

## *Gearing Up: The Response of Manufacturing Extension to the COVID-19 Pandemic*

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The coronavirus will impact North Carolina's manufacturing sector, though it is too soon to predict its longer-term effect. Some analysts are optimistic, highlighting immediate growth opportunities as manufacturers across our state and nation, busily shift production lines to make personal protective equipment, sanitizing products and life-saving medical treatments and devices. This growth could be further sustained, if medical device, personal protective equipment and pharmaceutical supply chains are 'reshored,' creating a further boost to domestic manufacturing capacity.

As the nation's fifth-ranked manufacturing state, with legacy strengths in textiles, biopharmaceuticals and advanced manufacturing, North Carolina is well-positioned to meet emergency production needs now and in response to future pandemics and natural disasters. Still, in all likelihood, the manufacturing outcome of this current pandemic for North Carolina will be highly uneven, negatively affecting some industries and manufacturing-strong communities more than others. The scale of manufacturing gains or losses will not rest entirely on the decision-making capacity or resourcefulness of individual firms. It will also depend on the type of institutional support and coordinated assistance that manufacturing operations in our state receive now and throughout the post-pandemic recovery period.

The 2020 CARES Act recognizes this potential for institutional action, earmarking \$50 million in support to manufacturing adaptation efforts coordinated by the U.S. Manufacturing Extension Partnership (MEP). Established in 1988 by the National Institute of Standards and Technology (NIST), MEP is a decentralized network of 51 centers (375 field offices) that employ over 1,400 specialists who provide business and technical assistance to small- and medium-sized (SME) manufacturers (Lipscomb et al. 2018). Every state (plus Puerto Rico) has at least one MEP center that is charged with helping manufacturers introduce organizational and technological changes that can enhance overall business performance. This national MEP network is financially supported through recurring State and Federal funding contributions, along with modest fees charged to manufacturers for service.

North Carolina's manufacturing extension system is the oldest in our nation (established in 1956) and its early successes contributed to the design of the national MEP network. Housed at North Carolina State University, NCMEP supports hundreds of small sized manufacturing establishments each year, reaching many more through strategic partnerships with small business and innovation-supporting community colleges and universities in our state. In 2019, NCMEP helped client manufacturing firms generate \$468 million in increased or retained sales, add or retain 7,422 jobs and capture \$804 million in new investment.

MEP centers throughout our nation, including NCMEP, have already modified activities in response to COVID-19 and are exploring opportunities to amplify that response. CARES Act funding will enable MEP centers to extend support to smaller manufacturers that are shifting production systems to make personal protective equipment and life-saving medical devices, including COVID-19 testing kits. Longer-term this additional institutional support could also strengthen North Carolina's manufacturing sector in more transformative and durable ways.

This project proposes to support actions taken by NCMEP, the North Carolina Department of Commerce and national MEP leaders by conducting comparative research on MEP center activities across all states. We will leverage our access to NIST-MEP data available at the center and regional manufacturing level to build a detailed database of the actions individual MEPs undertake in response to the pandemic. For

NCMEP decision-makers and other North Carolina economic development practitioners, there are critical lessons to be learned from this national review, both capturing the varied bundle of activities that individual MEP centers are undertaking now but also identifying opportunities for cross-state coordination in support of supply chain improvement and development.

No such data source currently exists. Accordingly, this project will address this knowledge gap by drawing on a mix of methods to document in real time the pandemic response of all 51 MEP centers. The results of this comparative analysis will be shared with leaders from the NIST-MEP national office, the NCMEP and the North Carolina Department of Commerce to help them assess the scale and scope of the response effort and to determine what manufacturing-support activities are most valued or need further refinement. Additionally, this analysis will identify opportunities for NCMEP and the North Carolina Department of Commerce to learn from other state initiatives and also coordinate cross-state efforts to strengthen the collective impact at the firm, supply chain, and regional levels.

MEP leaders at the national and state-level have requested immediate scholarly research to capture and analyze this real-time response and assess the impact on manufacturing decisions. In the past, when the Federal government infused MEP with extra funding to deliver stimulus and disaster relief funds, there was no mechanism to conduct real-time research on that unfolding experience. As a result, MEP leaders at both the state and national-level missed a critical opportunity to develop evidence-based solutions to improve manufacturing outcomes. To eliminate this shortcoming, the Federal MEP Program Evaluation and Economic Research Group has invited UNC-Chapel Hill to partner with them to contribute transformational knowledge in support of MEP decision-making, now and throughout the recovery period.

Support from the UNC Collaboratory program will enable timely research to accompany Federal and State stimulus dollars as they are spent and put knowledge-sharing systems in place that ensure the value of support provided by NCMEP is known and can be further advanced.

*Budget request: \$50,000.* Dr. Nichola Lowe will receive one month of summer salary support. She will be responsible for project management and ensuring that all tasks are completed according to the timeline. She will supervise graduate research assistants. She will support data analysis activities in partnership with MEP leaders. Funding will also support a PhD student (stipend and tuition: fall semester; summer hourly) and a master’s student (summer and fall semesters hourly). The graduate research assistants will assist with all research activities. This includes compiling information from an on-line search of MEP center responses to the pandemic; creating a shared data infrastructure for combining and analyzing new and existing data sources; developing profiles of individual centers; creating standardized interview protocol. A modest amount is also included for Todd Owen (Associate Director, Center for Urban and Regional Studies) for assistance with outreach and stakeholder engagement.

EHRA Salary	\$14,996.00
SHRA Salary	\$0.00
Grad Student	\$18,170.00
Temps	\$0.00
Fringe Pool	\$10,139.00
Non-Personnel Expenses (Tuition)	\$6,695.00
<b>Total</b>	<b>\$50,000.00</b>

*Broader Impacts:* Broadly speaking, this research also marks an important step towards evaluating stimulus spending that by design flows from our Nation's Capital to state and local entities. Past manufacturing stimulus spending, including during the Great Recession, received no formal evaluation, and did not provide systematic data from which participants could redesign and enhance policy processes and objectives. Equally important, this research provides an opportunity to inform economic development planning efforts by the North Carolina Department of Commerce and the Economic Development Partnership of North Carolina in support manufacturing development. More broadly, this project will put in place methods for guiding future stimulus and disaster recovery spending delivered through state-funded economic development organizations and other networked entities.

*Intellectual Merit:* Economic crises such as the Great Recession and the COVID-19 pandemic transform industries and regional economies in ways that endure after the crisis itself recedes. Scholars have studied the question of how decentralized networks like MEP work at the level of individual regions. This project provides a deeper understanding of how innovative and adaptive strategies incubate and scale across the manufacturing support system as a whole. In this regard, our study contributes to "experimental federalism," whereby learning across parts of the system leads to improvements of the whole. This research will also contribute to our understanding of Federal programs' impact on manufacturing and innovation by exploring how and under what conditions decentralized institutional networks innovate, adapt and coordinate strategies in response to emergent health and climate crises.