



REPORT ECONOMICS

Industry and Inclusion: A Blueprint for Action

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Executive Summary

During the 2020 campaign, President Biden promised a series of investments to help create millions of well-paying manufacturing jobs. Critically, the campaign promised that “major public investments in his plan—procurement, R&D, infrastructure, training, and education—will reach all Americans across all states and regions, including urban and rural communities, with historic investments in communities of color and an emphasis on small businesses.”¹ The linkage between manufacturing and inclusive economic development should come as no surprise, as communities of color have long looked to manufacturing as a source of well-paying jobs and a pathway into the middle class. During the first half of the twentieth century, the need for industrial workers helped fuel the Great Migration from the South to the North. Despite this history, many current media narratives link manufacturing with the experiences of the White working class, even though it was Black and Latinx urban communities that bore the brunt of late twentieth-century deindustrialization.

The past year has brought fresh attention to the role of manufacturing in our economy and its potential to power an inclusive recovery. In response to the COVID-19 pandemic, the federal government has dusted off the World War II Defense Production Act to turn the nation’s remaining manufacturing capacity toward producing the millions of pieces of medical and personal protective equipment (PPE) needed to endure and recover from the COVID-19 crisis. The challenge to secure needed equipment—at the same time as the rest of the world —has brought many policymakers to the realization that it is vital to have robust industrial capacity in the United States. Moreover, manufacturing is central to tackling the existential crisis of climate change which will require an entire new generation of products such as electric cars, solar panels, batteries, and high-efficiency building materials. The climate change crisis and the pandemic are visceral reminders that there is no path to a vibrant and sustainable society without a strong manufacturing sector. With millions of Americans unemployed and previously recession-proof service industries reeling from economic devastation, the manufacturing sector has added back 876,000 jobs over the past year, and as of early 2021, manufacturers were more bullish on growth than at any other time in the past three years.²

But U.S. manufacturing won’t fulfill its potential for job creation or meeting national needs unless it takes on one of its most pressing challenges: racial equity. Manufacturing companies need to recruit more than 2 million workers over the next decade to accommodate growth and to replace a rapidly aging workforce. Manufacturing—which is currently 67 percent White non-Hispanic³ and 70 percent male⁴—must recruit the next generation of workers from a rapidly diversifying workforce and bring these new workers into the sector at a time of rapid technological change. Meeting this challenge will require (1) recruiting people of color into entry-level production jobs, making them accessible to workers who may have diverse levels of formal education or have experienced long periods of unemployment as well as criminal records, and (2) promoting more upward mobility for people of color within manufacturing, from the skilled trades up through management and ownership. Such an effort will require manufacturers and their education and community partners to re-establish the bonds of trust between factories and communities burnt by previous waves of downsizing. To do so, they will need to take new approaches to recruiting, prepare and support youth and adults to succeed in manufacturing careers, and take action to make manufacturing workplaces more inclusive.

The TCF–UMA Industry and Inclusion Cohort

There is a growing movement of community-based workforce intermediaries that are taking on the hard work of building productive partnerships between companies, educational institutions and communities. The Century Foundation (TCF) and the Urban Manufacturing Alliance (UMA) brought these organizations (selected out of a national pool of applicants) into its Industry and Inclusion 4.0 National Cohort to learn from their programs and strategize how to forge a more racially inclusive future for U.S. manufacturing. We selected organizations that are deploying training models, targeting communities of color, and helping individuals earn industry recognized credentials and enter into good-paying careers that can begin without a four-year degree. Moreover, they are engaging in ongoing conversations with their industry partners about how companies can change their cultures and practices to enable new workers of color to advance and thrive. The eight organizations were selected intentionally to represent different parts of the manufacturing ecosystem including federally funded Manufacturing USA Institutes and Manufacturing Extension Partnership, business improvement organizations, and intermediaries operating programs in the community with higher education and at the K–12 levels. While the application was national, the organizations in the cohort selected on the basis of their program models represented the nation’s Midwest/North East industrial heartland. The groups selected were:

- Jane Addams Resource Corporation (Chicago/Baltimore),
- Lightweight Innovations for Tomorrow (LIFT) (Detroit),
- MAGNET (Cleveland),
- Manufacturing Renaissance (Chicago),
- Menomonee Valley Partners (Milwaukee),

- Manufacturing x Digital (MxD) (Chicago),
- Northland Workforce Training Center (Buffalo), and
- WRTP (Milwaukee).

These eight organizations participated with TCF and UMA in a year-long learning cohort alongside a national advisory board of manufacturing and community leaders. In a research and program model altered by pandemic conditions, cohort members participated in monthly online roundtables to share insights about common challenges including organizational scaling and sustainability, promoting upward mobility, utilizing industry recognized credentials, and addressing racial equity issues with employers. In addition, TCF and UMA organized three hour virtual roundtable sessions with leaders of each of the cities represented by the eight cohort members. The roundtable participants consisted of the lead community organizations, educational and community partners, employer partners, and educational leaders.

Findings from Roundtable Conversations

The discussions in the roundtables were analyzed with the assistance of textual analysis software to identify consistent themes. The discussions revealed a strategy for education and training that fits the needs of twenty-first-century manufacturing. (In the findings section below, these eight organizations are described as cohort organizations or cohort members.) The key findings regarding the sector identified during the roundtables were:

- **Industry-recognized credentials play a key role, but are not sufficient.** All of the programs run by or affiliated with cohort members used industry-recognized or post-secondary credentials, including those from the National Institute for Metalworking Skills (NIMS), the Manufacturing Skills Standards Council (MSSC), and the American Welding Society (AWS). Cohort members all agreed that these credentials provide a pedagogical underpinning for their program. However, employer acceptance of credentials varied, and cohort organizations and their educational partners recognize the key is to ensure that credential education programs are aligned with the needs of local employers
- **Manufacturing employment is creating new educational pathways.** Cohort members agreed that young people and adults no longer need to choose between manufacturing and college. Rather, cohort organizations now offer their program participants the chance to access post-secondary education in an accessible and affordable manner. Participants in early college programs now enter into manufacturing jobs with the explicit idea of using it as a springboard into a four-year degree, often paid for by their employer. Cohort organizations found novel ways to bring the educational acumen of community colleges out of the confines of traditional campuses into new factory and community settings.
- **The manufacturing sector is moving from skills training to a learning mindset.** The manufacturing industry has a wide variety of skilled positions. However, the roundtables revealed that the solution is not simply a set of occupational skills courses that lead to placements in factory workplaces. Industry partners identified learning readiness as the single most important trait of successful workers. Roundtable discussions indicate that the readiness to learn is a requirement for both workers and the firms in which they work. To establish diverse and equitable environments, firms need to be able to learn new ways to interact and communicate. In these firms, managers see themselves as facilitators of learning and adaptation, rather than grantors of opportunity.

The organizations in the cohort discussed how they were not only meeting the challenge of educating the next generation of industrial workers, but also were seeking to directly and explicitly rise to the imperative of racial justice, offering a series of important lessons for other efforts to promote diversity, equity, and inclusion (DEI) in manufacturing. The key findings regarding DEI identified during the roundtables were:

- **Manufacturing can overcome barriers to racial inclusion.** Industry partners have a heightened interest in recruiting Black and Latinx workers—men and women—into expanding job opportunities. But efforts to do so must acknowledge that there are multiple levels of barriers to accomplishing this goal. Tangible barriers, such as the lack of childcare or the geographic distance between urban communities of color, are often the direct result of systematic and historic inequalities. Moreover, community–industry partnerships need to overcome the declining awareness of the opportunities in manufacturing and negative perception of the sector that pervade communities of color
- **Manufacturing companies need to foster belongingness.** The roundtables identified the need for belongingness before large numbers of workers of color can thrive in manufacturing. Manufacturing is a legacy sector, and many companies have built up a strong “in-group” company culture. While companies may have a commitment to valuing diversity at the top, unless they inculcate that perspective among frontline managers, their cultures won’t evolve and new workers could easily continue to be alienated. Mentoring relationships between more experienced workers—especially workers of color—and new workers can foster a sense of belonging at a company.

- **Organizations must use trauma-informed approaches to engage with communities.** Recruiting from communities that have experienced trauma with greater frequency and intensity will require trauma-informed, emotionally safe approaches to career development that includes the understanding that racism and discrimination create inherently unsafe environments. A trauma-informed approach requires patience, a tolerance for failure, and emotional and peer support alongside the educational and job placement process.
- **Relationship innovation is often rewarded.** Relationship innovation is the ability to find new ways of advancing collaborative efforts and securing the resources needed to tackle social problems. Trust is the first part of any successful relationship, and yet legacy practices in the manufacturing sector have facilitated a sense of persistent mistrust in some communities. Rebuilding that trust is a necessary step to establish the types of relationships needed to help community members enter into successful careers, rather than seeing job seekers as having deficiencies. This requires conscious, difficult conversations about racial issues in the workplace.

Recommendations for Industry and Communities

The cohort points the way to interventions that companies and communities across the country can take to pursue the joint goals of industrial renewal and racial inclusion.

- **Create racially conscious community–industry partnerships.** The community–industry partnerships in this study were built on the principle and practice of building maximum mutual benefit, that of industry for the next generation of workers and community members for jobs. Industry partners were also motivated by a sense of social justice and responsibility to the communities where they were operating, which made these partnerships different from other staffing strategies.
- **Embrace a culture of continuous learning and development, including impactful credentialing.** Developing effective community–industry partnerships requires a commitment to learning readiness among companies, organizations, and their trainees. In particular, partnerships need to pursue impactful credentialing that ensures that credential earners develop skills in the context of local employers and credentialing is seen as a step on a career path and the process of career-long learning.
- **Establish a relational infrastructure that facilitates continuous learning and development.** Relational infrastructure consists of routine activities that build relationships of genuine trust, respect and interdependency. Partnerships can be intentional in fostering these relationships with counselors and educators, as well as through mentorships with more experienced workers and alumni from programs.
- **Commit to participative practices to address racial equity and social justice in factories and companies.** Once leaders and owners in the sector have accepted the importance of a full embrace of racial equity, it is important to recognize that top-down approaches to changing corporate culture are usually doomed to fail. Culture must become everyone’s responsibility, and everyone must be included in developing a culture that values racial diversity, equity, and inclusion.
- **Commit long-term to racial equity.** The legacy of racism is too historically deep to think we can ever move past it in the momentum of the most recent attention to racial equity and social justice matters. We have a social tendency to want to act and move on because the reality of racism is so unpleasant.
- **Foster belongingness.** Companies and communities can foster belongingness by creating support systems that truly help members from underrepresented communities navigate corporate culture, so that routine difficulties are not interpreted as a signal of racial rejection. Moreover, companies can establish cultures of unbiased achievement where everyone’s contribution has merit.
- **Incorporate trauma-informed services.** There is no sustainable path forward without addressing the trans-generational and intra-generational trauma of racism and racial inequity. The Substance Abuse and Mental Health Services Administration (SAMHSA) pillars for trauma-informed engagement (safety, trustworthiness and transparency, peer support, collaboration and mutuality, empowerment and choice, cultural, historical and gender issues) are a starting point for building corporate culture capable of fostering success. Critically, there must be a strategy for psychological safety in the workplace that builds healthy interpersonal relations as a priority.
- **Establish a lasting partnership infrastructure.** Establish partnership criteria and assess partnerships frequently. Partnerships mature when stakeholders are able to communicate through inevitable adversity and resolve issues potentially damaging to the partnership. Documentation is a mutual strategy for protecting the value each stakeholder brings, and ensuring the partnership sustains itself for the long-run.

Recommendations for Policymakers

Scaling these innovative programs and others like them requires an equitable manufacturing workforce strategy that encompasses both education and training. Such a strategy should contain the following steps to foster the creation of social justice partnerships between communities and the manufacturing sector:

- **Reforming the Workforce Investment and Opportunity Act (WIOA).** Cohort members saw serious limitations within the nearly \$4 billion WIOA system as a tool to advance equity within manufacturing. WIOA should be amended to include a separate title for incumbent worker training that allows workers of color to advance from production jobs into better-paid positions. WIOA's emphasis on sectoral partnerships should be strengthened with stronger metrics and standards, including guidance on how they can advance racial equity.
- **Create a National Manufacturing Reinvestment Corporation to oversee a network of Local Manufacturing Renaissance Councils.** Congress should charter a new National Manufacturing Reinvestment Corporation that develops a national manufacturing strategy that centers inclusion and industrial revitalization. This work would be carried out by local manufacturing renaissance councils that would receive federal funding to focus on business retention, educational pipelines, and pathways into ownership for people of color.
- **Collect data on racial equity and federal training.** The U.S. Department of Labor should expand required racial reporting across its current primary indicators of performance (employment rates, median earnings, credential attainment, and skills gains) as well as the race of participants and exiters. Moreover, the department should develop a program that allows for disaggregated data to be appropriately available to researchers.
- **Seed new partnerships between educational institutions, community-based organizations, and industry.** Congress should pass Representative Bobby Scott's Relaunching America's Workforce Act to establish new training programs targeting high-wage sectors such as manufacturing while giving additional preference to grant proposals that deliver training in community/workforce settings and give funds to community-based organizations. In addition, the Biden administration should build on the \$100 Million Youth CareerConnect grants program in 2014 to scale and seed new initiatives that connect young people in the K–12 system to high wage careers
- **Take a holistic approach.** All of the cohort emphasized the need to take a holistic approach in bringing community members into manufacturing careers. The federal government should create a new learning support fund to provide additional resources to states to support key needs such as transportation, including assistance to workers for purchasing or leasing a vehicle to get to factories outside of urban centers, both during training and the initial period of placement
- **Challenge the Manufacturing Extension Partnership (MEP) to be a national leader on diversity, equity, and inclusion in manufacturing.** The fifty-state MEP network can use its unique reach into small- and medium-sized manufacturing to promote a DEI agenda. This journey starts with MEP centers collecting data on the diversity of their clients' owners and the workforce it serves, offering diversity training as one of the services it provides to SME, and working to raise the visibility of people of color in manufacturing through board and staff positions at MEP Centers.
- **Utilize the Manufacturing USA network to promote advanced manufacturing opportunities among communities of color.** With its advanced manufacturing mission, Manufacturing USA is well positioned to link into HBCUs and other similar institutions as research and talent-development partners, alongside efforts to expose local educational organizations to its research and training facilities (as done by cohort members LIFT and MxD).

The Case for Racial Equity In Manufacturing

Efforts to achieve racial equity and social justice can face great difficulties in achieving and even discussing their goals. Data for this project was collected during one of the nation's most racially tense periods in a half-century. Discord was visible almost daily through numerous protests, violence, and rhetorical aggression around the issues of race in 2020. Manufacturing is not unlike other sectors of society and the economy when referencing issues of racial diversity, equity, and inclusion. Black workers are underrepresented at all levels of manufacturing. Black workers represent 11.9 percent of the entire workforce, but only 10 percent of manufacturing workers—closing this gap alone would create another 300,000 jobs for African-American workers.⁵ Over the next two decades, the United States will become a majority non-white nation, and manufacturers will need to recruit this next generation of workers to remain viable.⁶

It's not just about workers of color getting a foot in the door in manufacturing, but rather truly becoming a part of the sector's future. Representation of these workers declines to almost zero when examining demographics above entry level. Across the economy, the percentage of workers of color at the management level—already way too low—continues to fall; Black workers, for example, represented only 3.6 percent of senior management in the United States in 2007 and declined to 3.3 percent by 2018.⁷ Manufacturing is no different. Hispanic and Asian workers are not underrepresented in manufacturing, but they are concentrated in production jobs. Indeed, 23.8

percent of all production workers are Hispanic, far higher than their share in the overall U.S. workforce (17.6 percent).⁸ Nearly one in four Black workers in manufacturing earns less than \$30,000 per year, compared to 15 percent of white workers in manufacturing.⁹ Our research found that in Illinois only 0.5 percent of manufacturing companies were Black-owned in a state where the population is 14.2 percent Black.¹⁰

Several possibilities arise when considering remedies to the lack of representation in the sector. One step toward possible solutions is to make sure that top management and leadership believe in the value of racial equity and social justice. While there is an ongoing debate about the boundaries of personal and corporate ethics and social responsibility, the question of the value of racial equity and social justice is one that the nation can no longer afford. Racial inequity has cost the U.S. economy trillions of dollars and is projected to cost even more. Research by the Institute for Policy Studies indicates that the median wealth of Black families is “on a path to hit zero by 2053,”¹¹ and McKinsey and Company projects that the wealth gap between Black and white families will cost the U.S. economy between \$1 trillion and \$1.5 trillion between 2019 and 2028—between 4 percent and 6 percent of the projected GDP in 2028.¹² While racial inequities are costing the economy trillions, a 2018 study by the Boston Consulting Group (BCG) found that companies with management teams with above-average diversity reported sales from products or services launched within the past three years that were 19 percentage points above that of companies with below-average leadership diversity.¹³ Racial equity is not only a moral imperative; racial inequity can no longer be afforded by an economy engaged in intense global competition. The cohort organizations and their partners in this study are taking this imperative seriously.

About the Cohort

The eight organizations taking part in the project were selected intentionally by The Century Foundation (TCF) and the Urban Manufacturing Alliance (UMA) to represent different parts of the manufacturing ecosystem, including federally funded Manufacturing USA Institutes and Manufacturing Extension Partnership members, business improvement organizations, and intermediaries operating programs in the community, such as efforts in higher education and at the K–12 levels. The groups selected were:

- **Jane Addams Resource Corporation (Chicago/Baltimore).** Jane Addams Resource Corporation (JARC) focuses on training primarily women who are Black, indigenous, or otherwise people of color (BIPOC) under the age of 30, giving them the skills needed to gain access to metalworking and metal fabrication jobs in manufacturing. JARC was founded to keep manufacturing and industrial middle-income jobs in the Ravenswood Industrial Corridor of Chicago by focusing on purchasing and operating commercial space for industrial use, and has expanded its work with the opening of a Baltimore office.
- **Lightweight Innovations for Tomorrow (Detroit).** Lightweight Innovations for Tomorrow (LIFT), the Detroit-based, U.S. Department of Defense-supported national manufacturing innovation institute, has invested in more than forty replicable and scalable education and workforce development initiatives that have been deployed, tested, and refined throughout the Midwest region. LIFT’s IGNITE curriculum introduces Black high school students from Detroit to careers in manufacturing and includes classes on subjects such as materials science, CAD/CAM, and lean manufacturing processes.
- **MAGNET (Cleveland).** MAGNET, a nonprofit consulting group who for over thirty years has helped Northeast Ohio manufacturers grow their businesses, launched their Early College, Early Career program (ECEC) in 2015, adapting European-style manufacturing apprenticeships to Ohio schools. ECEC provides students under age 18–78 percent of whom come from low-income, predominantly African-American communities—opportunities to earn manufacturing certifications, work in paid internships, and receive professional development and soft skills training.
- **Manufacturing Renaissance (Chicago).** Manufacturing Renaissance’s (MR) career pathways programs provide skills training for jobs in advanced manufacturing primarily to African-American and Latino youth and young adults. Beyond the training-based programs, MR focuses on network-building with employers and social service agencies to create a supportive ecosystem to increase job resiliency and interest in career development.
- **Menomonee Valley Partners (Milwaukee).** The Menomonee Valley Partners (MVP) develop programs to support manufacturers located in the Menomonee Valley industrial district in Milwaukee, including its Career Discovery Initiative, Neighborhood Connectivity program, and Job Up training partnership aimed at increasing the success rate of students taking courses in engineering and manufacturing.
- **Manufacturing x Digital (Chicago).** Manufacturing x Digital (MxD), previously called the Digital Manufacturing and Design Innovation Institute (DMDII), is one of sixteen Manufacturing USA Institutes, a national network of centers tasked with advancing different aspects of Industry 4.0.¹⁴ MxD Learn is prioritizing under-resourced communities that historically have lacked equal access to high-tech career pathways, including using a 22,000 square foot manufacturing floor in Chicago to demonstrate cutting edge technology to educate high schoolers, young adults, and incumbent workers.

- **Northland Workforce Training Center (Buffalo).** Northland Workforce Training Center (NWTC) is an industry-driven, public-private partnership between employers, educational institutions, community and faith-based organizations, and state and local government, focused on closing the skills gap of the local labor pool and creating economic on-ramps to training, co-ops, internships, apprenticeships, and permanent employment for Western New Yorkers seeking high-paying advanced manufacturing and energy careers.
- **WRTP/BIG STEP (Milwaukee).** WRTP/BIG STEP uses workforce development to help stabilize individual manufacturing businesses and boost Milwaukee's regional economy by helping businesses keep and upskill their employees through multiple strategies. In 2012, WRTP/BIG STEP / WRTP launched the Industrial Manufacturing Technician (IMT) registered apprenticeship program establishing a new, 3,000-hour hybrid registered apprenticeship applicable to many careers in manufacturing

These eight organizations participated with TCF and UMA in a year-long learning cohort, alongside a national advisory board of manufacturing and community leaders. In a research and program model altered by pandemic conditions, cohort members participated in monthly online roundtables to share insights about common challenges including organizational scaling and sustainability, promoting upward mobility, utilizing industry recognized credentials, and addressing racial equity issues with employers.

Industry Roundtable Findings

To get more formal findings, TCF and UMA organized three-hour virtual roundtable sessions with leaders of each of the eight organizations represented by the cohort. The roundtables consisted of the lead community organizations, educational and community partners, employer partners, and educational leaders. The discussions provided an opportunity to share observations, experiences, and possible solutions for improving racial equity and inclusion in the manufacturing sector. Facilitators led participants through interactive introductions, norm setting, and structured interview questions designed to elicit responses from each subgroup as well as interactive responses from the entire group of participants (See the Appendix for a full methodology).

The roundtable discussions centered on two main issues: (1) pursuing a strategy for education and training that gives workers the knowledge and skills that fit the needs of twenty-first century manufacturing, and (2) ensuring that this strategy meets the challenge of reaching out to and educating the next generation of industrial workers.

Other researchers have outlined how the skills requirements within manufacturing are changing, with today's manufacturing workers far more likely to have education beyond high school and nearly a third having a four-year college degree.¹⁵ The sector is attempting to meet this skills development need through the development of a wide variety of industry-recognized credentials that can be delivered by community training models, and thus contribute to positive wage growth among a broad spectrum of both youth and adults.¹⁶ Yet, surveys indicate that many manufacturers—especially smaller companies—have been slow to recognize the value of these credentials in their hiring and promotion processes.¹⁷ Cohort organizations operate in this educational context, knowing the value of industry-recognized credentials but also appreciating that they don't guarantee employment success.

The organizations in the cohort also discussed how they are seeking to directly and explicitly rise to the imperative of racial justice and offer a series of important lessons for other efforts to promote diversity, equity, and inclusion in manufacturing. The Century Foundation chose cohort members that centered racial equity in their mission and were willing to have difficult and explicit conversations with industry partners about race. The roundtables were organized as the cities across the country were experiencing a racial reckoning in the wake of the police killing of George Floyd, which added even more urgency to the conversations.

What follows are summaries of the key findings of the roundtable discussions. In this summary, to preserve anonymity, the organizations participating in the discussions are sometimes identified simply as cohort members or cohort organizations, and quotations from the roundtable are not attributed to a particular city.

Industry-Recognized Credentials Play a Key Role in Cohort Programs, But Are Not Sufficient

All of the programs operated by cohort organizations used industry-recognized credentials, with the exception of the Northland Training Center, which used post-secondary credentials from the State University of New York. Employers are familiar with the key credentials, including those developed by the National Institute for Metalworking Skills (NIMS), the Manufacturing Skills Standards Council (MSSC), and the American Welding Society (AWS).¹⁸ Industry leaders in the roundtables acknowledged that these credentials demonstrated that trainees were manufacturing-ready but did not ensure an employment opportunity or success on the job.

Cohort organizations said that employers held a wide variety of views concerning credentials, even a widely used credential such as that from the American Welding Society, a finding that has been seen in other research.¹⁹ Some employers emphasized that they needed to confirm that new employees were able to do welds up to the specification for their sector, and that they valued work experience at other similar suppliers even more than the credential. Other employers put a greater weight on

those credentials, seeing them as an entry point into manufacturing:

In our industry, you cannot weld if you are not certified by the American Welding Society. When you graduate and you get out of that program, you have American Welding Society certification in two different positions. That right there is your golden ticket to be able to get a job.

Based on this reality, cohort organizations and their educational partners recognize the key is to ensure that credential education programs are aligned with the needs of local employers. Especially for the communities served, cohorts are looking to develop a model of impactful credentialing, that is, credentialing programs that are closely aligned with the needs of local employers. The credentialing bodies themselves are also responding to this need by creating flexible programs tailored to industry sectors. As described by one cohort leader:

So our training programs have what we call three interlocking principles on open entry, open exit; simulated work environment; and the use of industry credentials. It's a three-legged stool—if you take away any one of those legs, the stool falls over. You really can't do one without doing the other. And then the industry credential is kind of a curriculum overlay that ensures that you're not just running a makerspace. You know, there really is content and it's sequenced, and it's industry driven.

The presence of industry credentials in manufacturing, developed painstakingly by organizations with the support of multiple companies and key federal investments, provides a pedagogical platform for organizations in multiple cities to confidently reintroduce manufacturing to their communities. The presence of these credentials is a pivotal ingredient for these programs and allows similar programs to grow in other cities.

Manufacturing Employment Is Creating New Educational Pathways

All of the cities represented by members of the cohort have strong manufacturing heritages. Nonetheless, roundtable participants expressed a view that the educational systems in these cities are just catching up to the opportunities that twenty-first-century manufacturing offers to young people. Starting at the K–12 level, educational systems can and should expose young people to the opportunities available to them within manufacturing and give them a viable career pathway that they can begin without having a college degree. Doing this requires strong educational systems that impart learning readiness, technical aptitudes, and work experience that meet the entry requirements of manufacturing today. As one roundtable participant said:

I agree. Graduate with a plan. Everybody graduates with a plan for success. And we're not just handing out diplomas and saying, "Yay, you did it!" only to find out five years later that they're doing the same things as the kids who didn't graduate. A diploma has to mean something again.

And another:

Well, I would say, in the machine shop, the biggest hurdle we run into is math. And I'm talking about shop math—being able to read a blueprint, understanding geometric tolerancing, and adding and subtracting to two, four, and five decimal places.

Several of our cohort members led career-oriented educational programs targeting young adults, and they confirmed that the twentieth-century understanding of vocational high schools was that they were designed to get youth into a job, and were inferior educationally to college preparatory schools. The students going through these career education programs now, however, are aiming for both career and college—gaining opportunities to work after high school and simultaneously pursuing higher education. As one roundtable participant said:

The experience of knowing what certain tools do or how to use them, or how to deal with adults, that you don't see on a daily basis. I just learned so much I wouldn't be able to learn in school. After graduating, I went straight into the workforce and college. Wow. The day after I graduated, I started my job at a plastics company. And then that August, I started college. And my job is paying for it.

And another:

Yeah, I have kind of like a college plan already set out—I want to go into welding engineering. I want to do community college, and then university (or university all throughout) and stay in the welding industry as a career.

The notion that manufacturing is primarily a pathway for those who don't seek any education beyond high school is badly out of date. Manufacturing today is more similar to the health care sector, in that there are entry points into the industry without a post-secondary degree, as well as paths to upward mobility—such as engineering, management, and computer programming—that come with college credentials. For the youth participating in the roundtables, manufacturing is looked at as a career they could enter out of high school to make a competitive salary before going to college, sometimes on the company dime.

The Manufacturing Sector Is Moving from Skills Training to a Learning Mindset

The manufacturing sector has a wide variety of skilled positions. However, the roundtables revealed that the employment process is not represented simply by a set of occupational skills courses that lead to placements in factory workplaces. As indicated in numerous other studies, the cohort organizations' industry partners put a high value on so-called soft skills, including diligence, working in a team, and a willingness to learn.²⁰ Companies believe that as long as a worker has a solid skills base and soft skills, they can provide the firm-specific training they need to succeed (especially in entry level positions):

I think there's value to [industry-recognized credentials], but to approach those as being the exclusive silver bullet that solves things would be a mistake. They are a piece of it. And I think the other one is soft skills—and I'll add that, I don't think that just going into a class or taking an e-learning class on soft skills gives you soft skills. That comes from coaching and some experiences, and that takes time.

Overall, roundtable participants indicated that today's manufacturing workers need a learning mindset that can accommodate traditional mechanical skills, adapt to rapid technology-driven changes in job requirements, and have the cultural and relational skills to operate effectively in team environments. Industry partners identified this type of learning readiness as the single most important trait of successful workforces:

The willingness to learn and continually improve upon your skills is so critical, especially when you're talking about advancement. The willingness to just jump in and try something new, to continue to take on more responsibility—just showing that openness and the willingness and the aptitude to be able to do that, that comes easier to some people than others. I think that kind of learning, to do that at a very early age and just getting into the mindset that you're never done learning.

The need for learning readiness is as dynamic as the rate of technological and social change in manufacturing. Technological change and the desire to reduce labor costs has been pinned as a central cause of the historical decline in manufacturing jobs. Now, looking forward, the ever-increasing rate of new knowledge and technological capabilities needed, the radical impact of the global pandemic, and the need to close gaps in talent, skills, and succession have created conditions that elevate learning as a requisite skill for meaningful participation and advancement.

There are manufacturers who have discovered ways to integrate continuous learning into the culture and practice of current operations. Such practices result in their ability to maintain production while developing new talent in-house. This process also involves the expansion of talent pools by reaching populations that are underrepresented in industry ranks and yet are critical to the future survival of these firms.

Our roundtable discussions indicate that the readiness to learn is a requirement not only for workers, but also for the firms in which they work. To successfully integrate new workers into their operations and to establish diverse and equitable working environments, firms need to be able to learn new ways to interact and communicate. The firms in the cohort recognize that just as job seekers need to have soft skills to integrate successfully, managers need to overcome their own relational and cultural skill deficits. In these firms, managers and incumbent workers do not see themselves merely as grantors of opportunity to new workers, in their way of doing business, but rather as facilitators of learning and adaptation, including taking a new viewpoint on interactions with employees:

I think one of the things that's a challenge and a barrier—particularly if you're going to commit to working with distressed communities and the job seekers that have been left out—is figuring out why it's not working, what we have to do differently. And I think sometimes the tendency—and as an employer, it was often my tendency—to have this universalist approach. We have just got to make everything fair and equal for everybody, and that's a good start. But it's not enough, because everybody doesn't come in at the same place. And if you really want to be inclusive, you're going to have to accept and understand that people may have different starting points.

Managers must be able to acknowledge the challenges that some workers face while still seeing them as individuals with potential. Leaders must maintain an urgent commitment to racially inclusive practices, even when the effort becomes difficult, and even if those in leadership are unfamiliar with, cannot understand, or are not directly affected by forces such as structural racism or the other challenges that workers can face outside of their workplace. Constant organizational and institutional learning is required, if manufacturers are to accomplish this significant change:

One thing that always strikes me about manufacturing, and I think it's a real challenge, is that it's invisible to many people . . . then you juxtapose it with the composition of the manufacturing workforce, which is mostly male, mostly white, and there's just a lot of learning that needs to happen.

Manufacturing Can Overcome Significant Barriers to Racial Inclusion

After decades of challenges, companies are not only creating job openings, but also demonstrating interest in recruiting Black and Latinx workers—men and women—into them. But efforts to do so must acknowledge that there are multiple levels of barriers to accomplishing this goal. Roundtable participants encouraged companies to be aware of different challenges workers of color may face in landing and holding jobs:

It's been really a great catalyst for conversation. You say you want a diverse and inclusive workforce. But you've assumed that everyone gets to work the same way. You assume that everyone has access to the same kind of childcare options, it's assumed that, you know, the way that you see the world is the same as everyone. But that's not really actually true.

Some of these barriers include a century of inequitable real estate and urban planning practices. Redlining, gentrification, real estate covenants, and “block busting” are real estate practices that have isolated concentrations of poorer Black and Brown citizens and made it difficult to access jobs that have moved to suburban areas. This is a problem recognized by workforce development organizations and industry partners as they work to fill employment opportunities:

And one of our biggest obstacles that we found is people need transportation, because we're out in the suburbs. And so that's what we're really trying to focus on now is how can we help them? Because I think we have wanted to hire more candidates, but they just can't get the transportation. So, we're really trying to think about how can we solve that problem? Because we've only had great success with our Northland students.

Moreover, the community–industry partnerships need to overcome the declining awareness of manufacturing opportunities within communities of color. This alienation is deep enough that some communities of color don't even see jobs within walking distance from their home as potentially for them. The need to better market manufacturing jobs to communities of color, particularly their youth, also reflects a need to change the image of manufacturing to reflect the rebirth of the sector and the increasingly cutting-edge nature of this work. A recurring theme in the discussion was the need to start changing this perception at a young age.

So, our students officially start in our program as eleventh graders, but what we do is try to go into the schools and talk to ninth graders, just about manufacturing in general... A lot of them, you know, see this as a dark, dirty, dangerous, and dying industry. So what we try to do is invite not only students but parents and education partners. We bring our engineers—MAGNET engineers—to do some type of hands-on project or demonstration so that they can not only listen about it or hear about it, but also use their hands to do some of it.

Cohort organizations strategically deploy advocates who articulate the value of manufacturing careers and ownership in terms that are perceived as beneficial to communities of color. Involving community-based organizations in the recruitment of workers of color is a good practice for industry partners who may otherwise overlook many community members:

These jobs are out here. And I think the problem with outreach is the fact that you're not sending in . . . people who look like me. Where you're going to find them is the churches, at these community centers, at these festivals. That's where you're going to find the people of color. It's not going to be on the internet or an ad on the radio station.

Despite these barriers, the cohort organization and their industry partners evinced a deep commitment to tackle racial inclusion. Industry partners did this out of a sense of responsibility and because they have concluded that more inclusive hiring is critical for their future. The barriers to success are real, but they did not deter these partnerships.

Manufacturing Companies Need to Foster Belongingness

Our roundtables identified the need for a sense of belonging before large numbers of workers of color can enter into and thrive in manufacturing. One corrective action in the effort to create more inclusive, welcoming manufacturing workspaces includes companies instituting an “I can see myself” principle into all phases of recruitment, training, and placement. Even efforts to expose communities of color to manufacturing through factory tours may backfire if these issues of representation are not addressed thoughtfully. As one roundtable participant said:

It was the fact that when I brought kids there, because you guys are super open to us bringing youth to actually learn about opportunities and things like that. But there was a kid who actually came in and she told the CEO that “I don't believe that I can be an engineer anymore now that I've toured your site.” And when he asked her why, she said, “Because I didn't see anyone on my tour that looked like me.”

And another:

I think the problem that we're having with people of color in manufacturing is because they don't see people. Before I went to Northland, I didn't know a Black woman who was a mechanic in my life. And, I'm still the only one I know.

The issue of belongingness is not one simply related to the hiring of new workers, but rather must be continually addressed inside the workplace as well. External demographics and other variables often influence the internal demographics of manufacturing firms. There are instances where, for example, there may be visible representation of the Latinx community at the supervisory level and below, while other racial groups and women are underrepresented. There may also be circumstances in which there is no semblance of racial or gender diversity at or above the supervisory level. These demographics may have become so normative that they are viewed as an unchallenged and unchangeable reality. Companies can—and must—undertake proactive actions to foster belongingness, including accepting the genuine cultural differences among workers and seeing these as a strength in their companies:

Openness to accepting any sort of “other,” whether that means female welders or you know, people of color or LGBTQ, you know, all of the other isms. You know, there’s training that needs to happen to prepare your workforce, because if you do bring people in and they get the job, you want them to feel like they belong and that they’re included in that moment. Because then otherwise, they might leave in six months because I just didn’t feel like I was meant to be there when they applied.

One of the ways that companies can foster a sense of belongingness is by establishing mentoring relationships between more experienced workers—especially workers of color—and new workers. Several of the cohort members operate just such mentoring programs, forging bonds between more experienced workers of color and newer hires in and across companies. This mentoring also takes place organically within firms, as more experienced workers are willing to take newer workers under their wing, even if they have far different backgrounds. As one roundtable participant said:

And those are some of the things that we’re constantly looking at and actually hearing from different employers, how individuals are trying to figure out how to create a mentoring component. Because again, if you don’t see people who look like you, how else do you . . . see the opportunity for engagement or a fit or movement or mobility.

And another:

For me, it was also the employees. I actually had a really great trainer. He showed me a couple of times. Then I think he realized that I was able to kind of just pick it up. So, he kind of left me alone. He let me do it. And then when I made a mistake, he wouldn’t be angry, or you know, really aggressive with me. He’d be like, “Hey, okay, this is what should have happened.” So that probably made me feel really comfortable with kind of everybody and it didn’t seem like, everybody was against me, or everybody didn’t like me. They were like, okay, we’re going to help her do this.

Belongingness can be a complicated issue. However, continuous assessment of cultural, political, and power dynamics within the organization may illuminate more equitable pathways to leadership and even ownership for all races, ethnicities, classes, and genders. To their credit, the industry partners expressed an openness and willingness to do this difficult work.

Organizations Should Use Trauma-Informed Approaches to Engage With Communities

The workforce recruits from communities of color that have experienced repeated trauma over the course of their lives, including histories of discrimination and major job losses from deindustrialization that triggered poverty and other social ills in their neighborhoods. This trauma is lived on a daily basis in the form of violence, including that perpetrated by the police and the carceral state. Cohort organizations respond to this reality by using trauma-informed approaches in their outreach and in relating to the trainees in their programs. As described by the Substance Abuse and Mental Health Services Administration (SAMHSA) pillars for trauma-informed engagement (safety, trustworthiness and transparency, peer support, collaboration and mutuality, empowerment and choice, cultural, historical and gender issues).²¹

While the standards for approaching individuals who have experienced trauma were initially developed for public health, they are also applicable to job recruitment and training. The workforce recruits from communities that have experienced trauma with greater frequency and intensity and as such will require trauma-informed, emotionally safe approaches to career development that include the understanding that existing racism and discrimination create inherently unsafe environments. Cohort members and educational partners are typically aware of this dynamic because of their engagement with and embeddedness in their communities. Industry partners are usually aware to the extent that they have embraced inclusive practices and policies. The value of having relationships with partners who understand the patience required to develop fluent relationship among racially and culturally diverse population becomes immediately apparent. As one roundtable participant said:

Trauma-informed care is at the forefront of everything we do with our students. Our students come to us with a lot of trauma, and some deal with it differently. And teaching kids those coping skills and that mental support is important. Because, you know, not everybody deals well with trauma and everyone has it.

And another:

You know, when those barriers happen or that trauma happens, a lot of times they end up going in the wrong direction. And so it's just a sensitivity with us, with our employer partners, with education partners to be aware of, all that, you know, our students deal with.

Achieving trust in communities where people have experienced extended periods of trauma is a process that requires time and a tolerance for failure, something that may be outside the awareness and skill sets of leadership and others working in plant settings. Cohort members working in such communities have established high expectations for their participants but are attempting to evolve away from the “boot camp” approach that can reproduce traumatic experiences that participants have faced.

Relationship Innovation Is Often Rewarded

For the purpose of this project, “relationship innovation” is defined as the ability to find new ways of advancing collaborative efforts and securing the resources needed to tackle social problems. The first step in any relationship is trust. As described by Turkish economist Nurullah Gur, trust is a key determinant of the economic development of nations and by extension, disaffected communities.²² Cohort organizations use trust brokers who have preexisting relationships with their communities as part of an intentional effort to identify, engage, and collaborate with those who have community ties and believe in the mission of workforce development organizations. Trust brokers may also emerge in the form of educational system members or other institutional members within the community, such as faith-based institutions or neighborhood associations. Cohort organizations and those recognized as better trainers described themselves and others as investing more time in trainees and stakeholders early in the relationship development process, allowing them to build up the trust needed to overcome obstacles that come up along the way:

I think the depth of our relationships with all our partners and with our students has become really evident in this time. We were able to maintain our internships over the summer. It may have looked a little different or had time-delay, but we've been able to keep our program running—and, I feel, effectively. Because of the relationships, we've been able to really rely on those that we trust to keep this going.

A key step in building strong community–industry collaborations is addressing racial mistrust. The lack of diversity in the manufacturing sector and the policies and practices that have contributed to the exclusion of communities of color have helped to sustain distrust. Distrust of institutions and organizations that has evolved over decades—even centuries—of exclusion and disenfranchisement remains a significant barrier to the relational progress that is required to forge a more inclusive, participative future in manufacturing for communities of color. This kind of ingrained, persistent distrust creates barriers to the success not only of individuals, but also of interorganizational and interinstitutional collaboration. Roundtable participants expressed appreciation that these projects did not focus only on the routines of daily work, but also on creating a learning environment capable of exploring racial trust issues. The cohort members identified this as some of the most difficult work in moving toward diversity, equity, and inclusion in manufacturing. As one member said:

That means having people comfortable having those difficult conversations. We'll talk about [corporate] culture, but we won't talk about racism. We'll talk about this thing over here. But we won't really talk about racism. There's a structural reason that we need to have these conversations and we need to help people to understand this is not about “you.”

And another:

I'm trying to think of ways to get people comfortable having brave conversations, in a forum where people's lives and jobs are not on the line. Because racial conversations ratchet up so quickly. You kind of get better at being able to talk about stuff as it's happening, the microaggressions that happen, in way that nobody loses it, because we're in it together.

Despite challenges, cohort members persisted in directly engaging discussions of race with their industry and educational partners. These took the form of cohort trainings with anti-racism experts and representatives from multiple corporations, cultural competency efforts with higher educational partners as well as efforts with individual companies. Because of the on-going and symbiotic relationship between cohort organizations and their industry and educational partners, these DEI efforts have the potential to have more long-lasting impact than a stand alone training or program may have.

Recommendations for Industry and Communities

Create Racially Conscious Community–Industry Partnerships

The community–industry partnerships in this study were built on the principle and practice of building maximum mutual benefit for manufacturers as well as communities and the next generation of workers. Industry partners were also motivated by a sense of social justice and responsibility to the communities where they were operating, which made these partnerships different from other staffing strategies. Over time, the value for industry partners materializes when it becomes clear that cohort members understand the manufacturing facility climate, culture, and requisite skills enough to embed them in the design and delivery of their curriculum. That level of understanding is evident in the trainees that come through their program and the way they perform once hired.

Embrace a Culture of Continuous Learning and Development, Including Impactful Credentialing

Developing effective community–industry partnerships requires a commitment to learning readiness among companies, organizations, and their trainees.²³ The learning skills required for the current and emerging workplace extend far beyond the objective of filling available positions or simply closing the troubling skills gap. The list of emerging skills implies that companies will need comprehensive strategies for recruiting, retaining, and developing highly efficient pools of learners. The ability to infuse a strategic learning and development program will be critical to success.

- Credentialing will always be a necessary part of the pathway to career advancement. Partnerships need to pursue *impactful credentialing* that ensures that credential earners develop skills in the context of local employers so that trainees will have the highest probability of success once placed. Credentialing should be seen as the first step in contextualized learning within a firm and in service of career-long learning.
- Because the types of skills workers will need to have moving forward is not yet known or may change, there is a need for partners to have a much earlier discussion about how to develop learning readiness in potential applicants. Firms should plan regular conversations with strategic partners about the learning readiness of trainees and potential employees.

Establish a Relational Infrastructure that Facilitates Continuous Learning and Development

There is an enormous amount of research that supports the notion that positive relationships in the learning environment produce better learning outcomes. The social-emotional value experienced by people of color when seeing representatives from their communities participating in all phases and levels of organizational life cannot be overestimated, especially in work settings where historical inequities exist. The need is to master knowledge, skills, and cultural norms in these settings. Relational infrastructures developed with this in mind are more likely to foster genuine trust and respect, alleviating the psychological dilemma of engaging in cultural accommodationist behaviors like “code-switching,” or other inauthentic behaviors perceived as more acceptable to the racial majority. Relational infrastructures that are intentionally affirming by ensuring that participants experience emotional attachments that facilitate learning will make it easier to transfer the benefits to all phases of organizational life.

Partnerships can be intentional in fostering relationships with counselors and educators, as well as with more experienced workers and alumni from programs. The activities may take many forms (e.g., job shadowing, internship, tours, etc.) and provide opportunities for participants to experience new career possibilities. The goal of these activities is to provide opportunities to reinforce social learning, modeling behavior that can be remembered and replicated by (and motivating for) learners.²⁴

Commit to Participative Practices to Address Racial Equity and Social Justice in Factories and Companies

Once leaders and owners in the sector have accepted the importance of a full embrace of racial equity, it is important to recognize that while executive buy-in is essential to the success of any initiative, top-down approaches to changing corporate culture are usually doomed to fail. Culture must become everyone’s responsibility, and everyone must be included in developing a culture of valuing racial diversity, equity, and inclusion. Efforts to develop a more equitable, inclusive culture will only be as successful as the company’s ability to be equitable and inclusive in the process of developing cultural norms. The ideal is for the rank-and-file to be self-directed and self-assessing in sustaining the desired culture. Brand strategist Denise Lee Yohn, recently made this point in a Harvard Business Review article, “Company Culture Is Everyone’s Responsibility”:

While the actual implementation of this approach may vary based on the type, size, age, and structure of the organization, the general distribution of responsibility is like this:

- Board of directors: Guide the definition and development of the desired culture, ensuring that it aligns with business goals and meets the needs of all stakeholders.
- CEO and senior management team: Define the desired culture and cultivate it through leadership actions including setting objectives, strategies, and key results that prioritize culture-building.

- **Human Resources department:** Implement strategies and programs that enable the rest of the organization to fulfill their culture responsibilities, such as offering training programs that develop leader capacity for culture-building and employee engagement.
- **Compliance, Risk, and Ethics department:** Ensure that execution on the desired culture across the organization aligns with the company's risk management strategies through tools such as ethics decision trees, processes such as a whistleblower program, and systems such as compliance monitoring that align with the desired culture.
- **Middle managers:** Implementing culture-building strategies, cultivating employee engagement with the desired culture, and fulfilling the culture-building responsibilities of employees.
- **Employees:** Employees should provide feedback on existing culture-building efforts and ideas for new ones. Also, creating, adhering to, and enforcing routines and norms that interpret the desired culture; and aligning their attitudes and behaviors with the desired culture.²⁵

While these are general recommendations for transforming corporate culture, they are certainly applicable to developing a culture in which everyone takes responsibility for building a corporate culture that encourages racial equity and social justice. There must be set expectations integrated on all levels and subsystems within the manufacturer's company.

Commit Long-term to Racial Equity

Continuous assessment of the state of internal and external racial equity is required. The legacy is too historically deep to think that the manufacturing sector—or the nation as a whole—can ever move past it in the momentum of the most recent attention to racial equity and social justice matters. The urge to take immediate action and then move on—because the reality of the moment is unpleasant or makes people uncomfortable—must be resisted. This desire to move past moments requiring difficult work has slowed progress that has begun at previous moments of racial reckoning, causing them to fade quickly. Manufacturers and communities must:

- **Build on a concept of “corporate community.”** Industry must begin to see itself as an extension of the emerging community, which is much more diverse and increasingly intolerant of racial inequity and exclusive hiring and workplace practices. While two ideologies—one of equitable inclusion and the other of maintaining less-equitable practices—collide in the public sphere, sowing political and cultural division, industries such as manufacturing must take the lead in choosing inclusion in its community.

Management theorist Henry Mintzberg has written about developing “communityship” among managers and in organizations.²⁶ He suggests that community-building in an organization may best begin with small groups of committed managers, and that the insights generated by these reflections naturally trigger small initiatives that can grow into big strategies. An organization knows that “communityship” is firmly established when its members reach out in socially active, responsible, and mutually beneficial ways to the broader community.

Foster Belongingness

A diminished sense of belonging is one of the primary barriers to success for many members of underrepresented communities. The only way to create a sense of belonging is to create an organizational community that is committed to:

- **Building support systems for all workers.** Creating support systems that truly help members from underrepresented communities navigate the corporate culture so that routine difficulties are not interpreted as a signal of racial rejection.
- **Establishing a culture of unbiased achievement.** Everyone's achievement and contribution has merit. Too often, members from underrepresented communities encounter behavioral cues that suggest their contributions do not receive equal consideration, which may contribute to barriers that diminish belongingness.
- **Plan for the provision of more assistance than might be needed.** Identifying and resolving issues early for workers through robust assistance from coworkers and management is a proven prevention strategy that will enable employees to gain traction in the pipeline of promotional advancement. Organizations should have the capacity for such assistance ready before problems arise.

Incorporate Trauma-Informed Services

Trauma occurs on multiple levels during someone's lifetime. It is defined by the American Psychological Association as “an emotional response to a terrible event like an accident, rape or natural disaster.”²⁷ The Substance Abuse and Mental Health Services Administration's (SAMHSA) six principles that guide a trauma-informed approach (safety; trustworthiness and transparency; peer support; collaboration and mutuality; empowerment, voice, and choice; and cultural, historical, and gender issues) offer

important pillars for incorporating trauma-informed services into industry recruitment, retention, and advancement of potential employees from underrepresented communities.²⁸

This approach can be controversial if not appropriately managed. The recommendation is not meant to suggest that all members of Black or Brown communities are in need of trauma-informed services. However, if disparities in other social determinants are indicative of general needs, there may be a disproportionate need in Black and Brown communities due to the trauma experienced from racism and racial inequity. Dr. Joy DeGruy, in her book *Post Traumatic Slave Syndrome: America's Legacy of Enduring Injury and Healing*, addresses the residual impacts of generations of slavery. She asserts that “adaptive survival behaviors in African American communities throughout the United States and the Diaspora are the result of multigenerational oppression of Africans and their descendants resulting from centuries of chattel slavery, which was predicated on the belief that African Americans were inherently/genetically inferior to whites.”²⁹

There is no sustainable path forward for the manufacturing sector without addressing the trans-generational and intergenerational trauma of racism and racial inequity. For manufacturing, as with all other sectors, successful redress of the impact of racism and its resulting emotional and psychological impact is crucial to reach the relational wholeness necessary for all groups to escape the vortex of racial discord that has plagued America for centuries.

Incidents of racial tension often bubble up as the result of daily transactional exchanges that are otherwise unremarkable, yet can be filled with hurtful racial predispositions and learned behavior. Companies must put in place strategies for psychological safety in the workplace that build healthy interpersonal relations as a priority. Companies must build a “safe space” identity for themselves, making it known that their workplaces are psychological and emotional safe spaces for all. As part of this effort, employees and stakeholders will require training and development on the meaning of emotional safe space, as well as skills to recognize when a lack of safety has materialized. Furthermore, companies will need to establish reporting protocols as necessary, in the same manner required for recognizing physical safety hazards.

Companies can utilize the six SAMHSA pillars for trauma informed engagement as a starting point. While no two corporate cultures will be the same, in the context of progress toward a corporate culture that is prepared for inclusive practices, the pillars provide an excellent framework.

Establish a Lasting Partnership Infrastructure

The demands of the emerging world require finding more effective ways to collaborate. The members of the cohort, educational partners, and industry partners have all committed to sustaining their partnerships, and suggest several key principles for moving forward:

- **Establish partnership criteria and assess partnerships frequently.** Cohort members have deep relationships with their industry partners and are continuously engaging and getting feedback as they move forward.
- **Communication is critical.** Partnerships mature when stakeholders are able to communicate even through adversity and resolve issues potentially damaging to the partnership. Communication has to be grounded in transparency and the flow of critical information.
- **Documentation is essential.** Documents are the “breadcrumbs” of successful partnerships. Documentation is a mutual strategy for protecting the value that each stakeholder brings, and ensuring that the partnership sustains itself for the long-run.

Recommendations for Policymakers

The experiences of the cohort point the way toward an equitable manufacturing workforce strategy that encompasses both education and training. Such a strategy would foster the creation of social justice partnerships between communities and the manufacturing sector. These partnerships not only would be grounded in the skills needs of manufacturing companies, but also would equally center the needs of communities for good jobs in inclusive companies.

Practically, this means that workforce policies need to provide wraparound services, mentoring, and trauma-informed approaches not as “supportive services” but as core parts of equity-driven workforce programs. And, to be genuine tools for racial equity, workforce strategies need to track critical performance metrics beyond enrollment.

Just as the learning between companies and communities is an ongoing process, so is workforce learning. As indicated by the manufacturing companies interviewed for this project, policies must recognize that companies place as much value on employees’ capability to learn as on pre-employment occupational skills. This requires long-term engagement between community groups, companies, and educational institutions that goes beyond what is found in most short-term employment placement programs.

Reform the Workforce Investment and Opportunity Act

Cohort members saw serious limitations within the \$3 billion Workforce Investment and Opportunity Act (WIOA) system as a tool to advance equity within manufacturing. Many of the critical opportunities within manufacturing relate to advancement from production jobs. As recounted by I&I and National Manufacturing Extension Partnership board member Bernadine Hawes, the problem for Black workers has never been getting a job in manufacturing but rather having a chance to keep that position and advance to higher levels.³⁰ However, a worker earning the average production wage level of \$20 is not considered economically disadvantaged under WIOA. Even the recent focus on apprenticeships in the states has focused on training unemployed individuals not existing workers. Unlike the construction industry, manufacturing apprenticeships are not a way the sector recruits new workers. The following policy changes to WIOA, which is scheduled for reauthorization this year, would make it a more potent tool for change in manufacturing:

- **Establish a separate title for Incumbent Worker Training (IWT).** While Incumbent Worker Training is allowed under WIOA, it currently must be shoehorned into other priorities, such as preventing layoffs. To assist with equity in manufacturing, this new title should specify a priority for workers advancing to family-sustaining jobs³¹—especially among populations with less historical access to such jobs—as well as providing training to adapt to new technologies within the workforce. Federally supported IWT should prioritize partnerships with community-based organizations and community colleges, rather than be a pass through directly to corporations.
- **Focus on establishing equity-driven sectoral partnerships.** More needs to be done to fulfill WIOA's intent to support sectoral partnerships in key areas such as manufacturing. WIOA is a metric-driven program, and the U.S. Department of Labor should develop specific performance metrics around the implementation of sectoral partnerships. Such metrics would include required reporting on the number, types, and quality of partnerships. Moreover, the U.S. Department of Labor should issue guidance on how WIOA-funded sectoral partnerships can advance racial equity, by raising the visibility for leaders of color, producing analyses of equity gaps in targeted sectors, and promoting corporate DEI training and education.

Create a National Manufacturing Reinvestment Corporation to oversee a network of Local Manufacturing Renaissance Councils.

Congress should charter a new National Manufacturing Reinvestment Corporation that develops a national manufacturing strategy that centers inclusion and industrial revitalization. This reinvestment corporation would be a public-chartered nonprofit organization similar to NeighborWorks with a board consisting of key federal agency representatives as well as labor and civil rights organizations, and a set of local implementing partners (local manufacturing renaissance council). Each council, selected through a competitive bidding process and representing economically distressed communities or predominantly people of color, would be led by a local nonprofit or a governmental unit but would also be required to have industry, labor, and diverse community leadership. Before receiving federal funds, each council would be required to develop a strategic plan and create a strong industry-community partnership. Once awarded, the LMRCs would have authority to use federal resources as a source of seed capital to retain manufacturing and foster ownership of existing and new firms by people of color. The councils would play a critical role in fostering new pipelines into manufacturing careers through K-12 programs, adult workforce training alongside supportive services and diversity, equity and inclusion training and support for manufacturing companies.

Collect Data on Racial Equity and Federal Training

In a review of twenty-seven federally funded evaluations of career pathway programs, the Joint Center for Political and Economic Studies found that only six reported outcomes by race.³² WIOA should expand required racial reporting across its current primary indicators of performance (employment rates, median earnings, credential attainment, and skills gains) as well as the race of participants and exiters. Moreover, the U.S. Department of Labor should develop a program that allows for disaggregated data to be appropriately available to researchers.

Seed New Partnerships between Educational Institutions, Community-Based Organizations, and Industry

Meeting the workforce needs of the manufacturing sector and reaching out to train and hire workers from diverse communities cannot be done without the educational sector, especially K-12 schools and community colleges. After decades of disinvestment, the educational system is finally paying greater attention to vocational educational, pre-apprenticeship, and work-based learning. Career-focused education is now viewed as part of a path to the postsecondary education that all learners need, not an alternative. The cohort has exposed manufacturing as a pathway where young people (and adults) can get a job with an entry-level industry credential and then work at a decent paying job while pursuing further college education in STEM and other fields. Federal policy investments should build this infrastructure further with a stronger focus on equity:

- **Renew the Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program.** Started in 2010, the TAACCCT grant program directed \$1.5 billion in federal funds, establishing 1,992 new community college training programs focused on high-wage, high-growth industries.³³ Representative

Bobby Scott's Relaunching America's Workforce Act would direct \$2 billion to restart the grant program, includes a focus on local populations with lower levels of educational attainment, and mandates that partners be community-based organizations. The proposed legislation could be strengthened by giving additional preference to grant proposals that deliver training in community/workforce settings, that give funds to community-based organizations, and that work on DEI issues with industry partners. This funding should be a high priority as Congress considers President Biden's American Jobs Plan proposal.

- **Invest in partnerships between community-based and industry organizations and the K–12 system.** The Biden Administration should build on the \$100 million Youth CareerConnect grant program to scale and seed new initiatives that connect young people to high wage careers such as those available in manufacturing. This program should complement the existing vocational education system, with grant funds reaching community-based partnerships that can serve as intermediaries working with the education system and employers. Funded activities should start in elementary school and extend through high school and include attainment of industry recognized credentials, youth apprenticeships/paid work experience, and career awareness activities for under-appreciated pathways, including but not limited to manufacturing.
- **Utilize Historically Black Colleges and Universities (HBCUs) and other similar institutions.** Historically Black Colleges and Universities as well as tribal colleges and other Minority Serving Institutions can play a large role in preparing leaders of color in the manufacturing sector. As described by the Center for the Study of HBCUs, the Biden administration would allocate \$10 billion in funding to create 200 research centers of excellence at these institutions that could provide a pipeline of talent in advanced manufacturing, and moreover would require that 10 percent of any federal research grant to an endowment exceeding \$1 billion go to a subcontract with an HBCU or similar institution serving communities of color.³⁴ The administration should take this research principle and apply an appropriate version to programs such as Manufacturing USA, NSF's Advanced Manufacturing Program, and ARPA-E that provide basic and applied research funding.

Take a Holistic Approach

All of the cohort participants emphasized the need to take a holistic approach as they brought community members into manufacturing careers. This approach should include thinking and improving not only what are traditionally thought of as supportive and wraparound services such as child care and transportation but just as important mentoring, counseling, and group-based support delivered with a trauma-informed and culturally competent lens. However, cohort members said they found that private and public funders of workforce programs are primarily focused on rapid placement into jobs based on occupation, not supportive services and other person-centered approaches. Going forward, a standardized package of wraparound services should be a mandatory part of all federally funded workforce programs, including a requirement that grantees must report on outputs and outcomes. The federal government can promote such a holistic approach by:

- Directing the U.S. Department of Labor to study the provision of supportive services within workforce programs and make recommendations for how states and localities can better incorporate these services into the funding model and operating guidance for programs.
- Directing the U.S. Departments of Health and Human Services, Education, and Labor to convene national experts to make recommendations on the use of trauma-informed approaches within equity-driven education and employment programs.
- Creating a new federal learning support fund to provide additional resources to states to support key needs such as transportation, including assistance purchasing or leasing a vehicle to get to factories outside of urban centers, both during training and the initial period of placement. One yet-unfunded approach for doing this is the Gateways to Careers Act, which would deliver comprehensive services to individuals enrolled in career pathway programs that link community colleges and community workforce programs.
- Requiring federally funded workforce programs to provide screening for available public benefits and work supports.
- Requiring states to allow individuals receiving federal child care funds to keep them if they leave a low-paid job to enter into an education and training program within manufacturing.³⁵

Challenge the Manufacturing Extension Partnership to Be a National Leader on Diversity, Equity, and Inclusion in Manufacturing

The fifty-state MEP network can use its unique reach into small- and medium-sized manufacturing firms to promote a DEI agenda. This includes MEP centers collecting data on the diversity of their clients' owners and the workforce it serves, offering diversity training as one of the services it provides to SME, and working to raise the visibility of people of color in manufacturing through board and staff positions at MEP Centers. The U.S. Department of Commerce could promote this by directing some of its national Rolling Competitive Awards Program (RCAP) funding to this purpose. In addition, MEP centers should follow the lead of cohort member MAGNET and establish collaborative workforce programs between MEPs, industry partners, and community and educational organizations.

Utilize the Manufacturing USA Network to Promote Advanced Manufacturing Opportunities among Communities of Color

Similar to MEP, the fourteen federally funded Manufacturing USA institutes should include seeking racial equity when establishing their goals, staff, and leadership. With its advanced manufacturing mission, Manufacturing USA is well positioned to link into HBCUs and other similar institutions as research and talent-development partners alongside efforts to expose local educational organizations to its research and training facilities (as done by cohort members LIFT and MxD).

Conclusion

The changes in manufacturing have opened up a pathway to reclaim at least part of its historical role as a source of family sustaining jobs for people of color in America. The organizations in this cohort have demonstrated the potential for local industry partnerships to help achieve this transformation, including the ability to create trauma-informed approaches and facilitate engagement in the difficult conversations about race in the workplace that are needed to advance this vision. With additional support from policy makers, these interventions are poised for scale and point the way to more systemic change.

Appendix: Methodology

Virtual roundtable discussions included members of the eight workforce organizations, industry partners, educational partners, community partners, and trainees. The discussion provided an opportunity to share observations, experiences, and possible solutions for improving racial equity and inclusion in the manufacturing sector. Facilitators led participants through interactive introductions, norm setting, and structured interview questions designed to elicit responses from each subgroup as well as interactive responses from the entire group of participants. Modifications were made to questions based on programmatic differences in each geographic location while maintaining the questions' intent. Data was also gathered and analyzed from cohort applications, intake session transcripts, and webinar chat submissions to provide a wealth of insight into racial equity and inclusion in manufacturing as perceived by those who are on the forefront of workforce development, their partners, and trainees.

Workforce organizations were questioned about their purpose for participating in the cohort, challenges associated with their participation, and steps taken to mitigate any barriers to their participation. Their answers provided valuable information about organizing similar industry-specific learning communities in the future. Unexpected value was gained from having to transition to a totally virtual experience. Future learning communities will undoubtedly be more virtual. The agility demonstrated in the conversion from an in-person experience to a virtual experience while meeting project timeline projections provides a set of unique findings and implications for the future of collaborative learning.

Industry partners were asked about the benefits of programs offered by workforce organizations, the qualities of an ideal new employee, the importance of trust in the relationship with workforce organizations, and the importance of credentials to success. Workforce organizations must effectively articulate and demonstrate their value proposition for industry partners. Value propositions are developed through a process of continuous assessment of stakeholder needs. The data shared in the roundtable experience provided an opportunity to come together in a virtual exchange of what works and how value may be enhanced.

The questions directed to educational partners were also centered around the value of working with workforce organizations. However, questions were also asked about how the current educational system structure helps or hinders their ability to work with workforce organizations. While large scale system changes are often outpaced by social and economic realities that create the need, future success will be determined by the ability to assess, adjust, and implement as efficiently and effectively as possible.

The roundtables also provided an opportunity for the cohort members and partners to hear from trainees and graduates. Trainees and graduates were asked about the value of their training for acquiring an entry level position and the accessibility of the training.

The final round of questions was open to all roundtable members and more specifically addressed inclusion and equity for members of Black and Brown communities. Collecting data regarding racial equity and inclusion during one of the most contentious periods in the nation's history undoubtedly contributed to the richness of the experience. The entire group was asked to respond based on their knowledge of experiences of Black and Brown communities and the effectiveness of credentials as a path to entry level jobs, the challenges of presenting manufacturing as a career option, the qualities other than job skills that facilitate career advancement, their vision of equity and inclusion success, and what changes are necessary in the manufacturing industry to expand opportunities for advancement. The data was analyzed using Computer-Assisted Qualitative Data Analysis Software (CAQDAS) and manual coding methods to reveal participant insights about the topics.

- What is the purpose for participating in the cohort?

- What are the barriers or challenges to patriation in the cohort?
- What methods were used to facilitate participation in the cohort?
- What is the most important benefit of program(s) offered by the workforce organization?
- What are the qualities of the ideal new employee?
- How did you build trust in the partnership?
- How important are credentials to success?
- What is the value of partnering with a workforce organization?
- How does working within the current educational structure help or hinder your effectiveness working with workforce organizations?
- “How important was training to gaining an entry-level position?”
- What are some steps taken by the workforce organization to make training accessible?
- How effective are credentials in making entry level jobs more accessible?
- What are the qualities of the ideal new employee?
- What beyond job skills facilitates career advancement?
- What is the vision of equity and inclusion success?
- How does the manufacturing industry need to change to expand opportunities for advancement?

Data Mapping			
<i>Data Source</i>	<i>Data Collection</i>	<i>Data Analysis</i>	<i>Participants</i>
Cohort Applications	Structured Questions	Content Analysis	Cohort Members
Cohort Intake Transcripts and Logs	-Observation -Guided Group Interviews	Content Analysis	Cohort Members
Roundtable Transcripts and Debriefing Logs	-Observation -Guided Group Interviews	Content Analysis	-Cohort Members -Industry Partners -Educational Partners -Trainees & Graduates
Webinar Chat Transcript	Structured Questions	Content Analysis	-Cohort Members -Advisory Board Members -Interested Parties
Individual Interviews	Guided Individual Interviews	Content Analysis	-Industry Partners -Educational Partners -Trainees & Graduates

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Andrew Stettner, Senior Fellow

Andrew Stettner is a senior fellow at The Century Foundation, focusing on modernizing workforce protections and social insurance programs.



Ron Williams, Contributor

Ron Williams has served in higher education for thirty-five years, spending twenty-five years on the faculty of Coppin State University (CSU) College of Business, where he served as interim dean from 2013 until 2017. He holds a Ph.D. in management and organization from George Washington University with concentrations in organization behavior and the management of science, technology, and innovation. Ron serves on the boards of directors of Open Works and the Urban Manufacturing Alliance, and the advisory board of the American Association for the Advancement of Science HBCU Making and Innovation Showcase.
