

# **INCLUSIVE INNOVATION IN ADVANCED MANUFACTURING: BUILDING RESILIENCE THROUGH CAREER TRANSITIONS**

By Sophie Kelmenson, Ph.D, Tanu Kumar, and Nichola Lowe, Ph.D.

December 2022

Made With Equity: Orlando



COLLEGE OF ARTS AND SCIENCES  
City and Regional Planning

# Acknowledgements

This report was prepared by researchers at the University of North Carolina at Chapel Hill and the [Urban Manufacturing Alliance](#) with support from [Siegel Family Endowment](#). Siegel Family Endowment aims to support organizations working at the intersection of learning, workforce, and infrastructure.

We would like to thank everyone who shared their time and expertise with us in describing their work. We are grateful for the opportunity to learn from their experience and insight. All opinions are those of the authors and do not necessarily reflect the opinions or recommendations of study participants or supporters. Thank you to Katy Stanton and Eva Pinkley for editing support. All errors are the responsibility of the research team: Sophie Kelmenson, Ph.D; Tanu Kumar; Nichola Lowe, Ph.D; Katy Stanton; and Lee Wellington, J.D.

## Citation:

Sophie Kelmenson, Tanu Kumar, and Nichola Lowe. December 2022. Inclusive Innovation in Advanced Manufacturing: Building Resilience Through Career Transitions. New York: Urban Manufacturing Alliance.

# TABLE OF CONTENTS

**Introduction // 4**

**Core Institutions // 5**

**Key Implementation Strategies // 6**

Laying the groundwork for diversification // 6

Intentional recruiting // 7

Refining during a crisis and building for resilience // 9

Looking ahead to the next opportunity on the horizon // 11

**Inclusive Innovation Connections // 12**

# INTRODUCTION

Economic crises are not always the same for all industries, and can create an opening for regional strategies to take root that transform an unanticipated downturn for one industry into a growth opportunity for another. This is the case for Orlando, Florida. A global tourist destination, the region<sup>1</sup> is home to an outsized proportion of Florida’s low-wage hospitality and leisure jobs. Prior to the COVID-19 pandemic, just three occupations – waiters and waitresses, cashiers, and maids and housekeeping cleaners – made up almost 7% of all jobs in Orlando.<sup>2</sup> The pandemic upended job security for workers in these industries, foregrounding existing concerns about their low wages and stunted career paths. Fortunately, longstanding advanced manufacturing projects were quickly bolstered to meet the moment: accessible, rapid training programs catalyzed a transition for hospitality and leisure industry workers into high-skilled manufacturing jobs, immediately offering family-supporting wages and greater prospects for career and economic mobility.

Responsiveness in the face of a crisis, as philosopher Sheila Jasanoff writes, is about bringing together resources and partnerships to create systems that leverage technology with and for humanity.<sup>3</sup> For Orlando, this meant refining existing strategies to support transitions into advanced manufacturing for the most vulnerable. While these efforts responded to

pandemic-related economic shocks, the resulting solutions have been embedded within regional support systems to better aid those who may be left behind in future crises.

This report features strategies in the Orlando region that promote *inclusive innovation*, where investments in enhanced technological capacity occur alongside investments in a skilled, well-compensated workforce. In addition, workforce opportunities in advanced manufacturing are accessible to those seeking to share in the benefits of a successful regional economy. Fostering inclusive innovation in advanced manufacturing contributes to a more diverse, and therefore more resilient, regional economy while also extending accessibility to family-supporting wages for its residents.

# CORE INSTITUTIONS

Several key partners in the Orlando region collaborated to usher unemployed, underemployed, and/or underpaid hospitality and leisure workers into new roles in advanced manufacturing. While their efforts began prior to the pandemic, these partners quickly mobilized in 2020 to lend a hand to struggling residents by connecting them with training resources and to employers in dire need of skilled workers.



**CareerSource Central Florida**<sup>4</sup> is a local workforce development board that provides workforce programs for businesses and job seekers – including recruiting services, employee training and education programs, and paid internships – in Orange, Osceola, Seminole, Lake, and Sumter counties.



**FloridaMakes and the Manufacturers Association of Central Florida**<sup>5</sup> are public-private partnerships that support technology adoption, talent development, and growth in small- and medium-sized manufacturers. FloridaMakes is the state-level representative of the Manufacturing Extension Partnership (MEP) national network,<sup>6</sup> while the Manufacturers Association focuses on regional industry problems, educational training and workshops, grant opportunities, supply chain assistance, and lobbying.



**Valencia College** is a public college within the Florida College system. Its nationally-recognized Accelerated Skills Training (AST) programs help students quickly (within four to 22 weeks) become CNC machinists, electronic board assemblers, welders, industrial maintenance technicians, and robotics technicians. Programs are taught with industry-recognized technology, and culminate in industry-recognized certifications alongside college credits.



The **Orlando Economic Partnership** is an economic and community development organization serving the Orlando region. Their research convenes stakeholders and facilitates economic development strategies.



# KEY IMPLEMENTATION STRATEGIES

## Laying the groundwork for diversification

Efforts to diversify Orlando’s regional economy were underway before the pandemic began.

**Valencia College’s** Accelerated Skills Training programs, started in 2015, showcase this strategy in action. These programs welcome students with no previous work experience in advanced manufacturing and prepare them to take on a wide range of roles in a matter of weeks, not years.<sup>7</sup> New courses emerge quickly in response to industry needs, while well-established programs evolve in response to changes in industry or technology. As a result, programs like Accelerated Skills strive to expand access to quality jobs in the region by increasing accessibility to job training and employment; at the same time, the skilled labor force it creates helps to alleviate persistent labor shortages for existing local manufacturers and recruit new manufacturers to the area.

Partnerships bolster a regional approach. For example, Orlando Economic Partnership convenes advanced manufacturers, Valencia College, and FloridaMakes to mobilize upskilling and recruitment resources. FloridaMakes and the regional Manufacturers Association support firms’ internal assessments of technology and workforce together leading to investments that

recognize and prioritize the value of a skilled workforce for implementing new technologies. The partner group also co-hosts site visits at Valencia College to showcase how Accelerated Skills programming, and the transitional skills it is supporting, is a resource for companies considering relocating to the region.

# Intentional recruiting

Low-wage workers in tourism and hospitality are more likely to be women, people of color, speakers of English as a Second Language, or people with less formal education.<sup>8</sup> Creating accessible paths into roles in advanced manufacturing that offer family-supporting wages is likely to have outsized benefits for reducing income inequality and fostering broad economic prosperity. Intentional recruitment caters to the needs of specific populations and strengthens their ability to transition into advanced manufacturing.

For example, in 2020, the median age for Valencia's AST students was 35, representing students that are looking for a career transition – especially out of hospitality. This is not by accident: the college designed its recruitment and programming to support their career transitions, and to purposefully uphold manufacturing as an exciting career alternative. Rather than simple advertising, recruitment officers partner with community organizations to initiate conversations about career transitions and facilitate referrals to Valencia. Valencia also creates space on campus for supportive programming for Accelerated Skills students. For example, many prospective students, especially those transitioning out of hospitality and tourism, benefit from English as a Second Language (ESL) coursework prior to enrolling in Accelerated Skills. The College has designed, located, and

scheduled ESL courses that cover Occupational Health and Safety Administration (OSHA) safety training so that students can establish language proficiency concurrently with their safety training and Accelerated Skills coursework. The College also hosts **CareerSource Central Florida's** Osceola Career Center and other community organizations to enable easy referrals from one organization to another.

Recruiters – who specialize in recruiting non-traditional students – continue to support students throughout their training, job search, and job placement progression, alongside program staff. Program managers organize guest speakers and site visits to expose students to different work environments, which is a crucial experience to help them visualize working in a new industry. As the program wraps up, career placement staff help students identify companies where they are likely to be successful applicants and employees, prepare application materials and interview skills, and assess wage and benefits packages comprehensively.

Graduates are encouraged to seek employment at companies with strong relationships with Valencia. The college recommends employers with a strong track record of hiring and retaining graduates, including a willingness to hire formerly incarcerated talent. Program managers have also recently begun suggesting firms

that create comfortable work environments for graduates with less traditional backgrounds in manufacturing, such as for women on worksites that predominantly employ men. Finally, Valencia collects feedback from former students and notes turnover rates to help inform how it makes employer recommendations to students.

These features supported the development of a solid pre-pandemic program to meet a rapidly growing advanced manufacturing industry:<sup>9</sup> by 2019, 425 students went through Valencia's Accelerated Skills Training, with a 95% completion rate and an 81% job placement rate.





# Refining during a crisis and building for resilience

The pandemic put a spotlight on pre-existing concerns about low-wage work in hospitality and tourism. Waiters and waitresses, cashiers, and maids and housekeeping cleaners were the three most vulnerable occupations for low wages and exposure to Covid-related layoffs.<sup>10</sup> Osceola County – home to **Valencia College’s Advanced Manufacturing Training Center** – had the highest unemployment rate in the region during this time as a result of its heavy reliance on hospitality-related work.

Fortunately, Accelerated Skills programming offered a scalable solution for expediting the transition for displaced hospitality workers into family-sustaining careers in advanced manufacturing. While much of the tourism industry shut down with the pandemic, the manufacturing sector experienced a boost in demand, and with it the need to hire and train new workers. To help meet the demand for skilled talent in those areas, Valencia College ramped up its short-term training and degree programs. The college expedited the launch of a new associates degree in engineering technology with specializations in advanced manufacturing focused on supply chain automation, and increased capacity for higher enrollments across other manufacturing-related programs.

To facilitate the move from one industry to another, **CareerSource Central Florida** continued existing programs that provided financial support to offset training costs for firms offering high-skill, high-wage roles. The organization also started new programs that provided individualized career consultations and short-term training to direct displaced workers toward high-growth industries, including advanced manufacturing. Scholarships were made available for students enrolling in Accelerated Skills, and CareerSource provided weekly stipends of \$125 to help cover transportation, childcare, housing, and other costs associated with that training.<sup>11</sup>

As partners mobilized to help people with hospitality and leisure industry experience move into manufacturing, they adopted an important change in their approach to skill interpretation. Rather than focusing on prior work experience or educational credentials, they pivoted to focusing on relevant skills that may translate from seemingly unrelated industries. By featuring transferable competencies that were not industry specific, institutional partners recruited a diverse swathe of prospective students. For example, they featured the need for good communication skills, fine motor skills, and physical mobility, in manufacturing, all of which are also required of

waiters. Similarly, they pointed out the problem solving nature of manufacturing, which workers in customer-facing industries are all too familiar with. This effort was also helpful in discussions with employers, enabling them to see the value in hiring someone with prior work experience in demanding service-sector positions. This skills-based approach was an important support for struggling residents during the pandemic, but it is also an investment in the region's future resilience, as it focuses on enabling individuals to translate their skills and move into high-quality jobs, as industries and regions evolve in the face of disruptions or slower-moving changes.

Using the skills-based approach, CareerSource Central Florida helped over 80,000 career-seekers and over 3,500 businesses during the pandemic.<sup>12</sup> These gains are expected to continue: in 2022, manufacturing was the second most common destination industry for workers transitioning out of hospitality & food services, office & administrative services, and retail sectors.<sup>13,14</sup> The speed of Accelerated Skills programming facilitated quick transitions for new entrants. Manufacturers and longer-term training programs<sup>15</sup> can build on this momentum by deepening workforce development beyond initial transitions through continued upskilling paired with technological advancement for firms.



# Looking ahead to the next opportunity on the horizon

The lasting impact of this coordinated effort goes beyond career transition. The institutional partnership that mobilized in response to the pandemic is adapting to reshape other aspects of Orlando's economic and environmental future.<sup>16</sup> As an example, a new partnership has formed to expand the region's semiconductor industry – this one also involving Valencia College, in coordination with the University of Florida. Here too, the makings for this emergent partnership have earlier roots, in this case through the establishment of a state-of-the-art non-profit microelectronics fabrication facility in 2003. The recent transfer of the non-profit's operations to a Minnesota-based manufacturer in 2021 called Skywater Technology, alongside recent federal policies supporting semiconductor industry development nationally, have become a formal catalyst for leveraging that earlier investment. For its part, Valencia College has created a new accelerated skills training robotics technician program to deepen support for industry growth. The development also hosts a STEM-based high school in Osceola County to develop a skilled microelectronics workforce. This collaborative effort shows it is possible for institutions to respond to unanticipated crises by combining and amplifying latent regional assets, in turn strengthening their support for regional resilience.



# INCLUSIVE INNOVATION CONNECTIONS

The Orlando region showcases a novel approach to the development of an *inclusive innovation cycle* – a process in which a constellation of partners invests in complementary workplace improvements and technology over time. Several strategies are in play. Valencia College and CareerSource Central Florida **center** workers in hospitality and tourism by building institutional capacity and support around the unique needs of this population, which intensified during the pandemic.<sup>17</sup> To help workers and businesses alike see a future for themselves in advanced manufacturing, the Orlando Economic Partnership and others use a **visioning strategy**, in which they bring together manufacturers, FloridaMakes, and Valencia College to showcase what is possible through Accelerated Skills Training programming alongside commitments to upskill and invest in technology from manufacturers. Finally, the partners establish a clear **bridge** between their respective areas of expertise, while also working to garner collective resources and advance a common vision of regional economic inclusion and resilience. Partnerships between Orlando Economic Partnership, CareerSource Central Florida, and Valencia College enabled strategic forms of recruitment and the targeting of particular groups that have been marginalized and otherwise

left out of regional prosperity. These strategies helped residents stay afloat during a global crisis while also investing in longer-term infrastructure to increase regional economic resilience and more widely share its benefits.



# ENDNOTES

- 1 The Orlando Region is comprised of Lake, Orange, Seminole, and Osceola counties.
- 2 Foundation for Orlando’s Future. 2020. Re-Imagining Orlando’s Talent Supply: Skills-Based Hiring for Upward Mobility. Orlando Economic Partnership. Accessed August 24, 2022. [https://orlando.org/wp-content/uploads/sites/4/2020/08/Skills-based\\_hiring\\_report\\_2020\\_FINAL.pdf](https://orlando.org/wp-content/uploads/sites/4/2020/08/Skills-based_hiring_report_2020_FINAL.pdf)
- 3 Jasanoff, S. Technologies of humility. *Nature* 450, 33 (2007). <https://www.nature.com/articles/450033a>
- 4 <https://www.careersourcecentralflorida.com/about-us/careersource-central-florida/community-impact/>
- 5 <https://macf.biz/about/>
- 6 The MEP national network is a program of the National Institute of Standards and Technology, which is an agency of the U.S. Department of Commerce.
- 7 Accelerated Skills Training programs prepare students to become many roles, including CNC machinists, electronic board assemblers, welders, industrial maintenance technicians, and robotics technicians.
- 8 Economic Policy Institute. 2021. The State of Working America 2020 employment report. <https://www.epi.org/publication/swa-2020-employment-report/>. Accessed 22 August 2022.
- 9 The advanced manufacturing industry in the region had a job growth rate of 24% between 2012 and 2017 (<https://www.forbes.com/pictures/5b0325cb4bbe6f748689fd1b/no-1-orlando-kissimmee-sa/?sh=355a645a447d>)
- 10 Foundation for Orlando’s Future. 2020. Re-Imagining Orlando’s Talent Supply: Skills-Based Hiring for Upward Mobility. Orlando Economic Partnership. Accessed August 24, 2022. [https://orlando.org/wp-content/uploads/sites/4/2020/08/Skills-based\\_hiring\\_report\\_2020\\_FINAL.pdf](https://orlando.org/wp-content/uploads/sites/4/2020/08/Skills-based_hiring_report_2020_FINAL.pdf)
- 11 These supports were offered in partnership with the City of Orlando, Orange County, and Osceola County. The program was offered, with some minor variations, under the “RISE Employment and Training Program” for Orlando City residents, under the “Level Up Orange” title in Orange County, and under the “Osceola Cares” title in Osceola County.
- 12 In conjunction with this programming, Orange County Government contributed funds for social services, community needs, and partner nonprofits to alleviate homelessness, mental health and substance abuse, hunger, and challenges with job retention and childcare. Funding from Career-Source Central Florida also covered the costs associated with additional safety measures needed to re-open the Osceola County Career Center.

- 13 Florida Chamber Foundation. 2021. Florida Workforce Needs Study. <http://www.flchamber.com/wp-content/uploads/2021/08/FloridaWorkforceNeedsStudy.pdf>
- 14 Florida TaxWatch. 2022. Manufacturing a Transformational Shift: Expanding Florida's Workforce Development Through Sector Strategies: A summary of the 2021 MakeMore Manufacturing Summit. [https://higherlogicdownload.s3.amazonaws.com/FLORIDAMAKES/2397c95b-1b7d-4a3c-bd89-8c43cff65352/UploadedImages/MakeMore21\\_-\\_Final\\_TaxWatch\\_Report.pdf](https://higherlogicdownload.s3.amazonaws.com/FLORIDAMAKES/2397c95b-1b7d-4a3c-bd89-8c43cff65352/UploadedImages/MakeMore21_-_Final_TaxWatch_Report.pdf)
- 15 Lake Sumter State College offers a mechatronics certificate and Orange Technical College offers certificates in CNC production, welding, mechatronics, and machining.
- 16 Reynolds, Sara. 2022. High Frequency Indicators of Economic Recovery. Orlando Economic Partnership. Orlando Economic Partnership. Accessed August 25, 2022.
- 17 The case highlights how the Manufacturers Association of Central Florida and FloridaMakes may further center firms in the future: Valencia College will highlight firms that have strong track records of hiring and retaining graduates; MEPs can provide centered support for firms struggling to design work environments that would place them on Valencia's recommended employer lists. Especially when there are resources like those from CareerSource Central Florida to cover training costs. Seen a rise in employer-sponsored attendance at Accelerated Skills Training as well.