Knowledge intensive business services					
industry: Research, engineering, and technology					
industry: Media, entertainment, and recreation					

Table 29: Compensation and Concentration of Top Critical Occupations in the Delta Region

SOC	Description	2015-2019 Change	2019 Location Quotient	Shift Share Analysis				Media Hourly Earnings
				Competitive Effect	Occ Mix Effect	Nat'l Growth with Effect	Expected Change	
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,805	1.07	276	(924)	2,453	1,529	\$ 22.30
43-3031	Bookkeeping, Accounting, and Auditing Clerks	(2,400)	0.99	(457)	(4,520)	2,577	(1,943)	\$ 17.60
43-6011	Executive Secretaries and Executive Administrative Assistants	(2,671)	1.06	630	(4,388)	1,088	(3,300)	\$ 20.85
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	31	1.26	(1,342)	404	970	1,373	\$ 29.64
49-9071	Maintenance and Repair Workers, General	(3,423)	1.10	(6,832)	672	2,737	3,409	\$ 16.73

Table 30: Typical Experience and Education Required for Top Critical Occupations

SOC	Description	Typical Entry Level Education	Work Experience	Required Typical On-the-job Training
43-1011	First-Line Supervisors of Office and Administrative Support Workers	High school diploma or equivalent	Less than 5 years	None
43-3031	Bookkeeping, Accounting, and Auditing Clerks	Some college, no degree	None	Moderate-term on-the-job training
43-6011	Executive Secretaries and Executive Administrative Assistants	High school diploma or equivalent	Less than 5 years	None
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	High school diploma or equivalent	Less than 5 years	None
49-9071	Maintenance and Repair Workers, General	High school diploma or equivalent	None	Moderate-term on-the-job training

Appendix F: Focus Group Feedback and Survey Analysis

WHAT'S WORKING: EXEMPLARY PROGRAMS IN THE DELTA REGION

Our focus group discussions highlighted both challenges and opportunities. Along the way, we learned of many promising initiatives that are having great success and are worthy of replication in the Delta Region and beyond. Promising programs included the following:

- University of West Alabama LINCS (Leveraging Integrated Networks for Change and Sustainability): A regional training strategy using mobile learning labs to bring training opportunities to rural West Alabama.
- KY FAME (Federation for Advanced Manufacturing Education): FAME is a national program that provides training and a career pathway for credentials as an Advanced Manufacturing Technician.
- Alabama Career Connect: West Alabama Works' on-line portal to career and job training opportunities.
- Agriculture Business Academy (Lonoke): Arkansas' first high-school level training center to prepare young people for careers in agriculture and aquaculture.
- Tennessee Pre-Apprentice Program: This effort builds on Tennessee's excellent apprenticeship programs and seeks to expand such training opportunities to the high school level.
- Gibson County TN Second Chance: A nationally recognized model program based on partnerships between the local Sheriff's office and the Northwest Tennessee Workforce Board.
- Laborers Local 773 : Based in Marion, IL, Laborers Local 773 runs a well-respected and effective construction apprenticeship program.
- FedEx Institute of Technology: Based at the University of Memphis, this program provides training in emerging information technology disciplines.
- Advanced Maintenance Technician Co-Op Program at Jackson State Community College: Provides training and coop experience to help students become multi-skilled maintenance technicians.

The groups and survey respondents also identified several areas where additional testing and experimentation may make sense. These include:

TALENT ATTRACTION STRATEGIES

DRA could encourage more active efforts to recruit talent to the region, perhaps akin to programs like Tulsa Remote. As more people work from home (WFH), the Delta Region should expand efforts to recruit former or new residents to the region. This might be done via marketing campaigns, incentives, or other efforts to enhance the quality of life for those working from home.

Improving broadband access will also be an essential first step in this work. Attracting the WFH demographic will be impossible without high quality and affordable broadband access. Thankfully, new federal funds to support broadband expansion will help this effort.

In addition, the region needs to do a better job of promoting itself as a good place to do business. Local economic developers, especially those in rural areas, need better data and resources to promote the regional talent base, with special emphasis on the talents of those in career technical education programs. The region also boasts access to water, low-cost energy, and other amenities that are sought by manufacturers and other employers.

FLEXIBLE WORK ARRANGEMENTS

More active use of job sharing could serve to employ more younger people, seniors, and individuals seeking to juggle employment and family care responsibilities.

INVESTMENT TO ADDRESS STRUCTURAL BARRIERS TO EMPLOYMENT

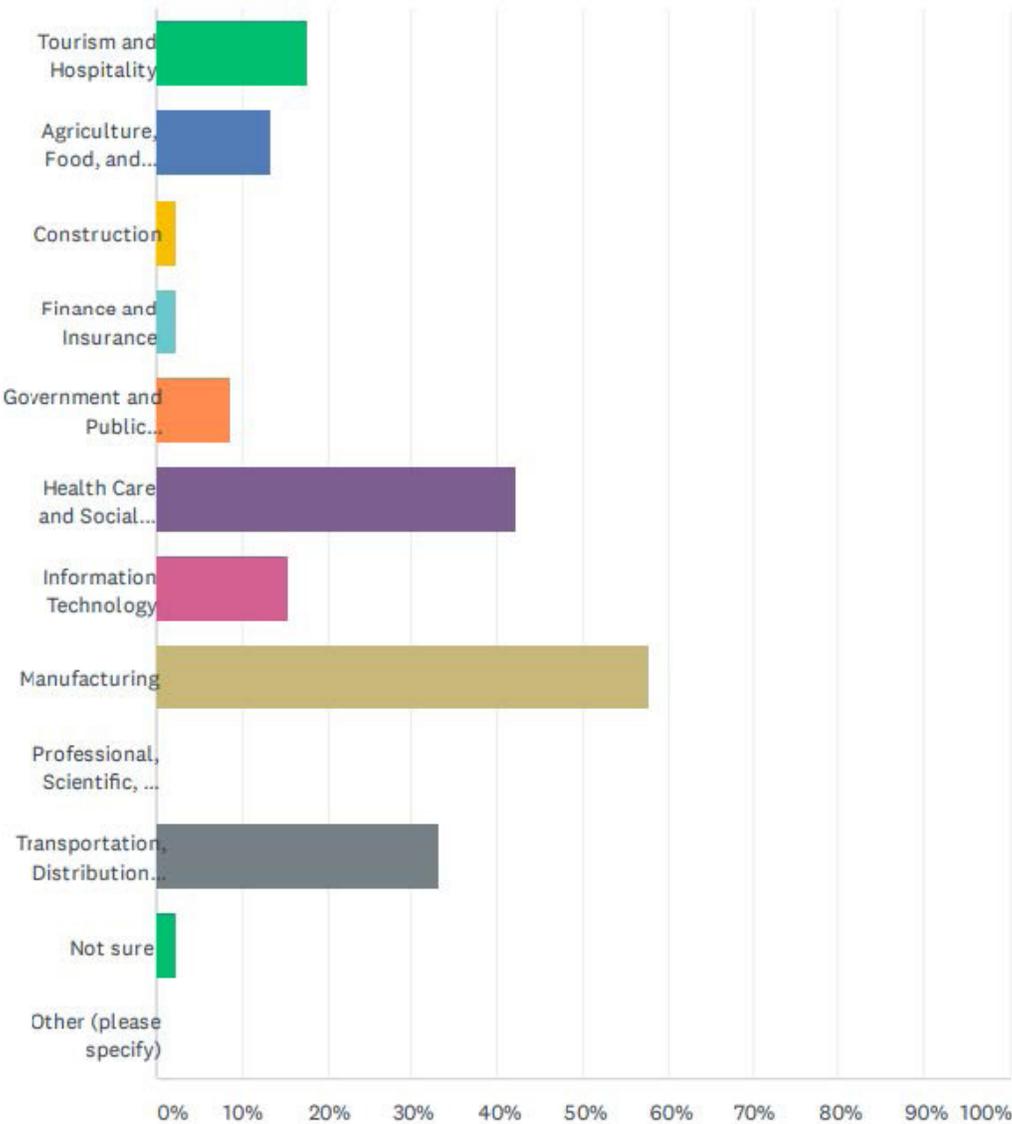
Many area residents want to work but are not able to do so due to issues with transportation, housing, and other factors. Additional investment in transportation could ease the ability to travel for job opportunities. In addition, childcare investments would also make it easier for parents and caregivers to enter or re-enter the workforce.

EXPANDED INCUMBENT WORKER TRAINING

CREC's early research suggests that a major training gap exists in supporting front line supervisors and managers. Expanded training programs for these occupations should help improve talent retention and create better career opportunities for incumbent workers. And, as these employees move up the career ladder, new entry-level positions open for additional workers.

Q1 What do you think are the two most important private industries for your talent development strategies?

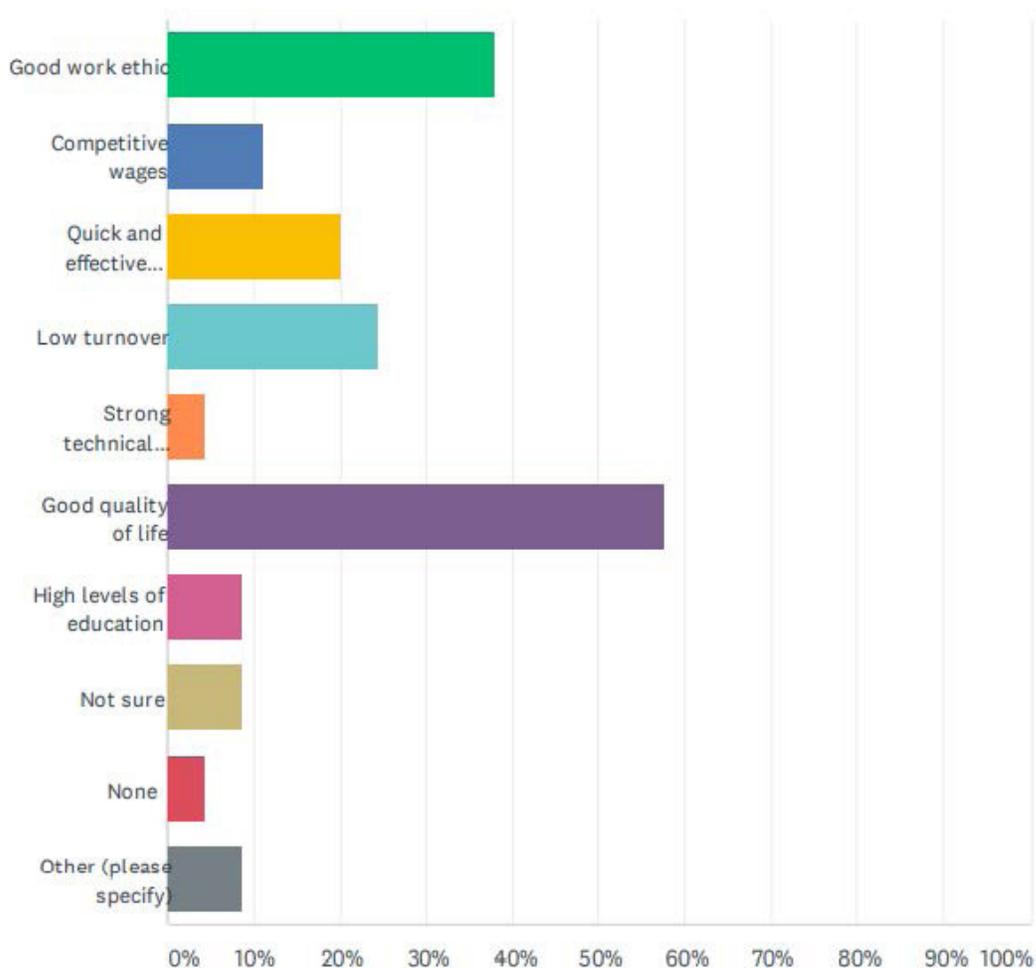
Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Tourism and Hospitality	17.78%	8
Agriculture, Food, and Natural Resources	13.33%	6
Construction	2.22%	1
Finance and Insurance	2.22%	1
Government and Public Administration	8.89%	4
Health Care and Social Assistance	42.22%	19
Information Technology	15.56%	7
Manufacturing	57.78%	26
Professional, Scientific, and Technical Services	0.00%	0
Transportation, Distribution, and Logistics	33.33%	15
Not sure	2.22%	1
Other (please specify)	0.00%	0
Total Respondents: 45		

Q2 Regarding talent in your local labor market, what are the two most important strengths that your community offers to businesses?

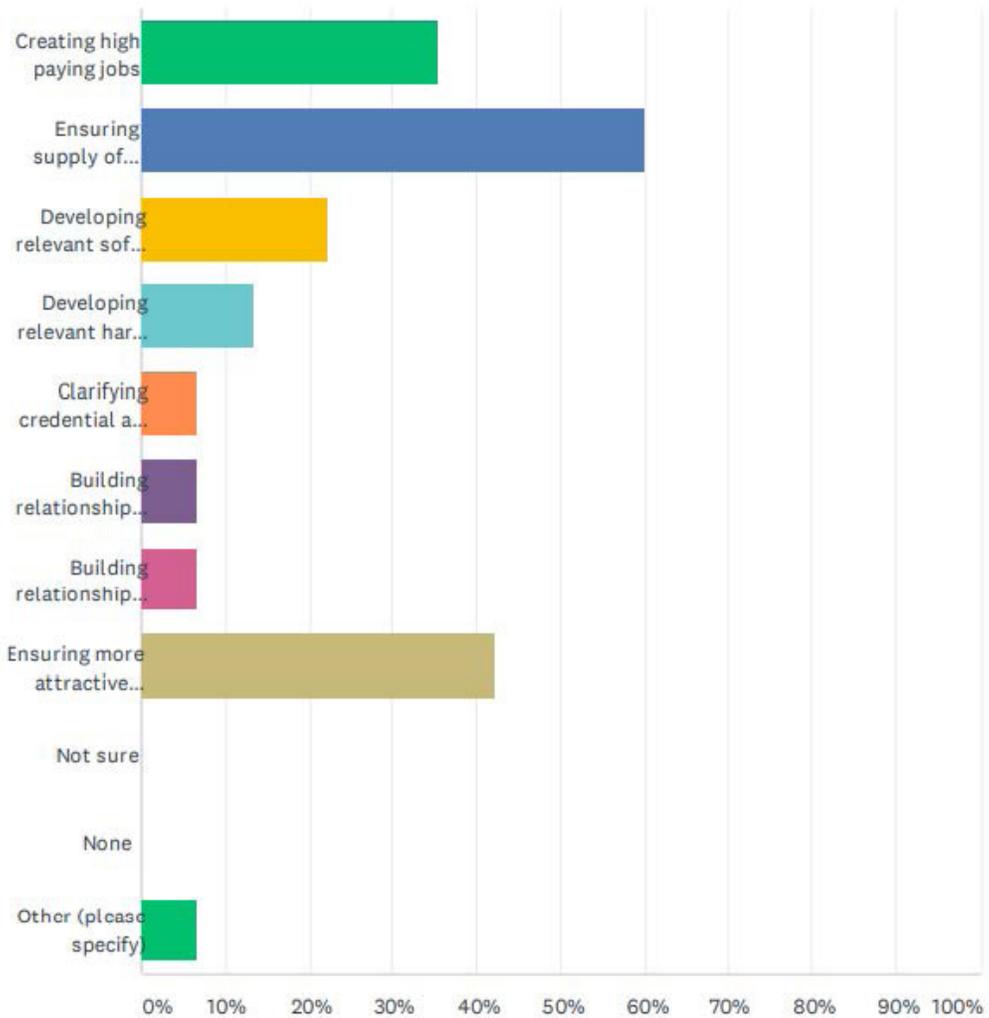
Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Good work ethic	37.78%	17
Competitive wages	11.11%	5
Quick and effective recruitment	20.00%	9
Low turnover	24.44%	11
Strong technical skills	4.44%	2
Good quality of life	57.78%	26
High levels of education	8.89%	4
Not sure	8.89%	4
None	4.44%	2
Other (please specify)	8.89%	4
Total Respondents: 45		

Q3 What are the two most challenging workforce development issues in your community or region?

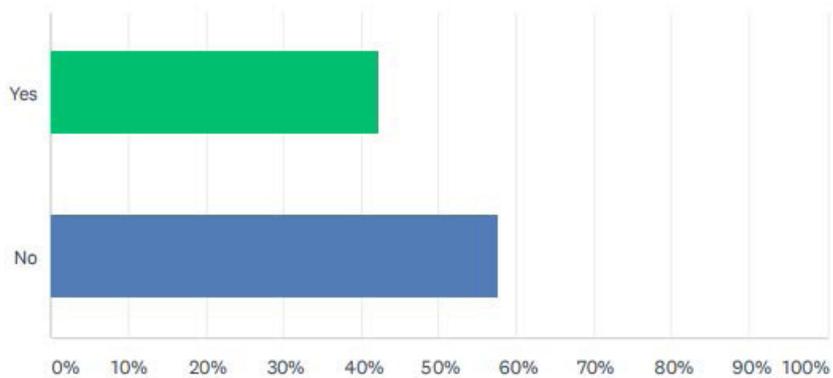
Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Creating high paying jobs	35.56%	16
Ensuring supply of qualified applicants and skilled workers	60.00%	27
Developing relevant soft skills (interpersonal, reliability, etc.) training opportunities	22.22%	10
Developing relevant hard skills (technology, manufacturing, etc.) training opportunities	13.33%	6
Clarifying credential and skill expectations	6.67%	3
Building relationships between workforce development organizations and educational institutions	6.67%	3
Building relationships with employers	6.67%	3
Ensuring more attractive wages for current job openings	42.22%	19
Not sure	0.00%	0
None	0.00%	0
Other (please specify)	6.67%	3
Total Respondents: 45		

Q4 Are your region's employers leading sector-wide strategies or multiple-employer collaboratives?

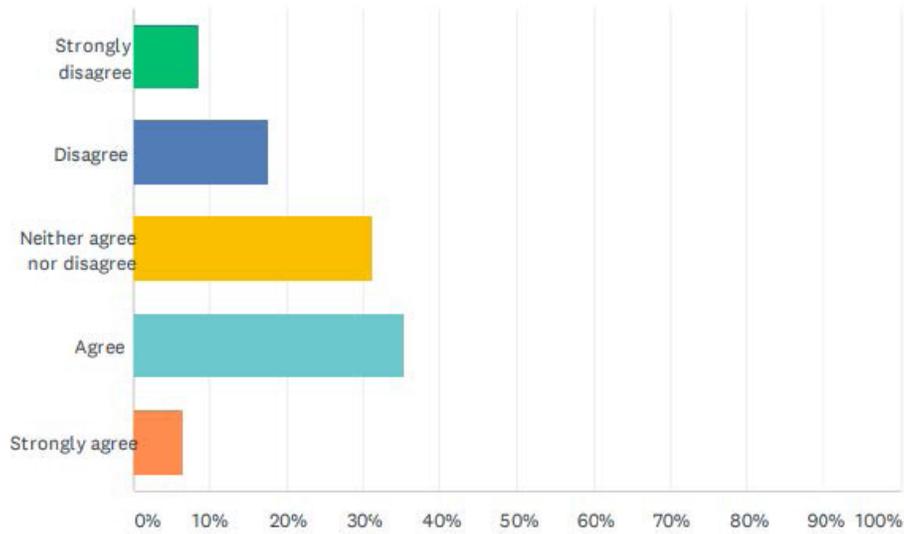
Answered: 45 Skipped: 0



ANSWER CHOICES		RESPONSES	
Yes		42.22%	19
No		57.78%	26
TOTAL			45

Q5 Directions: Please state whether you agree or disagree with the following statement using the options in the drop-down menu: My region's employers are actively involved in setting education and training priorities in my region.

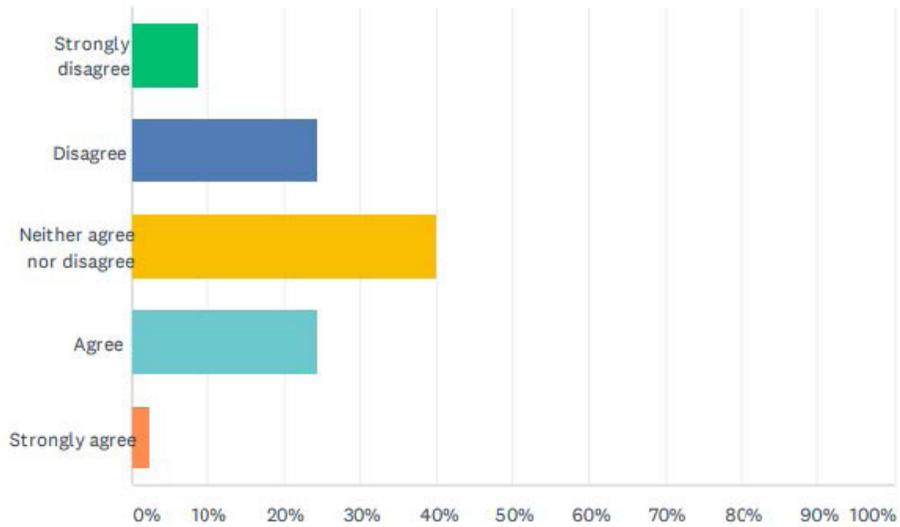
Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly disagree	8.89%	4
Disagree	17.78%	8
Neither agree nor disagree	31.11%	14
Agree	35.56%	16
Strongly agree	6.67%	3
TOTAL		45

Q6 Directions: Please state whether you agree or disagree with the following statement using the options in the drop-down menu: My region's employers are actively involved in determining competency and credential requirements in my region.

Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly disagree	8.89%	4
Disagree	24.44%	11
Neither agree nor disagree	40.00%	18
Agree	24.44%	11
Strongly agree	2.22%	1
TOTAL		45

Q7 What is the strongest employer-led program that is creating results in your community?

Answered: 45 Skipped: 0

Q8 What is the most exciting talent development opportunity in your community today?

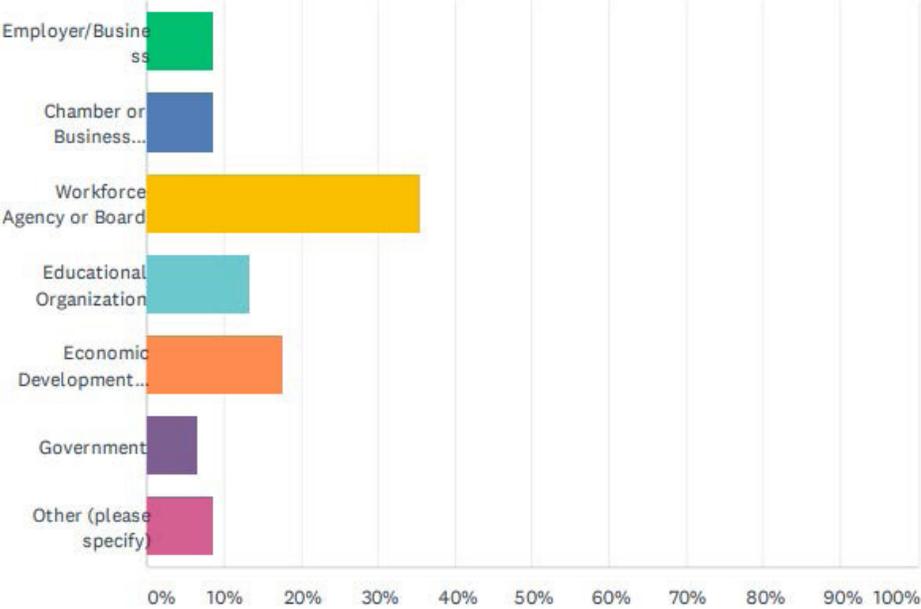
Answered: 45 Skipped: 0

Q9 What would you suggest are the two most important things that your region's public or private leaders should be doing to ensure the strongest and most capable workforce?

Answered: 45 Skipped: 0

Q10 Generally, who leads or champions workforce development efforts in your community or region?

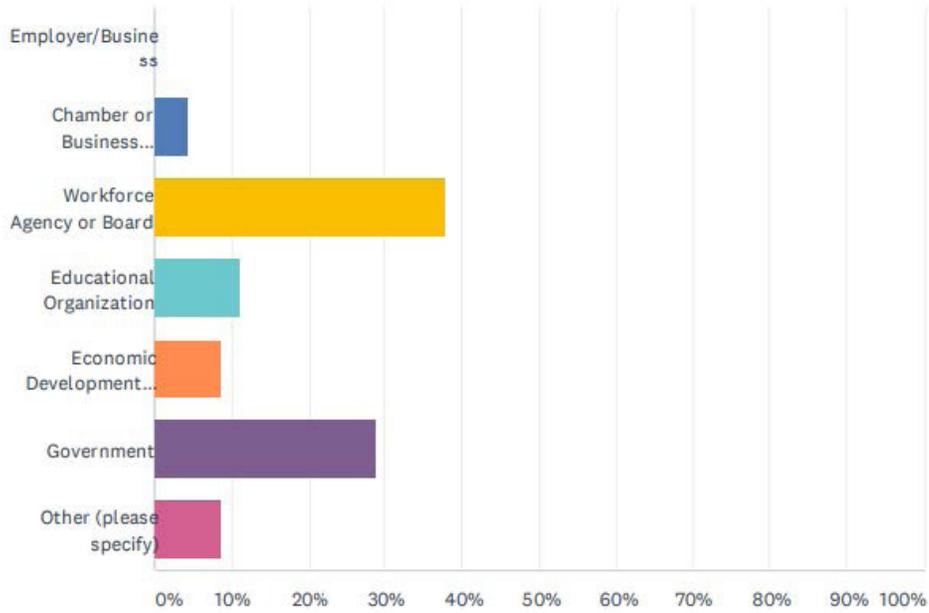
Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Employer/Business	8.89%	4
Chamber or Business Association	8.89%	4
Workforce Agency or Board	35.56%	16
Educational Organization	13.33%	6
Economic Development Organization	17.78%	8
Government	6.67%	3
Other (please specify)	8.89%	4
TOTAL		45

Q11 Please describe your organization type. Select one.

Answered: 45 Skipped: 0



ANSWER CHOICES	RESPONSES	
Employer/Business	0.00%	0
Chamber or Business Association	4.44%	2
Workforce Agency or Board	37.78%	17
Educational Organization	11.11%	5
Economic Development Organization	8.89%	4
Government	28.89%	13
Other (please specify)	8.89%	4
TOTAL		45

Q12 Is there anything else you'd like to share about workforce development initiatives in your region/state?

Answered: 44 Skipped: 1

Appendix G: Case Study Analysis

DELTA REGIONAL AUTHORITY REPORT: CASE STUDY THEMES AND COMMONALITIES

Program Themes	MCC Lineman Training Program	Greater New Orleans Inc. Mechatronics Apprenticeship Program	UWA and LINCS	Base Camp Coding Academy
Institution of Higher Education Involvement			The University of West Alabama created the Leveraging Integrated Networks for Challenge and Sustainability program in partnership with private company Beta Box to send mobile learning labs into rural communities and provide job skills training.	
Community College Involvement	Madisonville Community College developed the program in partnership with local private industry and federal agencies.	Three community colleges (Delgado, Nunez, and Northshore Technical) formed a partnership and developed the Apprenticeship Program	Mobile learning labs have been used in partnership with Coastal Community College to offer Ready to Work courses.	Northwest Mississippi Community college is a partner in providing training.
Utilized Diverse Funding Sources (private and public funding across all levels of government)	need more information; some information missing	need more information; some information missing	need more information; some information missing	need more information; some information missing
Partnership Across Multiple of Government	need more information; some information missing	need more information; some information missing	need more information; some information missing	need more information; some information missing
Created in Response to Specific Private Industry Need	Local employer William E. Groves Electric Services needed specific skills to install and maintain energy transmission infrastructure, but his workers were entering retirement age.	Regional employers were investing in more complex manufacturing technologies and required upskilling of workers.	Flexibility is embedded in programming; the LINCS Mobile Labs can be used to provide customized training services based on industry needs	Private technology companies identified needs and formed the training as a private-led initiative.
Private Sector Assisted in Program Design	Training needs were identified by local employers and private local employers assisted in program design.	Training needs were identified by local employers and private local employers assisted in program design.	Training needs were identified by local employers and private local employers assisted in program design. The mobile learning labs allow for flexibility and LINCS works with private industry to develop relevant curriculum on an ongoing basis.	The program is managed by private industries, with a board of directors making decisions based on private industry needs.

DELTA REGIONAL AUTHORITY REPORT: CASE STUDY THEMES AND COMMONALITIES

Program Themes	MCC Lineman Training Program	Greater New Orleans Inc. Mechatronics Apprenticeship Program	UWA and LINCS	Base Camp Coding Academy
For-Credit	The program was specifically designed to be for-credit. Students use financial aid to pay for classes.	need more information; some information missing	need more information; some information missing	need more information; some information missing
Apprenticeship Program		Yes	Yes	Yes
State Funding used	need more information; some information missing	need more information; some information missing	need more information; some information missing	need more information; some information missing
Not-For-Credit		need more information; some information missing	need more information; some information missing	need more information; some information missing
Federal Grant used	Delta Regional Authority grant used	Delta Regional Authority grant used	Delta Regional Authority grant used	Delta Regional Authority, Department of Labor, Appalachian Regional Commission all provided some grant funding.
Costs Subsidized for Student		Yes	Yes	Yes
Students Receive Certification		need more information; some information missing	need more information; some information missing	need more information; some information missing
Available to New Workers	Yes	Yes	Yes	Yes
Available to Incumbent Workers	Yes	Yes	Yes	Yes
Utilized Mobile Learning Lab		Program funds were used to purchase a mobile mechatronics lab.	The entire program involves sending Mobile Learning Labs to rural areas to provide training as needed by the community.	
Involved Intermediary	need more information; some information missing	need more information; some information missing	need more information; some information missing	need more information; some information missing
Addresses Student Needs Besides Work Training (e.g., transportation, food)			Program addresses students with lack of transportation, soft skills, and other resources as needed.	Students receive support for food, transportation, and other needs.

DELTA REGIONAL AUTHORITY REPORT: CASE STUDY THEMES AND COMMONALITIES

Program Themes	MCC Lineman Training Program	Greater New Orleans Inc. Mechatronics Apprenticeship Program	UWA and LINCS	Base Camp Coding Academy
Led by Engaged Board of Directors				The organizational model demands an actively engaged Board of Directors. Board members serve in many active roles such as mentors, admissions officers, funders, and community advocates.
Flexibility is Embedded in Program Design			Mobile learning labs can provide an array of curriculum and training options depending on industry needs.	The training programs evolve on a continuous basis based on private sector needs.

MCC LINEMAN TRAINING PROGRAM:

Background

Operating four campuses in Hopkins and Muhlenberg counties of Western Kentucky, Madisonville Community College (MCC) is a growing institution currently serving nearly 6,000 students.²¹ Like most schools in Kentucky's Community and Technical College System (KCTCS), MCC provides a mix of degree and training programs for residents of Kentucky's Western Coalfield and Pennyriple regions. Like many rural parts of Kentucky, the region's population and economic growth levels have stagnated in recent years, and the area's population is rapidly aging.²² Regional unemployment rates are slightly higher than national averages, and per capita income is lower than state averages. In 2020, the region's employment situation was worsened by the COVID-19 pandemic, as well as the downturn in the local coal industry.

The combination of stagnant economic growth and declines in key sectors, like coal mining, have created significant workforce challenges in the region. Local employers face challenges in recruiting and retaining local workers, and regional workforce gaps impede the region's ability to attract or grow new ventures.

State, regional, and local leaders have introduced several new initiatives designed to tackle these challenges. These efforts date back to 2010's Pennyriple Future strategy, that identified a **stronger regional talent pipeline** as its top priority.²³ In 2017, a follow-on analysis focused on the coal industry downturn presented similar findings and recommended significant reforms to local workforce development efforts.²⁴ This 2017 Pennyriple Future study also identified transportation and logistics, including truck driver training, as a potential target industry for future regional growth. In 2020, this priority was further supported in the Pennyriple Area Development District's Comprehensive Economic Development Strategy, which called for **strong partnerships** to "create a strong pipeline of talent to support the region's current and future employers."²⁵

Regional leaders have responded to these challenges. For example, Hopkins and Muhlenberg Counties have been designated as a Kentucky Work-Ready Community. In addition, Madisonville Community College (MCC) has expanded its operations and introduced a host of new programs, including the new Lineman program developed with support from DRA, DOL and others. The MCC Lineman program emerged in response to a specific need identified by a local employer, William E. Groves Electrical Services, a large regional construction firm serving the power transmission and distribution industries. Groves was facing the effects of looming workforce shortages in the utility industry, particularly as it related to training new linemen to install and maintain energy transmission infrastructure. Groves' training challenges were not unique, as similar pressures are affecting the entire industry as it seeks to replace a large share of workers who are at or near retirement age. In 2019, the Center for Energy and Workforce Development estimated that an additional 29,000 Lineman would need to be trained and hired by 2023 to meet current and projected industry demand.²⁶

Groves and its President, Jeff Groves, had long partnered with MCC on various training and community initiatives, but the MCC Lineman initiative was more consequential. Like many firms serving the utility industry, Groves faced major challenges in attracting and retaining workers with necessary skills and background. For years, it had relied on trainees coming out of the private Southeast Lineman Training Center in Trenton, GA. Groves hired many graduates of this program, who were well-trained and ready to work. However, because they were not from Western Kentucky, many of these workers opted to move closer to their homes when new opportunities arose. Jeff Groves was also concerned that local people were not given the opportunity to obtain utility industry training and pursue these available career options.

²¹ <https://systemoffice.kctcs.edu/our-colleges/madisonville.aspx>

²² Pennyriple ADD 2020 CEDS https://storage.snappages.site/agtngx8yn9/assets/files/2020_CEDS-MASTER-Nov-9-2020.pdf. Pp.7-8.

²³ <http://www.pennyriplefuture.com/resources/Pennyriple+Economic+Development+Strategy+FINAL+Jan2011.pdf>

²⁴ <https://storage.snappages.site/agtngx8yn9/assets/files/Hopkins-Muhlenberg%20Power%20Economic%20Growth%20Plan.pdf>

²⁵ Pennyriple ADD CEDs, p. 47.

²⁶ <https://cewd.org/wp-content/uploads/2020/12/2019-GapsintheEnergyWorkforce-SurveyResults.pdf>, p. 6

MCC's program was developed in response to this mix of factors. MCC reached out to numerous employers and found that they faced similar issues, including that many local employers faced a major talent gap, and local **residents** would benefit from training in an in-demand skill set. MCC's program would also be less expensive than that provided by the Southeast Lineman Training Center, opening opportunities to local people who lacked the resources or ability to move to Georgia for training.

Madisonville Community College Lineman Training Program: Responding to Regional Workforce Needs

Initial planning for the Lineman program kicked off in early 2017 via several meetings that engaged local employers in identifying their most pressing training and personnel needs. Both employers and community college staff were excited about the project's potential, but also recognized that a Lineman program required extensive up-front investments. High dollar items included equipment such as bucket trucks, tractor trailers, generators, poles, and other equipment.

In addition, MCC and KCTCS wanted to create a for-credit training program, as opposed to an apprenticeship or non-credit program.²⁷ This decision ensured that students obtained college credit and could access financial aid programs. But it also added to initial start-up costs related to curriculum development and review, program accreditation, and other administrative costs.

Fortunately, the MCC team enjoyed great success in accessing startup funds. Key investments came from the Delta Regional Authority and KCTCS, which was pleased to support the development of a for-credit lineman program and expanded availability of CDL training at MCC. Groves donated several trucks and equipment as well, and Kentucky Utilities donated poles and various supplies. Finally, a larger DOL/DRA grant through the Workforce Opportunities for Rural Communities (WORC) program helped the team acquire sufficient funding for the program.

The final missing piece concerned faculty, and MCC was fortunate to retain Alan Martin to teach the course. Recently retired from Groves Electric, Martin was well-known in the industry, bringing credibility and knowledge of the latest industry trends, technologies, and business practices. His extensive experience ensured that students were getting an invaluable introduction to the industry.

With the initial training and funding infrastructure in place, MCC was ready to unveil the program in early 2018. Initial recruiting was moving slowly until a well-timed article in **Kentucky Living** magazine generated a boom in interest, making the recruitment process much easier.²⁸ The initial class cohort included 12 students, and the first **training** cohorts were of similar size. However, because of growing local interest and a lengthening waiting list, MCC has now opted to expand the program's size and will soon begin training up to 90 students per year at a new specialized facility in Webster County. The Webster County site, developed in partnership with the Green River Area Development District, and the Webster County Industrial Development Authority, will be located at a former coal mining facility. In total, the MCC Lineman program runs for eight weeks, with three cohorts being trained each year. The program operates daily from 6AM to 2:30PM and is designed to operate like a typical business day for a lineman. The program costs roughly \$7,000 per student, with a large share of students receiving financial aid or using military veteran's benefits. In addition to coursework, students receive (at no extra charge) essential equipment, such as hard hats, belts, and tools. Students also get their own poles, which they can keep after training.

The training is incredibly hands-on, and requires extensive physical activity, mimicking a regular "day at the office." Students receive academic training in fields like electrical systems, mapping, and first aid, as well as hands-on training with equipment like the use of bucket and digger trucks. All students also obtain a Class A CDL certification.

The training program is open to all with the physical capacity and interest in a lineman career. Accepted students must have a high school degree or GED equivalent and show real interest in completing the program. Applicants are interviewed by program staff before potential acceptance, and like the training itself, the vetting process is exceptionally hands-on. Potential applicants are made aware that the industry requires hard work, physical fitness and dexterity, and a bit of toughness.

²⁷ Craig Dixon, Sherry Hewell and Britney Mitchell were other key members of MCC's program team.

106 ²⁸ <https://www.kentuckyliving.com/news/wanted-lineworkers>

Program Results

Between 2018 and 2021, the MCC Lineman program supported 117 graduates. Program attrition rates were low, and nearly all students completed the program once they were enrolled. Because of high industry demand, graduated students benefited from increased economic opportunities, with many earning an average starting salary of around \$45,000. Roughly 85 percent of graduates were placed in full-time positions within two to three months of program completion.

The program has been a great success to date. The program is not only supporting local residents but is attracting students from other parts of Kentucky and other states. The program is also being utilized by transitioning veterans leaving service at nearby Fort Campbell. In addition, MCC has received great recognition in media reports and within KCTCS. Thanks to these successes, the program will be expanding rapidly this year when the new training facility opens in early 2022. The new facility will likely allow MCC to train up to 90 students per year. The MCC team is also helping Louisville's Jefferson Community and Technical College replicate the program at its campuses.

TAKEAWAYS

Listen to Industry

MCC's Lineman program has been industry-driven from Day One. The MCC Lineman program was developed in direct response to a local employer's request for help with talent development and retention, and the program itself is fully integrated with leading industry practices. The course instructor is also connected to leading sector trends and program participants train on start-of-the-art equipment donated by area employers. When students graduate, they seamlessly transition into full-time industry employment.

Embrace Hands-on Program Design

Program and curriculum design are essential to ensuring that training meets the needs of students and employers. Because of close industry ties noted above, MCC provides a streamlined program focused on the key skills needed on the job. As Alan Martin, program faculty member, noted: "We cut out the fluff and go straight to the poles." Training is experiential and hands-on, and students use all the tools and equipment on a regular basis. In addition, the program is unique in providing a CDL component, which not only attracts more students, but provides another in-demand skill set for students.

Think Long Term

In a desire to be responsive to industry needs, many training programs get started too quickly and hope to iron out program details along the way. MCC, KCTCS, and its partners took a more deliberative route. The project team opted to develop a for-credit curriculum, which was developed quickly but still slowed the process of program start-up. However, this decision has generated many benefits, especially for program participants. Students now receive academic credits and are eligible for state and federal student aid programs.²⁹ In addition, the Lineman program benefits from KCTCS academic supports, and can be more easily adopted at other schools in the KCTCS system or elsewhere.

Provide Strong Support to Program Participants

The MCC team provides lots of "wrap-around" support for program participants. The vetting process to enter the program is rigorous, with program administrators ensuring that students are ready for the academic and physical rigors of lineman training. Program administrators also ensure students are "ready to work" and clearly understand the expectations and demands of the field. Finally, the MCC team provides essential help in obtaining financial aid and in finding housing for out-of-town students.

²⁹ Students also earn academic certificates in Pole Top Rescue, Utility Technician, and a Climbing Certification. They receive non-credit certification in Adult First Aid/CPR/Blood Borne Pathogens; Basic Lifting & Rigging; Bucket Truck Operator Trainee; Chainsaw Safety; and Digger/Derrick Operator Trainee.

GREATER NEW ORLEANS INC. MECHATRONICS APPRENTICESHIP PROGRAM

Background

The Greater New Orleans region, encompassing ten parishes in southeastern Louisiana, has long been a major manufacturing center. Because of its location along the nation's most important waterways and easy access to energy and other resources, the Greater New Orleans region is home to a diversified array of manufacturers operating in a host of unique industries. Overall, the region's manufacturing sector employs more than 17,000 workers.³⁰

In recent years, regional manufacturers have made major investments in new technology and production processes, including the introduction of robotics and other technologies that have revolutionized the business of manufacturing. In addition to increasing efficiencies, this transformation is changing the regional talent equation as demand for expertise in automation and robotics may soon exceed demand for more traditional skills such as welding and machining.

Mechatronics has emerged as one of the most important in-demand skillsets now sought by advanced manufacturers in the New Orleans region and around the us. 'Mechatronics' refers to an emerging discipline that combines knowledge and skills in several inter-connected fields: mechanical systems, electrical systems, control systems, and computers. Mechatronics engineers and technicians typically work with robotics, control systems, and electro-mechanical systems. And, as robots have become integral to modern manufacturing, demand for mechatronics expertise has skyrocketed.

Growing demand for mechatronics-related expertise is part of the region's overall increased demand for talent in the advanced manufacturing sector. Developing talent for advanced manufacturing is particularly important for public administrators and policymakers because the advanced manufacturing field provides high-quality career opportunities for middle skill workers. In fact, the average regional wage for advanced manufacturing—over \$36 per hour—far exceeds the region's average salary levels. And importantly, most advanced manufacturing jobs (around 83 percent) do not require a costly four-year college degree.

While many manufacturing positions are deemed middle skill, they do require specialized talent and expertise. In fact, more than three percent of regional manufacturing job postings are seeking individuals with expertise in automation, a key component in the field of mechatronics.³¹

All manufacturers in the Greater New Orleans region face talent shortages, but the pressures are more pronounced in specialized industries seeking unique skill sets (like mechatronics). Many Orleans local manufacturers were facing talent shortages, and their concerns soon came to the attention of Greater New Orleans Inc. (GNO, Inc.), the region's lead economic development agency. Among its many roles, GNO, Inc. has focused on serving as an intermediary to connect local employers to a wide range of training and human resources-related opportunities. This effort is known as GNOu.

As part of its regular outreach to employers, GNO, Inc. soon identified mechatronics as a pressing regional talent gap. The original spark for these discussions came from senior managers at Elmer Chocolate, a leading producer of seasonal chocolate candies. In 2016, Elmer made a major investment (of \$44 million) in new automated production technologies.³² With new technology in place, Elmer needed trained workers to operate and maintain this cutting-edge equipment. Senior Elmer managers, Ellen and Bernd Weber had experience working in Germany, with its sophisticated apprenticeship systems, and hoped to replicate that model at Elmer. Unfortunately, Elmer's talent demands were relatively small, as they needed only a few new employees each year. But, thanks to assistance from GNO Inc., the Elmer team was connected to other manufacturers with similar needs. As a group, these firms generated significant demand for specialized mechatronics training, and the Mechatronics Apprenticeship program was born.

The first step in developing the program involved recruiting key employers. In addition to Elmer Chocolate, Zaratrains McCormick and Laitram joined as lead partners in the program's first years. With GNO Inc.'s assistance, these firms connected with local community colleges to develop and design a specialized mechatronics-related curriculum.

²⁹ Students also earn academic certificates in Pole Top Rescue, Utility Technician, and a Climbing Certification. They receive non-credit certification in Adult First Aid/CPR/Blood Borne Pathogens; Basic Lifting & Rigging; Bucket Truck Operator Trainee; Chainsaw Safety; and Digger/Derrick Operator Trainee.

³¹ *Ibid*, p. 18.

108 ³² <https://opportunities.ledfaststart.com/global/en/blogarticle/bold-mechatronics-apprenticeship-programbreaks-new-ground/>

The GNO program is particularly unique because it has engaged multiple employers as well as three area community colleges: Delgado Community College, Nunez Community College, and Northshore Technical Community College. These three schools came together in a unique partnership that not only builds on each institution's unique competencies, but also provides a more comprehensive set of programs for employers and students. As Dr. William Wainwright NTCC's Chancellor noted: "Each of us assessed our faculty and programmatic capabilities to develop the curriculum. This is a really innovative program for Louisiana and the feedback we've gotten nationwide from our peers in higher education is incredible."

GNO Mechatronics Apprenticeship Program: Addressing Regional Workforce Needs

With key industry and education partners in place, GNO Inc. publicly unveiled the Mechatronics Apprenticeship Program in Spring 2019. This effort kicked off with a big media push to publicize the program, and most importantly, recruit apprentices for its first cohort. Ultimately, eleven apprentices began the first year of the program.³³

The program operates through a strong three-pronged partnership. GNO Inc. serves as the program's connector, reaching out to industry, to public and private funders and potential program participants. GNO, Inc. played a key role, working with NTCC, to obtain a \$1.9 million Delta Regional Authority grant from the Department of Labor to support initial project startup costs and to purchase essential equipment and supplies. Among other things, these funds were used to purchase a mobile mechatronics lab managed by NTCC.

Industry partners recruit and vet potential apprentices. Apprentices are formally hired by each company, and, after entering the program, they are considered full-time employees with access to healthcare, benefits, and other company perks. Apprentices are also paid a starting salary of \$10 per hour in year one, and with potential raises to \$12 per hour in year two. Employers fund all costs. The three community colleges are the final component in this partnership. While the schools jointly developed the program plans and curricula, they have each refined a specialized offering for apprentices. Nunez focuses on electrical training; NTCC focuses on robotics and programmable logic controls, and Delgado focuses on machining and mechanical training. The schools all provide additional training in leadership, soft skills, sales, and other essential competencies.

Apprentice training takes two years and combines classroom and work settings. Students typically spend eight weeks in class, followed by eight weeks at a job site, and so on. Students rotate between the three colleges for their in-class training. The two cohorts have an incredibly diverse group of apprentices that represent varied race, gender, and age groups.

There have been two cohorts as of early 2021, including approximately 8-10 apprentices. The third cohort will begin classes around August 2021. Apprentices come from a diverse set of backgrounds and include recent high school graduates as well as career changers in their 20s, 30s, and 40s. The program recruited its first female apprentice in Fall of 2020. The cohorts are made up of diverse representations of the population in the region.

The first cohort is set to complete the program in July 2021. At this point, they will be hired as Mechatronics Technicians or Robotics Technicians with an estimated annual salary of \$45,000 to \$55,000 per year, along with no student debt. Program completers receive approximately 20 industry credentials and a certification of completion, but presently do not receive academic credits.

Program Results

While it is too early to fully assess this program, early results are promising. Demand for the training is strong among students and employers. In fact, GNO Inc. expects to engage several new business partners in the coming months. In addition, attrition levels in the program are relatively low, with most students completing the entire curriculum.

As noted above, all program completers will transition into full-time employment, with average annual salaries in the range of \$45,000 to \$55,000. These salary levels are much higher than the region's median salary levels, and median salaries for other middle skill positions in the Greater New Orleans region. GNO, Inc. will begin tracking additional program metrics when the first cohort completes the program in summer 2021.

³³ Nine students remain in this first cohort, which expects to complete the apprenticeship in July 2021.

TAKEAWAYS

The initial pilot phases of GNO's Mechatronics Apprenticeship Program have been highly successful, generating a positive response from employers, program participants, and the wider economic and workforce development community in New Orleans and across Louisiana. Project managers identified several important factors that have contributed to this success.

Create regular opportunities to identify employer “pain points”

GNO, Inc. and its community college partners manage several initiatives that regularly assess employer needs and problem areas. The community colleges operate advisory boards that offer input on curriculum and insights on industry trends. In addition, the GNOu program serves as a regular convening venue to build partnerships between employers and higher education institutions. To date, this work has led to the creation of the mechatronics initiative and new statewide program in AWS Cloud Computing and Web Services. Finally, these efforts are further supplemented by business retention and expansion programs led by GNO, Inc. and by local economic development agencies. These business visitation programs also identify gaps in workforce development programs.

Target diverse funding sources

Most program costs are supported by employers and by GNO, Inc., though outside funding was needed to support start-up costs and to purchase needed equipment and training materials. Reaching out to federal, regional, and state partners allowed program managers to access these critical seed investments. DRA's support for the initial program design work was essential to its success. And with public base funding in place, private sector investments can focus on the important work of developing a new generation of mechatronics talent.

Workforce intermediaries matter

While GNO, Inc. does not deliver this program, it played an essential intermediary role. GNO, Inc. initially identified the workforce challenge. Today, GNO, Inc., connects business and education partners, publicizes the program, assists in fundraising, and most importantly, holds key partners accountable. The GNOu team led by Josh Tatum, is widely lauded for ensuring that the program remains on track and that all the key partners are fully engaged.

Target gaps

GNO Inc. is an economic development agency; it is not a WIB or an “official” part of the state or federal workforce training system. As a result, GNO, Inc. has made a conscious decision to target its work on key gaps in the regional workforce development system. This targeting allows more effective and efficient use of resources, while also providing clear and tangible benefits to local employers.

UWA AND LINGS

Background

Located in Sumter County, the University of West Alabama (UWA) serves a heavily rural region of southwest Alabama. In addition to providing a high-quality education to more than 5,000 students and serving as the region's largest employer, UWA also provides critical support via its Division of Economic and Workforce Development. In this role, UWA is a major supporter of local and region-wide workforce and economic development programs.

UWA serves a 10-county region, which is part of Alabama's Black Belt, with an overall population of approximately 200,000. The core of UWA's service area faces an array of economic and workforce development challenges. The region has the lowest educational attainment levels in Alabama, and its poverty rates are among the highest in the us.³⁴

The Black Belt region is incredibly rural, and many communities face challenges in terms of access to broadband, easy highway access, or other key amenities. For example, Sumter County's local population (of around 13,000

people) has been declining, and both poverty and unemployment rates remain high. The county workforce also remains quite small, with about 5,000 workers actively engaged in the labor market.³⁵ Similar patterns persist across the region.

The local economy is dominated by several leading industries, including wood pellet manufacturing, textiles, social services, and agriculture. Most employers operate in sectors where average wage rates are far below state and national averages. In addition, local economic development capacity has historically remained quite limited. However, in recent years, this situation has improved thanks to UWA's expanded role and the creation of new programs such as a local **Economic Development Leadership Development Academy, the Sumter County Renaissance Plan, and a state-backed strategic planning effort.**³⁶

While economic and workforce development capacities are being enhanced, the region faces significant talent challenges that have been worsened during the COVID-19 pandemic. Local and regional efforts have focused on growing the local talent base and upgrading the skills of both new workers and incumbent workers. These efforts have paid dividends, but the **local** uptake of training opportunities has been lower than expected.

Local residents have faced many challenges in accessing these training services, largely due to long travel times required for many rural residents. Major training and workforce centers are in Tuscaloosa, Demopolis, and Jackson, but these sites can be anywhere from 60–90 miles away from many area residents. In addition, many residents lack access to reliable transportation or broadband, and may be dealing with health and care-giving challenges for themselves or family members. As a result, even the most committed residents may not be able to benefit from local training and support programs. These limitations are further worsened by area workforce shortages due to the pandemic and to a retirement wave facing many local manufacturers. Firms in the area's wood products industry are seeing long-time employees beginning to retire, and now have a growing demand for replacement workers. In addition, several recent planning efforts, such as the Sumter Renaissance strategic plan, also identified a pressing need for greater local investments in workforce training and career awareness.³⁷

The UWA LINC effort (Leveraging Integrated Networks for Change and Sustainability) is designed to directly address these issues. Specifically, LINC targets three major workforce gaps identified by UWA's workforce team and key community partners.

1. To develop employer-driven curriculum and fast-track certification programs,
2. To recruit and place new workers and upskill incumbent workers, and
3. To create a Center for Rural Apprenticeships at UWA.

LINC is structured around several mobile labs designed in partnership with BetaBox Learning, a North Carolina-based developer of mobile learning labs. The initial connection to BetaBox was developed with support from the Alabama Forestry Association and a former CEO of the Westervelt Company and chair of DEWD's employer advisory council, one of the area's largest employers. These partners had used BetaBox learning labs in other settings and felt they could be easily deployed for the LINC effort.

The BetaBox mobile learning labs are outfitted with state-of-art equipment, such as virtual reality headsets and simulation software, and excellent hands-on and distance learning capabilities. The UWA mobile labs are smaller in size than typical mobile labs, which operate in shipping containers typically transported by tractor-trailer trucks. The smaller LINC labs can be transported with smaller trucks. This smaller size reduces operating costs and ensures that the labs can be transported by drivers without CDL certifications.

Increasing Rural Access to Workforce Training

The use of Mobile Training Labs Initial planning for LINC began in 2019, and a US Department of Labor/Delta Regional Authority Workforce Opportunity for Rural Communities (WORC) grant, totaling \$2.5 million, was approved in Fall 2019. The project was delayed slightly due to the COVID-19 pandemic, but the first two mobile units

³⁵ https://uwaworks.com/wp-content/uploads/2020/02/476389_sumter-county-profile.pdf

³⁶ <https://alabamane.wscenter.com/2020/01/29/rural-alabama-is-getting-much-needed-attention-from-economic-developers/>

³⁷ https://uwaworks.com/wpcontent/uploads/2020/02/475950_uwasumtercountyrenaissancestrategicplanupdatedjan182018.pdf

were launched in October 2020. These units are now operating in the field, and a third unit, focused on supporting K-12 students, was delivered in May 2021.

The DOL/DRA funding for LINCS also allowed UWA to purchase the mobile labs. While the purchase option generated higher up-front costs, it is cheaper than leasing over the long term. These lowered operating costs will help to sustain the program after the initial federal grant funds had been spent.

The mobile labs, and related equipment and curricula, can be customized for multiple uses and partners. They are currently operated by two full-time staff members: a STEM education professional and a technology professional. The units can also be deployed to assist other regional workforce training gaps in the rural region. To date, the “Skills on Wheels” units have been used on several projects. For example, partnering with Coastal Community College, the units were used to offer Ready to Work courses and UWA’s College of Business and Technology as enhancement to their Industrial Maintenance program. AIDT, the state of Alabama’s statewide workforce training operator, Prystup Packaging, a local industry partner, in Livingston, Alabama, partnered with UWA to offer supervisory leadership training to their workforce.

The project team expects that the units will travel the region and remain in a single location for up to six weeks at a time. While on location, the labs can provide a host of training programs, related to specific employers or occupations, or can provide more generalized training in career awareness, soft skills, or other competencies.

The current effort is built on several core partnerships. Within UWA, LINCS is closely working with the College of Business and Technology which assisted with the build-out of the labs and is using them for training purposes. UWA’s workforce team also hopes to partner with the College of Education, to support research on mobile learning and to support expansion of the new Black Belt Teacher Corps program. UWA is a registered apprenticeship sponsor and intends to use the labs for apprenticeship programs in the future. Regional and statewide partners include Region, 3, 5 and 7 Workforce Councils, AIDT, Alabama Forestry Association, and the Alabama Office of Apprenticeship.

The Skills on Wheels mobile learning labs have been in the field for only a few months, but early results are promising. For example, in early 2021, one unit operated in the town of Butler (with a population of 1900) for four weeks, based at the local Civic Center with strong backing from Butler’s mayor. This unit offered training on career essentials and an introduction to manufacturing course. Five local students completed the program, and, as a group, they gained 23 certifications during that month. Several other pilot projects are underway.

TAKEAWAYS

Be Proactive

The entire LINCS effort embraces a proactive approach. Since many training programs led by UWA and its key partners could not be accessed due to long travel and transportation challenges, the LINCS team opted to bring the training on-site to rural towns in Alabama’s Black Belt. On-site accessible learning opportunities can bring new experiences and critical skills training to at-risk populations and help to develop a more diverse and capable local workforce.

Provide Customized Solutions

The LINCS Mobile Labs are well designed to serve rural communities not only because they are mobile, but also because their systems and training programs can be customized for multiple uses. The labs can be used for varied audiences and for varied training needs. For example, they have already been utilized to deliver soft skills and career essentials training, as well as more specialized on-the-job training for local employers.

The Power of Anchor Institutions

The LINCS effort benefits greatly from its home at UWA. UWA is widely recognized as a leader in regional economic development, and as a strong advocate for the Black Belt Region and rural Alabama more generally. This strong reputation helps open doors, with community partners, employers, and local residents. In addition, the ex-

expertise found at UWA has supported the project with technical help, personnel, research support, and a stable and welcoming institutional home.

BASE CAMP CODING ACADEMY

Background

Located in North Mississippi hills about 20 miles south of Oxford, Water Valley is a small town (approximately 3,200 residents) on the move. In recent years, the community has attracted new residents and its downtown area is becoming well known for great restaurants and shopping. Community leaders are investing heavily to develop new amenities and to cement Water Valley's reputation as one of Mississippi's most attractive and desirable small towns. This work is not just focused on downtown destinations, but also seeks to create new career and learning opportunities for local residents.

Base Camp Coding Academy is the centerpiece of these new talent development efforts. Founded in 2015, the Academy provides a rigorous year-long training program for young people with an interest in coding or information technology sector careers.

Like many small towns in the Delta Region, Water Valley and Yalobusha County (total population of 12,400) face many talent development, retention, and attraction challenges. Countywide population has steadily declined, and the current population is aging. In 2014, the median age in Yalobusha County was 40.8, far older than state or national averages. Meanwhile, young people are leaving the region for better job and career opportunities. The area's most recent economic development plans identified youth flight and an aging population base as among the region's most pressing threats to future prosperity.³⁸

These regional plans have identified workforce development as a central objective, seeking to "create opportunities for residents to improve their employment status through access to timely and relevant workforce and job training opportunities."³⁹ This focus is driven by two forces: Local employers face major talent gaps, struggling to find and keep talented workers, and younger residents lack access to rewarding career opportunities and may be forced to leave the region for better jobs and careers. The region's technology firms have been most affected by this challenging talent dynamic, investing significant levels of time and resources in a search for workers with the skills and capacities needed to thrive in fast-moving IT sectors. Companies in the Water Valley region are not alone in facing this challenge, and a few efforts to fill this talent gap are now underway across Mississippi and the wider Delta Region. According to Base Camp's leaders, Mississippi has an average of 1,200 unfilled computer-related jobs available every year, yet the state's colleges and universities only graduate 200 computer science majors per year.

Base Camp Coding Academy origins flow directly from the "pain points" facing Mississippi's technology sector. In this specific case, the project's origins can be traced to the emergence and success of FNC, an Oxford-based technology firm that pioneered new approaches to managing real estate transactions. In 2015, FNC was purchased by CoreLogic, and at that point, the sale was the biggest technology company acquisition in Mississippi's history. Executives at FNC, CoreLogic, and other technology firms in the region shared a common pain point: they were spending too much time and too much money looking for IT talent. Two of these executives, Kagan Coughlin, and Glen Evans, developed an initial concept for a coding academy as a feeder system for local coding talent as well to address other community economic development challenges.

Their initial outreach to other local companies found that Coughlin and Evans were not alone in their desire for a richer regional talent base. In fact, several companies stepped up and offered to invest their own funds to support the Base Camp Coding Academy Concept. As Coughlin noted, the concept was a simple sell as the Academy offered an opportunity to reduce talent acquisition costs and to contribute to local economic development as well. In addition, Coughlin and Evans made a compelling case that it was more cost-effective to develop local talent than to spend money on recruiters and on the hunt for talent in other parts of the us.

Thanks to this groundswell of support, Base Camp Coding Academy was started as a private sector-led effort with a straightforward goal of creating a strong local pipeline for coding talent. At the outset, a few local employers,

³⁸ North Central Planning and Development District 2017-2022 CEDS, p. 23

³⁹ Ibid p. 25.

including CoreLogic, C Spire, and Renasant Bank, along with several foundations funded the program's startup costs. The original plan, funded with approximately \$500,000, was designed as a three-year pilot project, but has now been extended indefinitely.

Growing the Technology Workforce in Rural Mississippi

The Base Camp Coding Academy Base Camp Coding Academy is focused on supporting business outcomes, namely by providing trained coding talent to local employers and good job opportunities for local youth. It operates by training annual cohorts of students who are nominated by community partners and vetted through a rigorous application process. The program targets graduating high school seniors who are hard-working and focused, but who may be unlikely to go away to college due to family commitments or financial limitations. The typical Academy student wants to stay in the region if they can find rewarding work. Work ethic and maturity are more important than grade point averages as criteria for program participation.

The Base Camp Coding training program has been developed in-house with input and participation from corporate partners. Business partners and Academy Board members provide support and mentoring to students, and training is provided by in-house staff and business partners. At present, three full-time staff support the academy: an Executive Director (newly hired in 2020), and two instructors. All other support is provided pro bono by board members and community partners.

Academy students are engaged in an 11-month curriculum that operates as a full-time job (40 hours per week). The program is free to students, with total costs per student (of around \$15,000) supported by program partners. In addition to training, mentoring, and career services, students also receive support for food, transportation, and other needs. The program operates with an annual student cohort of approximately 15-20 students per year.

Training combines classroom work, student projects, career counseling, and internships with local employers. Program staff estimate that roughly 60 percent of training focuses directly on technology, and 40 percent of time is spent on work skills, career guidance, and collaborative projects. Training focuses on learning key coding and programming tools and languages such as Java, Python, Django, and HTML. In addition to projects, students lead much of the Academy's daily work, such as managing its social media feeds and procurement activities.

Since opening for business in 2016, the Academy has graduated four cohorts of students, with an average class size of 10 to 15 students. The 2021 class, with 15 students, is currently underway after a delayed start due to the COVID 19 pandemic.

Impacts to date have been incredibly impressive. More than 90 percent of students have been placed in full-time jobs that pay an average of \$50,000 per year, far exceeding the region's median wage and closely mirroring local salaries for college-trained IT professionals. Nearly all the graduates have remained in the region, providing a strong, and growing, base of home-grown tech talent. These academy alumni have also stayed in place with their current employers, enjoying stable and well-paid work environments.

Existing program partners are especially pleased with the program's results to date. They have continued to fund the program, and new partners, such as FedEx, have also stepped in with new investments. In addition, Facebook has recently agreed to fund several scholarships for the program. These private contributions have been further bolstered by funding from the Delta Regional Authority (DRA), the Appalachian Regional Commission, the US Department of Labor, and other public partners.

The academy benefits from all these collaborations, but the most consequential partnership may be Base Camp Coding Academy's new joint venture with Northwest Mississippi Community College (NWMCC). NWMCC has long supported the Academy's work and was seeking ways to deepen this partnership. NWMCC's President, Michael Heindl, was impressed with the academy model but was also seeking an expanded presence on-site in Yalobusha County.

These shared objectives have come together in the newly opened Everest Innovation Hub, Mississippi's first rural education and innovation center. The 64,000 square foot facility houses both Base Camp and NWMCC operations and was funded with support from DRA and many other partners. Total project investments have exceeded \$4.7 million and have contributed to the reuse and revitalization of a prominent historic building. The Hub is a true partnership, as the facility is owned by the City of Water Valley and will be utilized by many community partners.

TAKEAWAYS

Base Camp Coding Academy has enjoyed great success, and the project team attributes this success to several factors, which are detailed below.

Think Like a Business

Base Camp Coding Academy has always operated with a laser-like focus on the needs of local employers. Its program operations are fully funded by private contributions, and its primary mission is similarly business-focused: to provide coding talent to local employers. Base Camp supports other goals along the way, including youth retention, regional talent development, and local economic development. However, it measures its impacts related to the business bottom line and makes its case based on its ability to support local employers.

Know Your Sweet Spot

Running like a business also means understanding your core competencies. Base Camp's core competency is providing training to entry-level coders and IT professionals. It remains focused on this central mission and has generally avoided other new program directions. As co-founder Coughlin advises: Stay focused and ask for help when needed. Base Camp has always kept its mission tightly focused. When new missions or tasks arise, the program team relies on partners and other outside experts.

Be Flexible

While program focus is essential, so is flexibility. This flexibility is most evident in Base Camp's programming and training efforts, which evolve on a regular basis. As Coughlin, we do not "sell a finished product." The Base Camp team works with local businesses to identify pressing talent needs, and designs (often co-designs) new training to help students gain these new skills and competencies. When employers help to design programs and trainings, they become more "bought in" to the process.

Engaged Board of Directors

Many non-profits operate boards of directors that have limited say on program design and operations. Base Camp Coding Academy operates with a different model that expects—and demands—that Board members get actively engaged. Board members currently serve in many active roles, such as mentors, admissions officers, funders, and as community advocates. This active engagement improves program operations, brings in new ideas, and creates real community buy-in for the Academy's work.

Embrace Partnerships

All effective workforce programs are built on strong community partnerships, and Base Camp Coding Academy is no exception. In addition to engagement with the Board and local employers, the Academy has benefited from many partnerships at the local (the City of Water Valley owns the Everest Innovation Hub building), regional (funding support from DRA and NWMCC), and federal (funds from Department of Labor) levels.

CAPE GIRARDEAU, MISSOURI

Background

Located in Missouri's Southeast corner, Cape Girardeau, with nearly 40,000 residents, anchors a wider region of nearly 218,000 people. The region is rural, with an economy driven by anchors of manufacturing, healthcare, and travel/tourism.

The region's economic and workforce development challenges are like those found in other parts of the Delta Region.⁴⁰ The area's workforce is aging and shrinking, and local employers face major difficulties in accessing talent. In addition, limited local housing options and poor transportation connectivity to other regions complicates the process of talent recruitment. As a result, current regional economic development plans place great emphasis on home-grown business opportunities. Other current regional strategies include promoting entrepreneurship and Main Street business growth, promoting farm-to-table food business opportunities, and supporting the expansion of local tourism assets.⁴¹

All these strategies required a rethinking of local economic development work. Renewed efforts to help entrepreneurs and to build a regional entrepreneur ecosystem would be needed. Much of this work was originally centered at Southeast Missouri State University's (SEMO) Center for Economic and Business Engagement and the Douglas C. Green Center for Innovation and Entrepreneurship. In addition to supporting SEMO academic programs related to innovation and entrepreneurship, the Green Center also leads engagements with the regional business community via programs such as the LaunchU Business Startup Program, an AgTech-focused incubator, and by hosting the local Small Business Development Center office.

This initial work got a big boost in 2014, when two local entrepreneurs, Chris Carnell, and James Stapleton, started Codefi, a local business with a "mission to eliminate the skills and opportunity gaps preventing workers and entrepreneurs in the region from participating in the digital economy."⁴² Stapleton, who was the founding Director and formerly led the Green Center, viewed Codefi as a leader in developing the next iteration of the region's innovation economy.

What Challenge is being addressed?

Codefi began life with big ambitions. The founding team hoped to support revitalization in Cape Girardeau, but they had bigger plans as well. They hoped that their initiative could become a model for rural communities around the us. As part of these goals, the founders reached out to the Vermont-based Center for Rural Innovation, a national clearinghouse on effective programs and policies for rural development. Ultimately, Cape Girardeau became a founding member of CORI's Rural Innovation Network, and began expanding its service area to include both Southeast Missouri and Western Kentucky.

Codefi manages a host of programs and initiatives in Cape Girardeau, many of which are delivered in the southern third of Missouri and 16 counties in west Kentucky. Programming is organized around three leading focus areas: Connects, Startups, and Works.⁴³ Connects refers to Codefi's coworking space located in downtown Cape Girardeau. This location now serves more than 350 members, and new partner locations have recently opened in Paducah KY, Springfield MO, and Perryville MO.

Startups refers to Codefi's programs targeted to new and growing entrepreneurial ventures. Programs include a locally supported grant program that recruits tech startups from across the globe, a tech pre-accelerator, an ag-tech accelerator, and the new Redhawk Startup Fellowship for students at SEMO studying all disciplines who want to experience real-life tech startups.

Finally, Works refers to Codefi's suite of training and workforce development programs, such as the Rural Delta Tech Innovation Network and Tech Talent Consortium. These initiatives have received extensive Federal support from the DRA, EDA, DOL and other agencies. They seek to provide tech talent to local and remote firms, especially

⁴⁰ http://www.semorpc.org/assets/econ_dev/2019%20Embracing%20the%20Future%20CEDS.pdf

⁴¹ CEDS, pp. 21-24.

⁴² <https://news.semo.edu/southeast-announces-contribution-from-codefi-to-support-entrepreneurship-techbusiness-development-programs/>

116 ⁴³ <https://www.codefiworks.com/blog/codefi-turns-6-while-closing-in-on-30-million>

early-stage ventures, and to assist local residents in starting their own tech companies.

Codefi has enjoyed great success in its first six years of operations. Its programs have received numerous national, state, and local awards, and the Codefi program model is now being deployed in Paducah KY and elsewhere. Over time, the Codefi team hopes to have a national footprint and recognition as a global leader in supporting rural innovation.

Program Design and Operations

Codefi operates three primary Works-related programs. Its Youth Coding League works with area youth (n grades 5-8) to teach computer coding and critical STEM-related skills. It operates as a nine-week after-school program, in over 80 schools in seven states, that culminates in a regional coding competition. The competitive aspect engages young people, and raises local awareness of the program.

Code Labs, Codefi's adult training platform, provides tech education and on-the-job training for software developers based in rural parts of Missouri and Kentucky. The Full-Stack Web Developer program was developed in partnership with local employers and is offered free of charge to all participants. Modeled on St. Louis' Launch Code project, Code Labs was modified to serve the needs of local employers and the Codefi's more rural markets. The program operates as a twelve-month part-time boot camp, with instruction provided by full-time software developers who can share the latest technical trends as well as real-life information on IT and coding careers. Key industry partners include Vizient, CSI and many others.

Finally, Codefi is now in the process of rolling out its newest offering—the Rural Source Employment Network--which is designed to connect rural talent to remote employment opportunities around the US and around the world. Specifically, the network operates by connecting Code Labs students with veteran developers to help them find remote work opportunities and to gain critical insights into the reality of working as a coder or IT professional.

Assessment: Impacts and Outcomes

The Codefi team has achieved important results within its Works portfolio. Specific impacts are detailed below.

- Youth Coding League:⁴⁴ The program began in 2018, serving 17 Missouri schools and 350 students. Today, the program operates in 7 states, and works with nearly 80 schools and 1500 students in the 2021-2022 school year. Roughly 2/3 of students live in rural regions or are enrolled in free or subsidized school lunch programs. Student participants are diverse, with young girls making up 50 percent of participants and minority students comprising 25 percent of Youth Coding League participants.
- Code Labs: To date, Codefi has supported the training of approximately 150 software developers. In the next three years it has plans to train over 350 additional adults to enter software development occupations and will add new skill programs in occupations including quality assurance testing, cybersecurity, blockchain development, and geospatial intelligence.
- Rural Source Employment Network: This new effort seeks to connect Codefi grads and other rural residents to remote work opportunities around the globe.

LESSONS LEARNED

Nurture the Ecosystem

The Codefi leadership team always embraced an ambitious mission for their work. They were not simply seeking to deliver good workforce or economic development programs; they were seeking to transform the regional innovation ecosystem in Southeast Missouri (and beyond). In keeping with this mission, Codefi developed a diverse mix of programs that support business development and talent development, recognizing that talent is the key differentiator in thriving entrepreneurial hotspots. No single Codefi program stands alone, but together they synergistically

⁴⁴ <https://www.codefiworks.com/youthcodingleague/>

support an emerging innovation ecosystem in Southeast Missouri and Western Kentucky.

Be Entrepreneurial

Codefi operates like an entrepreneur. The team regularly scans the marketplace to identify opportunities and then amasses the resources needed to capitalize upon them. This entrepreneurial mindset is a core part of all programming at Codefi.

Embrace Partnerships

Codefi has relied on close partnerships throughout its existence. These include close work with Federal funders such as DRA, the US Economic Development Administration, the US Department of Labor, State partners including the Missouri Technology Corporation and long-standing ties with local employers who help to train and eventually hire Codefi program graduates. At the local level, key partnerships include those with SEMO, which has located its SBDC and Business Engagement offices at Codefi. In addition, numerous area banks and the City and County of Cape Girardeau have been close partners and offer free Wi-Fi in the downtown area near Codefi's offices.

Build on Anchor Institutions

Cape Girardeau and Southeast Missouri benefit from their proximity to SEMO, which attracts talent to the region and provides important institutional support to Codefi. Many of the region's local employers can trace their origins back to SEMO, and many of Codefi's program leaders and participants also have SEMO connections. For example, Dr. James Stapleton, Codefi's co-founder, previously served on the SEMO faculty. Likewise, Codefi's expansion across southern Missouri has been fueled by a close working relationship with Missouri State University in Springfield, Missouri, and its innovation center, eFactory.

Appendix H: Recommendation Addendum

Table 31: Educational Attainment by Race or Ethnicity

Race / Ethnicity	Education	DRA	US
Asian	less than high school	25%	21%
	high school graduate or GED	28%	24%
	some college or associate's	12%	14%
	bachelor's or higher	35%	42%
Black	less than high school	27%	20%
	high school graduate or GED	50%	46%
	some college or associate's	16%	21%
	bachelor's or higher	7%	13%
Hispanic or Latino	less than high school	41%	40%
	high school graduate or GED	38%	36%
	some college or associate's	13%	15%
	bachelor's or higher	9%	10%
Other	less than high school	36%	36%
	high school graduate or GED	36%	36%
	some college or associate's	17%	17%
	bachelor's or higher	11%	11%
White	less than high school	17%	15%
	high school graduate or GED	48%	40%
	some college or associate's	18%	20%
	bachelor's or higher	16%	24%



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