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Informs Decision-Making on Unemployment Insurance Benefits During Crisis

INNOVATION THROUGH DATA SCIENCE
Approaching data research from a sociological foundation

SUCCESSFUL WORKPLACE TRANSITION IN PANDEMIC
Shifting to remote operations while continuing to serve partners
This magazine was prepared by Mississippi State University’s National Strategic Planning and Analysis Research Center (NSPARC). NSPARC is a nationally-recognized interdisciplinary research center that provides tailored research and analysis services with an emphasis on workforce and economic development. The center is home to experts across disciplines including sociology, economics, statistics, communication, computer science, and industrial and systems engineering.

To learn more about NSPARC, visit nsparc.msstate.edu

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The Drill Field
(Photo by Colleen McInnis / © Mississippi State University)
INNOVATION THROUGH DATA SCIENCE AT NSPARC

Article by Jonathan Barlow, Ph.D.

Scour the internet in search of a clear definition of “data science” and you’ll find as many variations as there are public and private organizations making contributions to the field. Mississippi State University’s National Strategic Planning and Analysis Research Center (NSPARC) approaches data science from a point of view that derives from its history as a university research center undertaking academic work in the field of sociology.

Roots in Sociology
NSPARC’s sociological approach to data science began taking shape more than 20 years ago. A key goal of sociological science is to transcend the understanding of society that humans naturally construct based on personal experience. The social scientific expert transcends mere biography to understand history. This is the sociological imagination, described by C. Wright Mills as having the ability to “grasp history and biography and the relations between the two within society.”

More abstractly, Peter Berger defines the sociological perspective as seeing “the general in the particular.” As scientists, sociologists engage in a virtuous cycle that iterates between observed particulars, well-informed questions, tentatively confirmed or disconfirmed hypotheses, and finally, general theories for understanding social phenomena. Data science, for NSPARC, has been a complementary pursuit necessitated by the kinds of particulars available to social scientists who study workforce development, employment, and human services – that is, administrative data.

The Value of Administrative Data in Research
Government agencies collect administrative data for non-statistical reasons, such as reporting participation counts, ensuring that implementation follows programmatic rules, and case management. NSPARC began helping Mississippi’s agencies use this administrative data not only for retrospective federal reporting and strategic planning, but also to bring new value that improves customer service and helps to foster continuous process improvement while maintaining the highest standards of confidentiality and privacy.

While creating reports requires historical data, performing and improving customer service requires real-time use of data to make relevant information available at the instant when a participant in a program is served. A good example of real-time use of data is the way that labor market information and the characteristics of individuals working in a specific occupation can be used to help customers of the Mississippi Department of Employment Security (MDES) find out whether a particular job opening is a “good fit” given the customer’s education, skills, and experience. In addition to using administrative data to benefit the agency’s customers, NSPARC has also shown how these data can be used in the aggregate for economic development purposes, demonstrating the presence of skilled labor in a region where a prospective company intends to locate, or even helping existing businesses create a hiring and promotion plan to address labor shortages or turnover issues.

Expanding Expertise: Research and Systems Development
Because of NSPARC’s growing expertise in using data science to bring insights from administrative data, when Mississippi established a State Longitudinal Data System (SLDS) in 2013, NSPARC was selected as the state data clearinghouse. NSPARC assembled the computing and human resources required to receive and manage data from Mississippi’s...
state agencies and operate within the oversight of a board to produce research reports on the basis of the data. NSPARC has shown the value of scientific, subject-matter expertise in avoiding mindless empiricism while taking advantage of the data science revolution in terms of computational processing power, storage capacity, and analytical techniques.

Due to NSPARC’s expertise in data science, as applied to sociology, the center has also found points of contact with other disciplines, serving an analytical role in projects emerging from colleagues in engineering, kinesiology, health, agriculture, energy, economics, and other disciplines. For example, in the past twelve months, NSPARC has engaged human motion data through MSU’s growing competency in athletic engineering. This field uses sensors such as cameras, accelerometers, and pressure-detecting materials to produce data that, when analyzed, help scientists and practitioners understand human motion and body position. While the application of this work to the sports athlete is a new subject-matter area for NSPARC, it also applies to industrial workers, military personnel and first-responders, and patients in a healthcare context, drawing closer to NSPARC’s history of engagement with workforce, health, and vocational rehabilitation.

Currently, NSPARC’s work in athlete engineering attempts to capture human body position using readily available mobile camera technology. This will reduce the cost of motion capture and allow its use in the field, outside of the laboratory, where sports scientists help athletes improve performance, physical therapists evaluate workers for work-readiness after an injury claim, and industrial managers train workers in safe lifting practices.

Data science in this context not only covers the lifecycle of data acquisition and storage, but also has given NSPARC experience in the training and application of deep learning models. The first application of deep learning in the human motion context turns two-dimensional visual (camera) data of human movement into three-dimensional geometric data on the position of each major body joint. The second application of deep learning classifies the type of movement. For example, the classification may indicate an unsafe lifting movement or a mechanically inefficient arm movement during a baseball pitch because the AI model has been trained using videos of safe lifts and efficient pitches. The third application of deep learning is in the emerging field of “explainable AI” – finding a way to understand why the trained, deep-learning model classifies a lift as “safe” or “unsafe.” Without being able to explain the reason for the model’s classification, the AI will only tell humans that the lift is unsafe, but not how to correct it (see page 6 to learn more). As in most NSPARC’s work, the practical and domain-specific work drives our data science innovation.

As a practical necessity to ensure quality data collection, NSPARC has developed a strong capacity for software development, including mobile and web application development. As an adjunct to our work analyzing administrative data, NSPARC has developed a way for administrative data systems to communicate with each other to serve overlapping program participant cohorts in real time.

The federal Workforce Innovation and Opportunity Act (WIOA) brought together several programs, administered by multiple federal agencies, that deal with workforce training and education. Each of these federal programs is administered at the state level by corresponding state agencies who manage grants from their federal counterparts and provide (or contract to provide) services under the rules of the federal program. In Mississippi, these programs were administered by four separate state agencies, each of which had its own existing, specialized case management systems. Mississippi’s game plan was to leverage services from all four agencies to connect people, no matter their needs, with a career path. NSPARC designed and implemented a data hub system that supported this plan by allowing the four agency systems to securely share common records relating to the program participant’s WIOA-specific case information. One practical example of the value of such a system is that the instant a WIOA partner records an updated phone number for a participant, all the other partner systems have access to refreshed and consistent contact information.

The data hub system helped bring efficiency to the alignment of programs, reducing duplication of services, and even providing for electronic agency-to-agency referrals that help to prevent procedural gaps. And, best of all, agencies continued to use the case management systems for which thousands of staff members were already trained— the difference was that the systems now operated in the same multi-agency data context. Design and implementation of the WIOA data hub was made possible by NSPARC’s data science expertise—specifically, our understanding of administrative data, the ability to work within the data governance guidelines established by the federal WIOA law and its accompanying regulations, and NSPARC’s software development expertise.

NSPARC is an Available Asset
To other research centers or academic departments at Mississippi State University and beyond, NSPARC operates as a resolute data science partner by providing subject matter expertise in workforce development and other sociological topics, numerical and analytical expertise in a variety of fields, applied research experiences for staff and students, polling and focus-group services, software development capabilities, and a strong understanding of data governance, integration, and security. For our state government, industry, and non-profit partners, we pursue a common mission to solve real-world problems through cutting-edge research and innovative strategic thinking. By building on a solid sociological research framework, NSPARC’s mission has helped to establish its partners in Mississippi and beyond as leaders in implementing data-driven solutions. What challenges can NSPARC help you to meet?
Since 2010, there has been one annual event that I’ve always wanted to attend: the Consumer Electronics Show (CES). It is truly an unbelievable experience if you are into electronics—the Super Bowl of gadgets covering 2.75 million square feet of space and 4,500 exhibitors at the Las Vegas Convention Center. In 2019, I had the opportunity to attend the CES and research the latest electronic wearable technology, as part of our National Science Foundation (NSF) I-Corps funded research, where we interviewed more than 130 strength and conditioning coaches, athletic trainers, and other professionals involved in the sports athlete ecosystem on their views of wearable technology.

The show did not disappoint, and I was able to identify several opportunities in 3D printed sensors, flexible sensors, and wearable IMUs (inertial measurement units) to help record human movement. If you are not familiar with wearables, IMUs are electronic devices that measure and report force, angular rate, and device orientation, using a combination of accelerometers, gyroscopes, magnetometers, and flexible sensors. Placed around the joints, flexible sensors are soft, bendable electronics that change electrical charges when stretched or bent.

IMUs can be found in everyday items like watches, cars, cell phones, and tablets which allow screens to rotate. These units can prove to be beneficial to the sports community because the devices can count your steps and how fast you are moving. Many of the sports measurement systems use IMUs to gauge performance and build predictive models. However, there are some inherent issues with IMU-based wearables. These devices can be a hindrance as they may detach, require recalibrating (most coaches will not stop a practice to do this), and are often not worn due to low comfort levels.

At the show, I was surprised to learn Intel and Alibaba had announced on Twitter that they would introduce an artificial intelligence (AI)-powered 3D athlete tracking technology at the next Olympic Games. Now this was truly a game changer, but I needed to complete my dissertation research on wearable technology, so this concept of computer vision research and machine learning had to be stored away until the timing was right.

After earning my doctorate, I joined NSPARC as a postdoctoral research associate in 2020. I continued learning software project development and management under the guidance of NSPARC Associate Director of Design and Development Jonathan Barlow. In this new role, I was able to reignite the idea of computer vision research and machine learning for human motion capture.

Limitations in Motion Capture Research

Much of my graduate research involved conducting human performance analysis using an optical motion capture system. This system requires the human subject to wear reflective markers on their body. Multiple...
Infrared cameras then track the markers during movement. Due to occlusion, where one camera cannot detect a marker, eight or more cameras are required to capture a movement pattern.

Even though it is the “gold standard” in measuring human movement, several challenges with optical motion capture systems are (1) the costs are $50,000 and higher, (2) participants must come to the lab, (3) markers will shift or fall off during movement, and (4) due to missing occlusion data, the trial must be repeated. Many times, working with MSU football, basketball, and softball student-athletes to collect jumping or movement data, it would take an hour to correctly capture all the data necessary for a study of a single participant.

Improving the “Gold Standard”

The idea of a marker-less motion capture system has been in the back of my mind for decades, and now it seems to be a reality in progress. The idea of a marker-less motion capture system has been in progress. However, this process was so cutting edge that the components were not readily available. The next big impact came in the late winter of 2020. Apple released its iPad Pro LiDAR scanner with three infrared cameras and a LiDAR (light detection and ranging) scanner. LiDAR technology uses eye-safe laser beams to create a 3D representation of the surveyed environment. This offered a new opportunity not previously seen in a mobile device. According to Apple, the iPad Pro LiDAR scanner can create depth mapping points that, when combined with camera and motion sensor data, can create a “more detailed understanding of a scene.” The “aha!” moment came, and we now have the hardware to measure human movement in 3D.

After a pitch to NSPARC leadership, Barlow brought together NSPARC Graduate Research Assistant Kourosh Teimouri-Baghaei and NSPARC graduate student worker Patrick Nelsen to begin developing our marker-less motion capture system. A required component of the application is to build a computer vision machine learning model. We collected more than 230 golf swings from different angles on the three types of golf swing patterns: a slice, draw, and straight shot. After running the golf swing videos through Apple’s Create ML, we developed a categorization model that could identify what type of golf swing a person was executing without knowing where the ball was going. Our first trained model proved to achieve more than 80% accuracy when a new golf swing was classified. Though the model provided 2D data with a confidence value, it lacked the vital 3D component.

To improve the model, we needed to look deeper into machine learning algorithms. This required a dive into research articles involving pose estimation to allow us to determine specific object position relative to the camera. Several platforms such as TensorFlow, PoseNet, and OpenPose could be helpful in this research; however, there are limitations as each of them requires additional computations. This was a major opportunity for NSPARC to leverage our data science resources to develop cutting-edge data and visual analytic systems.

Research in the Field

NSPARC is a part of the athlete engineering group at MSU, which is involved in providing data analytics to a variety of human athletes. Most people think of sport athletes, but there are many personas, including the industrial athlete (workforce), tactical athlete (military and first responders), and at-risk athlete (recovering from injury), that share commonalities in physical training and performance.

NSPARC currently supports the data analytics initiative of athlete engineering for most of the sports teams at MSU. The addition and creation of a marker-less motion capture system provides incredible benefits for coaches and athletes. Being able to quantify movements outside of the lab during game-like training and actual games can help to provide insight about altered biomechanics due to fatigue and modify techniques to improve performance or mitigate injury. Developing our athletes to perform at the highest level has major implications for the athletes and university.

“In the long run, this innovation could democratize access to high-quality coaching and training for anyone that performs any sort of sports, whether as a hobbyist, or as a professional athlete,” Teimouri-Baghaei said. “[This has the potential of] lowering the odds of exercise-related injuries and improving the overall learning curve of various types of sports.”

Another exciting application of NSPARC’s computer vision technology is in the area of injury-related rehabilitation.

“The idea of a marker-less motion capture system has been in the back of my mind for decades, and now it seems to be a reality in progress.”

— Tony Luczak

The idea of a marker-less motion capture system has been in the back of my mind for decades, and now it seems to be a reality in progress.
I’ve always been interested in the mechanics of sports and general athletic movement. It’s been exciting to work on something that not only may change the future of how athletes train, but also can prevent and help fix injuries.

Shifting to “outside-of-the-lab research” has had a major positive impact in mitigating and reducing musculoskeletal injuries for industrial workers in the workplace. NSPARC will be able to quantify movement patterns and establish personal baselines for workers based on their anthropometrics, range of motion, and volume of work through advanced data analytics. With advanced explainable AI computing, new insights on how to maximize the health of workers while maintaining productive workflow will have a positive impact, allowing workers to return to work sooner and reducing the financial burden that often hits a family from missing work.

“NSPARC’s resources have allowed the design team to come from many different backgrounds and experiences, and it is a great opportunity to watch these many perspectives all add to the depth of what this system can achieve,” Nelsen said. “I am very excited to see what the future of this project holds.”

As evident in NSPARC’s mission of solving real-world problems through data and innovation, the integration of human factors and ergonomics with NSPARC’s software development team will lead to the creation of mobile AI apps for iOS and Android platforms based on 5G connectivity, edge, and cloud computing. This is only the first step to developing lab-quality systems that can be used in the real world. Creating, designing, and building software applications that allow AI and machine learning insights, brings deeper understanding of what human performance really means and how NSPARC can assist and enhance the human athlete.

NSPARC’s resources have allowed the design team to come from many different backgrounds and experiences, and it is a great opportunity to watch these many perspectives all add to the depth of what this system can achieve.”

– Patrick Nelsen

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With months of advance disaster preparedness exercises, Mississippi State University’s (MSU) National Strategic Planning and Analysis Research Center (NSPARC) was able to quickly transition to remote operations due to the COVID-19 pandemic—without disruption in providing services to its clients.

How NSPARC Executed a Successful Workplace Transition During a Crisis

As COVID-19 cases rapidly increased across the U.S. in March 2020, MSU President Mark E. Keenum, with guidance from the Centers for Disease Control and Prevention (CDC) and the Mississippi Institutes of Higher Learning (IHL), announced on March 15, 2020 “unless otherwise indicated, the University is requesting that all non-essential employees stay home until contacted by your supervisor to return to work.” This announcement came after MSU extended students’ spring break for an additional week and made the decision to move all classes online after the extended break was over.

Following MSU’s guidelines, NSPARC made a quick transition from in-office work at The Mill at MSU to remote work in a single day. After Keenum’s announcement, NSPARC’s leadership team moved swiftly to ensure that all NSPARC employees had the necessary resources to perform their job duties while working from home.

“Becoming the interim executive director during [a global pandemic] is one of those lots you draw,” Grice said. “You do the best you can with it.”

Although a leadership change may not seem ideal in the midst of a global pandemic, NSPARC was able to execute a successful transition from workplace to home under Grice’s leadership. Grice’s top priorities for this transition were to make sure that all employees were kept safe; everyone had access to the proper equipment needed; adequate security measures were in place; and two-way communication was maintained.
Preparing in Advance for Crisis

One plan that proved to be instrumental at the start of the COVID-19 pandemic was NSPARC’s disaster preparedness plan. In his previous role as deputy executive director, Grice was instrumental in developing the disaster preparedness plan alongside NSPARC Associate Director of Information Technology Hal Bullock, and several other employees. In his new role, Grice was able to oversee the disaster preparedness plan implemented in a way that was best for the employees and the center as a whole.

The disaster preparedness plan allowed NSPARC to be equipped for possible scenarios. One scenario was continuing operations if The Mill was in a state in which people could not enter the building. Another scenario was if employees could not enter the office due to issues with the Data Center. The Data Center is an NSPARC facility, located in the MSU Thad Cochran Research Park, and is dedicated to IT processing, storing data, and running all employees’ virtual workstations at NSPARC.

“As it turns out, that was the scenario [not being able to work in The Mill] we faced without much notice,” Bullock said.

Having an established internal crisis plan in place was a huge aid in the transition to remote operations. During the practice runs, Bullock and his infrastructure team were able to work out any bugs before the pandemic occurred. With this plan already in place, employees had also been prepped for the possibility of transitioning to a different workspace—whether it be the Data Center or their homes.

Bullock and his team were able to work out the scenario of employees being able to distribute laptops and other necessary equipment by assigning time slots for employees to safely pick up the devices.

“We envisioned people working off laptops all along,” Bullock said. “However, what we did not take into account was the transition of working on a 13- or 15-inch laptop screen when employees were used to working on two 23-inch screens.”

Keeping Work Safe and Secure

When equipment was distributed and employees were fully equipped to work from home, NSPARC’s next priority was to make certain proper security measures were in place. Craig Shorter, manager of security and compliance at NSPARC, asserted that the research center’s systems were well-protected and secure while employees worked from home.

Shorter’s team is responsible for alerting and monitoring suspicious activity. They watch for anomalies or odd times of day for logins to VDIs (virtual desktop interface) and provide solutions to enhance system security.

“Two-factor authentication has been one of the best solutions in maintaining tight security control as our employees log into their VDIs remotely,” Shorter said.

Communicating and Staying Connected

Another priority for NSPARC’s leadership was communication to ensure that all employees stayed connected and well-informed. NSPARC Communication Manager Laura McPhail stated that the disaster preparedness plan was a helpful tool that played a huge role in NSPARC’s action throughout the process from initially transitioning to conducting business remotely.

“Two-factor authentication has been instrumental at the start of maintaining tight security control as our employees log into their VDIs remotely,” Shorter said.

Grice wanted to make certain that employees were in frequent communication with their managers to avoid any type of disconnect while from working from home. As a result, NSPARC initiated bi-weekly management team meetings on Tuesdays and Fridays.

“Tuesdays turned into more of a managerial check-in to see the status of various projects,” McPhail said. “Dr. Grice wanted to change a global pandemic? As you get closer to when the crisis actually occurs, you have to start leaning on that plan, but also thinking on your toes, and a lot of that is anticipating what kinds of questions are going to be asked internally and externally.”

McPhail worked closely with Grice to determine the best way for all employees to receive information in a succinct way that prevented miscommunication or misinterpretation.

“We had a thorough review process of all information that went out via email to employees,” McPhail said. “We wanted to make sure much of the information was in writing so that people would be able to refer to it if they had any questions.”

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“To test the scenarios, we ran mock drills and exercises where we said, ‘Okay, if we couldn’t work in The Mill, what would we do and who would we notify first?’”

—Hal Bullock

“Equipped to Work from Home

The infrastructure team had a short timeframe to ensure all employees were equipped with the proper technology, such as laptops and monitors, to perform their duties from home. NSPARC was able to distribute laptops and other necessary equipment by assigning time slots for employees to safely pick up the devices.

“We envisioned people working off laptops all along,” Bullock said. “However, what we did not take into account was the transition of working on a 13- or 15-inch laptop screen when employees were used to working on two 23-inch screens.”

Bullock and his team were able to secure several large screen monitors from the NSPARC office to distribute to employees to alleviate some of the strain of working from laptops.

“The disaster preparedness plan worked well in terms of preparing us to work some place besides The Mill, and it also prepared us well for the ability to contact people quickly through our telephone tree [a system NSPARC has in place to ensure all employees are contacted by necessary personnel],” Bullock said. “Where we had to improvise was in terms of rapidly issuing equipment for people to take home and basically turn their house into a semi-permanent office.”
things up on Fridays with “Tell me how you and your team are doing. Is there anything that we can do to help them out?”

To stay connected with their teams and other coworkers, NSPARC employees utilized Microsoft Teams and WebEx to communicate while working from home. NSPARC employees were already using these communication tools prior to the COVID-19 pandemic, so the familiarization with these types of software was another benefit during NSPARC’s transition.

With frequent updates from the Mississippi Governor’s Office, CDC, and MSU, NSPARC leadership sent weekly emails to its employees. Staff meetings, held via WebEx and Microsoft Teams, were switched from quarterly to monthly meetings. The NSPARC intranet was updated as needed with important announcements and guidelines. This was to make certain all NSPARC employees received the latest information and guidance.

As for external communication with clients, NSPARC assured clients that even through uncertain times, NSPARC was still in full operation, progressing and working towards deadlines.

“We sent out a newsletter to our clients to let them know what we’ve been doing as a status quo, but also to let them know what we’ve made a priority and what kind of work we’ve been doing for COVID-related response,” McPhail said. “We worked a lot with the Mississippi Department of Employment Security (MDES) for unemployment insurance. We did a lot of projections and economic forecasts for the state to help these state agencies and organizations respond in the best way possible to keep Mississippians afloat while everything was so uncertain.”

Performing Successfully from Home

Even while working remotely, NSPARC employees continued to produce quality work for clients. Joel Huber, NSPARC senior systems analyst, was working on multiple projects when the research center transitioned to remote work. He primarily worked on a project for the Mississippi Community College Board (MCCB) while also helping with the Provider Integrated Portal (PIP) project, the Cybercrime Support Network (CSN) project, and a new Unified Benefits Application for the Mississippi Department of Human Services (MDHS).

Huber was very impressed by his team’s efforts and believes his team’s delivery improved in terms of meeting clients’ expectations. Huber and his team were able to make accommodations to work environments to best fit their needs; this allowed them to work in a way that best suited them to produce high-caliber work.

With strong leadership and a hardworking, flexible staff, NSPARC was able to successfully transition to working from home in a timely manner without disrupting their work internally or with clients. Kara Herman, NSPARC business manager, emphasized that NSPARC was ready to work from any location thanks to the disaster preparedness plan and the confidence Grice has in his employees.

“It was great to see NSPARC employees excel during a time of stress,” Herman said. “Dr. Grice ensured that everyone was prepared while also having everyone’s safety in mind so I really love that his leadership style involves caring for his employees.”

McPhail agreed with Herman and also noted that the trust that the employees have in Grice’s leadership was integral to a seamless transition.

“I think because we have all been familiar with Dr. Grice’s leadership style since he was a deputy prior to being named interim executive director, there is a huge amount of trust in Dr. Grice coming from the staff that played a key role in making huge changes overnight,” McPhail said. “It’s a reciprocal trust—Dr. Grice has confidence in his staff, and we have confidence in his leadership. Without a doubt, that helped us change our mode of operations within a day, without any disruption to the work we were doing.”

Making a Safe Return

In a phased restart plan developed by MSU, NSPARC resumed in-office operations on July 6, 2020. Prior to employees’ return, NSPARC developed many safety precautions such as enforcing a mask requirement; establishing one-way entrances and exits; hand sanitizer stations throughout the office; and revising workspace assignments to implement six-feet distancing. All employees were supplied with a mask and a bottle of hand sanitizer. Any needed equipment, such as a headset or laptop, were provided to employees, and nearly all meetings continued to take place virtually through WebEx or Teams to avoid human contact. NSPARC also implemented telework agreements for employees to allow the flexibility of working from home and in the office through December 2020.

Solid leadership provided by Keenum along with MSU Provost David Shaw, MSU Vice President for Research and Economic Development Julie Jordan, and members of the COVID response team was vital in ensuring the safety of university employees and students at all levels. Because of MSU’s exemplary leadership paired with NSPARC’s existing disaster preparedness plan and the integrity and flexibility of the staff, NSPARC was able to execute a successful transition to work from home as well as a safe return to in-office operations.

For more information regarding MSU’s COVID-19 resources, please visit https://www.msstate.edu/covid19
With tough decisions ahead for the state of Mississippi, the Mississippi Department of Employment Security (MDES) relied on Mississippi State University’s National Strategic Planning & Analysis Research Center (NSPARC) to serve as the agency’s data science research and analysis arm. Rapid response analyses provided by NSPARC would help inform decision-making on key policies and executive orders that impact tens of thousands of Mississippians.

At its core, MDES is responsible for helping the people of Mississippi to find jobs and helping businesses find qualified employees. The state agency also administers Mississippi’s unemployment insurance (UI) program, which provides temporary financial assistance (UI benefits) for individuals who have lost their jobs due to no fault of their own.

UI benefits are disbursed from the Mississippi Unemployment Insurance Trust Fund. In turn, these benefits sustain the purchasing power of the individual, community, and the state as a whole during periods of involuntary unemployment.

At the onset of the pandemic at the end of the first quarter of 2020, the trust fund was one of the most solvent in the country.

Mississippi businesses are responsible for paying UI taxes (contributions) to help maintain the trust fund’s solvency. The pandemic soon disrupted this historically successful process on a large scale. In fact, by the end of the second quarter of 2020, the UI trust fund saw its total decline by approximately 39.7% in just three months.

With several programs and strategic plans in place, MDES was well prepared for an economic downturn, but like most, the agency never imagined that the state, nation, and even the entire world would face an economic shutdown.

“We had an unprecedented number of claims [application filed for approval to receive UI benefits] come in at one time,” said Jackie Turner, executive director of MDES. “We went from 1,000 weekly claims to suddenly having around 40,000 claims per week.”

In the following months, this number, due to the COVID-19 pandemic, compounded each week, resulting in hundreds of thousands of UI claims filed over the course of the statewide shutdown.

Soon after the shutdown was first announced by Governor Tate Reeves’ office, the unemployment rate skyrocketed. The unemployment rate in Mississippi—which was typically 5.4%—shot up to 16.3%.

As struggling businesses were no longer able to keep most of their employees on payroll and contribute taxes to help maintain the UI trust fund solvency, MDES relied on NSPARC to provide on-the-fly research to (1) forecast if and for how long the trust fund could remain solvent while paying out a historically unprecedented amount of UI benefits and (2) support agency efforts to find innovative solutions for providing tax relief to struggling businesses.

“We already had a positive existing relationship with NSPARC and had established trust there,” said John Garrett, deputy executive director/general counsel of MDES. “We knew we could depend on them to quickly and expertly give us invaluable information, calculations, and prognostications that helped us immensely in deciding a lot of what we needed.”
Armed with this information, the Mississippi Legislature and Governor’s Office had reliable information on how long the state could go and still pay UI benefits before the fund would need to be replenished.

**Providing Timely Research and Communication**

Immediately after MSU President Mark E. Keenum announced campus closure for all students, faculty, and non-essential staff on March 15, 2020, NSPARC swiftly shifted to remote operations, while simultaneously meeting the growing demands of each of its partners also affected by the crisis. NSPARC’s research team quickly adjusted to a new environment of virtual meetings via video calls and phone.

“NSPARC has analysts and researchers with various backgrounds such as social sciences, economics, statistics, and engineering,” said Yanbing Tang, NSPARC associate director for research and analysis. “Whether we’re working in office or at home, we are able to effectively use our expertise in applied fields in education, economic and social development, and workforce development by exploring pathways, conducting scenario analysis, and providing derived information for decision-makers.”

With more than 20 years of experience in data research and analysis, NSPARC was able to help offer MDES clarity in a time of great uncertainty. Detailed forecasting helped the agency to look two to three years ahead and make decisions accordingly.

“Our research estimated how the UI trust fund would fluctuate throughout the pandemic and how the fund will be impacted by changing situations and policies,” said Rui Wang, NSPARC postdoctoral research associate.

As multiple executive orders went into effect throughout the pandemic, MDES was appreciative of having open lines of communication with the NSPARC research team to get the Legislature and Governor’s Office what they needed in a timely manner.

“We were able to quickly call NSPARC, send them emails and text messages, almost 18 to 20 hours a day, and they were able to respond,” said Timothy Rush, deputy executive director/reemployment assistance director of MDES. “They were able to get information to the legal team and myself, which had a tremendous impact on us being able to give information to the Governor’s Office so they could make decisions on how quick we pay these funds and the impact on the employer community—because there were many unknowns.”

During this time of uncertainty, MDES and NSPARC’s longstanding relationship allowed for a seamless workflow throughout the pandemic.

“We already had a positive existing relationship with NSPARC and had established trust there. We knew we could depend on them to quickly and expertly give us invaluable information, calculations, and prognostications that helped us immensely in deciding a lot of what we needed.”

– John Garrett

“We have worked with MDES for almost two decades, and they are an incredibly data-driven organization. It was a great experience to be part of their team and provide our expertise to support their efforts to quickly address unprecedented economic problems caused by the pandemic,” said NSPARC Deputy Executive Director Michael Taquino. “Most folks don’t get a thrill out of 9 p.m. Friday night video chats to discuss the finer points of UI modeling, but this is what we thrive on at NSPARC.”

**Making an Impact with Rapid Response Research**

As a result of the rapid response research provided to MDES throughout the pandemic, the State was able to take multiple economic scenarios into consideration while developing effective state policies and executive orders that impacted struggling businesses and unemployed Mississipians.

“We were able to quickly call NSPARC, send them emails and text messages, almost 18 to 20 hours a day, and they were able to respond.”

– Timothy Rush
quarter and fourth quarter, then by the end of the year, you’ll have X amount of money left in the trust fund, and this is how much money you’ll need to replete it to continue to pay UI benefits,” said Garrett.

Garrett asserted that MDES was able to examine the effectiveness of the measures placed in each of the Governor’s direct executive orders—thus, reaffirming the value of research as well as the agency’s partnership with NSPARC.

“I sent a letter on behalf of the agency requesting the Legislature to use some of the state’s CARES [Coronavirus Aid, Relief, and Economic Security] Act money for the replenishment of the state’s trust fund,” said Turner. “The amount that we asked for and received was based on the analysis done by NSPARC, so they have been a true key partner in this effort.”

Key measures derived from NSPARC’s analyses included expanding UI qualifications for employees and waiving portions of employer taxes to help businesses stay afloat during the pandemic.

“With the Governor’s permission, we waived some of the eligibility requirements, giving the employers tax relief from charges. Waiving eligibility requirements would allow more claimants to get paid,” said Rush. “Thus, more claimants getting paid meant more money coming out of the trust fund which equated to more people receiving money. And, this equated to more people having money in the economy—therefore, being able to have a positive immediate impact on the economy with money being paid out.”

By being well informed with analyses, MDES was also able to develop strategies for assisting businesses in the reopening process as they bring their employees back to work, as well as strategies for determining how and when businesses would start back making contributions to the UI trust fund.

Months after the pandemic began, the unemployment rate has been decreasing. In October 2020, the rate was around 7.4%, compared to the 16.3% rate in April. According to Rush, to date, the state has paid out approximately $3.1 billion between the CARES Act fund and the state UI trust fund. Though the state is still navigating the economic effects of the pandemic, MDES is confident in its ability to work together with partners like NSPARC and efficiently make informed decisions that impact the lives of the people of Mississippi.

“This situation reaffirmed our view in the value of what NSPARC does for us,” Garrett said. “It’s a big help to have calculations to help us and let us know where we are and where we need to be as far as our trust fund and all of the UI benefit expenditures. We were able to get timely information that helped the state to maintain trust fund solvency and provide tax breaks to businesses across the state.”
Learning Cybersecurity Skills and Techniques Through Hacking Competition

Article by Cassidy Gilbert

Though hacking has negatively impacted countless computer systems across the world, hacking is now serving as an avenue of experiential learning and professional development in the field of cybersecurity. Mississippi State University's National Strategic Planning and Analysis Research Center (NSPARC) has partnered with Terminix (a pest control company based in Memphis, Tennessee) for the second year to host the virtual hacking competition, Capture the Flag (CTF).

What is CTF?
A nationwide hacking competition, CTF pits teams against each other to accomplish a variety of tasks including web exploration, network forensics, and reverse engineering. This competition requires critical thinking, which fosters a hands-on learning experience for students and professionals to learn new skills in cybersecurity.

NSPARC security and compliance GRA Trey Hubbard explained how hosting a CTF competition came to fruition as an experiential learning and professional development opportunity for GRAs, students, and employees at NSPARC.

"CTF at NSPARC spawned from leadership wanting to have a challenging competition that taught critical thinking skills as well as basic security principles," Hubbard said.

Leadership Encourages CTF
Leading up to the CTF event, NSPARC leadership encouraged employees to take a break from their normal day-to-day responsibilities and take part in the hacking competition.

"This type of event was a great way for our employees to hone their existing cybersecurity and hacking skills," said Craig Shorter, NSPARC manager of security and compliance. "It also allowed them to learn new skills that they will be able to apply in their daily duties here at NSPARC and in future career endeavors."

Planning During a Pandemic
Hubbard, along with Sarah Hahn, information security analyst at Terminix, began planning the 2020 CTF event in late February before the COVID-19 pandemic.

"When coordinating this event, communication with Terminix and MetaCTF was crucial," Hubbard said. "We had to make sure all of us [event coordinators] were communicating the same information and that we had everything planned months ahead."

Having previous cybersecurity experience was not required to participate in CTF, which made the competition a great way for employees in other departments to learn about cybersecurity, gain knowledge of a different field, and learn new techniques.

MetaCTF is a software company that creates hands-on, interactive, and learning-based competitions on cybersecurity for companies across the country. These competitions cover a variety of topics, designed to teach new skills, and enhance teamwork.

In 2019, NSPARC and Terminix’s CTF competition was held at Terminix headquarters in Memphis, with the choice of taking part virtually. Thirteen teams participated in the 2019 competition. Due to COVID-19, the 2020 competition was held fully online, and a total of 110 teams participated from around the world.
Hahn believes the significant increase was due to the virtual aspect, as well as hosting the event during U.S. daytime work hours—from 10:00 a.m. to 5:00 p.m.

"[It was important for us to keep in mind that] employees have pre-planned deadlines to meet and that students have other engagements when choosing a timeframe," Hahn said. "[We decided] hosting the event during work hours would allow employees to develop stronger relations with members on their teams and not forgo their weekends."

Participating in CTF
Twenty-one NSPARC employees participated on six teams in the 2020 CTF competition. Team Null Pointers ranked the highest of all the participating NSPARC teams, coming in sixth place overall. Through CTF, NSPARC participants were able to improve problem solving skills, gain exposure to activities outside their routine, and experience team bonding.

NSPARC security and compliance GRA Bidhan Bashyal participated for the first time in the 2020 CTF. He found the competition to be fun, challenging, and a great way to hone his cybersecurity skills.

"CTF focuses more on the offensive side rather than defensive side [of cybersecurity]. Some of the offensive [tasks] were the scavenger hunt, finding bugs in web applications, etc. These tasks are very similar to my day-to-day work," Bashyal said. "Although I had taken various security classes, different tasks in CTF were new to me."

CTF also provided NSPARC participants with an opportunity to work with members of the leadership team in a more personable fashion.

NSPARC Programmer Analyst Matthew Sorrell was a part of Team Null Pointers with Deputy Executive Director Martin Duclos and Associate Director of Design and Development Jonathan Barlow.

"It was a lot of fun to work with my team members outside of NSPARC-related work," Sorrell said. "Martin and Jonathan really carried the team by earning most of our team's points. I do not get to work with them very often, so it was a really cool experience working closer with them. I was impressed with how knowledgeable everyone on my team was."

Sorrell emphasized how getting involved in the 2020 CTF encouraged him to think outside the box and analyze software code in different ways.

"I learned a lot about different vulnerabilities and exploits that hackers use," Sorrell said. "This new knowledge will help me develop software that is more secure and at a higher quality."

Hubbard not only planned CTF, but he also competed in both CTF events. He believes that the most important component of the competition is critical thinking.

"Knowing about a specific aspect of a system is great but knowing how to use it and figure it out on your own is even better," Hubbard said.

Hubbard enjoyed watching people work through difficult problems and find solutions. He asserts that this is the reason for planning and
participating in this competition—hitting a roadblock and finding a way to get through it without quitting.

Growing the CTF Competition
NSPARC’s goal for CTF is for the competition to grow and include a wider range of participants in coming years. NSPARC Systems Analyst Collin Graff believes that to get more people involved in CTF, they must first understand what the competition is all about.

“I think a lot of likely participants heard IT and security and thought ‘that’s not for me,’” Graff said, “but there were a lot of different puzzle categories, and anyone with a little patience and the ability to Google could contribute to the team, even if it was just to start researching the problem for a teammate to pick up later.”

Though the hacking competition provides many techniques for participants without security experience, CTF is one of the most exciting ways to educate people about cybersecurity. Through this hands-on experience, NSPARC encouraged its employees, GRAs, and student workers to pursue different avenues of cybersecurity, hone existing skills, and gain knowledge of a different field. While no date has been confirmed for the 2021 CTF competition, NSPARC is looking forward to providing more innovative experiential learning and professional development opportunities in the near future.
Each member of the communication department is a member of the Public Relations Association of Mississippi (PRAM), the Starkville-MSU chapter of PRAM, and the Southern Public Relations Federation (SPRF). Each year, these organizations have an awards competition to recognize the top programs and projects in the field of public relations. Starkville-MSU PRAM hosts the Bulldog PRism Awards; PRAM hosts the PRism Awards; and SPRF hosts the Lantern Awards. Each competition has the same submission guidelines that require the PR practice of applying the four-step process—research, planning, implementation, and evaluation (RPIE)—to their work. Though professionals and students can enter their work at any competition level, a common practice is to first enter the local awards, receive valuable feedback from the judges, and make adjustments to entries prior to submitting work to the next awards competition.

“Tak[ing] local, state, and regional competitions by storm”

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“My goal was to have everyone in the department submit their best work into the Starkville-MSU PRAM chapter Bulldog PRism awards, and then go from there,” McPhail said. The team won ten awards out of 11 submissions. From there, the team was able to adjust their entries and prepare for their next awards submission.

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For the state PRism Awards hosted by PRAM, the team submitted ten entries and won awards for each. Unfortunately, due to the COVID-19 pandemic, the in-person PRAM state conference and award ceremony were canceled. However, winners were recognized in a virtual ceremony on July 22, 2020. The communication team joined a prestigious group of past winners who have significantly impacted public relations throughout the state and region.

“Out of many outstanding submissions, our judges found NSPARC’s work to truly set a new standard of excellence for all practitioners,” said Rob Pettit, vice president for awards programs with PRAM.

After receiving their scores and feedback from the judges, the communication team went a step further and submitted their work in the 2020 Lantern Awards hosted by SPRF. The conference including the awards ceremony was held virtually on September 14, 2020 through the virtual event management app, Whova. The communication team won a total of nine awards—one Lantern Award, six Awards of Excellence, and two Awards of Merit.

Boatner, Price, and Stevens won three of the six student awards presented. This opportunity allowed both the professionals and students to gain valuable insight, skills, and a new perspective toward writing.

These competitions have been enriching to both professional employees and student workers.

Lewis received multiple awards including an Award of Excellence at the local level, a PRism Award at the state level, and an Award of Excellence at the regional level for her Nexus article, “Data and Technology Sparking a Highly Skilled Workforce of the Future.” Lewis, along with collaborative efforts from McPhail, Sobayo, Price, Stevens, and Boatner, received an Award of Excellence at the local and state levels for their contributions to the Fall 2019 issue of Nexus magazine.

“To be recognized for the hard work we collectively put into producing the magazine was an amazing experience,” Lewis said.

Sobayo contributed to each winning entry by ensuring each project’s collateral had visual appeal. He was also recognized for his work on the Data Summit 2019 video and mobile app—a collaboration with former NSPARC developer Nathan Ansel. Sobayo took home a combined total of six awards.

“The feedback I received from each competition helped me identify the areas that we were lacking design-wise,” Sobayo said. “I was able to make corrections throughout the competitions that improved the overall structure and design of each entry.”

The student workers were able to use this experience to sharpen their writing skills, learn more about the RPIE process, and adjust to displaying their work on a competitive level. Price, Stevens, and Boatner have since graduated with bachelor’s degrees in communication and are now seeking their master’s degrees at MSU.

Price was recognized in each competition for her Nexus article, “Creating the Portal to Kindergarten Readiness,” where she highlights the importance of standardizing the quality of child care centers in Mississippi by using the Provider Integrated Portal (PIP) developed by NSPARC. Her article earned her a Top Dawg Award and Bulldog PRism Award at the local level; a student PRism Award at the state level; and a student Award of Excellence at the regional level.

Stevens not only received recognition for her work on the social media campaign, but also for her Nexus article, “Data Summit: Expanding Data-Driven Conversations Across Multiple Industries.” She earned student Awards of Excellence at the local and state levels. Stevens and Boatner gained valuable experience that improved their collaborative and writing skills when working with complex data.

Although the RPIE process was very challenging due to the extreme importance of detail and planning, Price felt confident in her work because of constant encouragement she received from her team.

“The overwhelming support of my coworkers and supervisors through this process as well as after each award ceremony was unbelievable,” Price said.

Under McPhail’s guidance, Price also collaborated with Stevens and Boatner on the #DS2019 social media campaign and won a student Award of Merit at the local level; a student Award of Excellence at the state level; and a student Award of Merit at the regional level.

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“‘All in all, I really enjoyed working on the social media campaign. I was able to take part in all four aspects [RPIE] of creating the campaign,” Stevens said. “This experience taught me a new perspective on how to approach my writing in the future.”

Price, Stevens, and Boatner met with McPhail on a weekly basis to discuss strategies, create content, and develop effective messages.

“This process helped improved my writing skills. It challenged me to write in a more analytical and timely manner, considering tight deadlines,” said Boatner, who is now a graduate assistant with the Office of Research Development at MSU. “It made me think on a higher level and be more open to learning about various writing processes and their benefits.”

McPhail was proud of her team for taking initiative and representing NSPARC well.

“I’ve had the privilege of seeing the students and my staff take true ownership of the things they are creating and showing them off to their peers,” McPhail said. “I love it when they realize they can do better and challenge themselves to do so, and they’ve all come a long way. It keeps me on my toes, so I
don’t become complacent in my own work.”

Among multiple accolades at each level, McPhail won a state PRism Award and a Lantern Award of Excellence for her Nexus Fall 2019 article, “Women in Mississippi & East Africa Unite to Fight Issues Facing Girls & Women Worldwide.” She, along with team members Libbi Havelin and the Data Summit committee, won a state PRism Award and Lantern Award in the special events category for organizing Data Summit 2019.

The hard work and success of NSPARC’s communications team is inspiring.

“I love seeing my team truly come together to make each other, our department, and NSPARC shine,” McPhail said. “They embrace the concept of teamwork and celebrate each other’s successes.”

As the year 2020 came to a close, the communications team had set a new standard for NSPARC as well as public relations professionals throughout the state and southeast region of the U.S. The team is now preparing for the new awards season and is looking forward to one day competing at the national level.
Smith: There are a lot of moving parts to NSPARC. How would you describe NSPARC in simple terms?

Grice: NSPARC is a data science organization that works to make data actionable. Simplifying the work we do at NSPARC has been a challenge for the past 20 years, although the concept is straightforward: take research and make it applicable to everyone. In practice, NSPARC works with data and translate it into information that people—not just other academics, not just agency heads—can benefit from it. The goal is for everyone in Mississippi to be able to find value in our research to improve their quality of life.

Smith: Describe the solutions offered by NSPARC.

Grice: One of the cool aspects of NSPARC is that we do work in a lot of different areas. Traditionally, our wheelhouse has been workforce and economic development. We also have experience in digital government which is the idea of creating a solution, information, or an actual software product that aids agencies or entities, for example, in delivering their services more efficiently, faster, and broadly.

Mississippi Works is one example of the software products that we create. This innovative solution was built on the robust understanding of how Mississippi’s labor market works to connect people to jobs. We have also created a system that allows child abuse reporting to be easier and anonymous.

Some of our other products include Job Scout, which is a career exploration app for Mississippi students, and the Hub, which is a centralized data exchange system that connects multiple state agencies.

NSPARC strives to create products that help universities and agencies better serve their clientele.

Smith: What was it like transitioning to interim executive director during a global pandemic?

Grice: I had the unique opportunity to be named interim executive director at NSPARC during the week that the U.S. began shutting down from the global pandemic. Stepping into this role at that time is one of those lots you draw, and you do the best you can with it. The nationwide shutdown made this opportunity even more interesting in many ways, but there were a lot of challenges to be met for me.

In mid-March 2020, we were able to organize in short order when the university made the decision for employees not to return to the office. We had already spent the previous year preparing for this type of event. We made sure that we had plenty of equipment for employees. We had undergone many mock exercises to ensure our employees could work remotely if they were ever in a position to do so.

From this experience, I have learned that NSPARC was well-prepared for this sudden transition and has the right people at the center that allowed us to continue to be productive. The way we have typically operated at NSPARC over the years is to be forward-thinking and imagine what could be—what the possibilities are. We were in excellent shape to handle the sudden work from home situation.
Smith: What are some of the innovative COVID-19-related strategies and solutions that NSPARC has been able to develop?

Grice: As you might imagine, the COVID-19 pandemic has disrupted how many people do business. It not only impacted us when we moved to a work-from-home model, but it also impacted our established clients, many of which were state agencies. They found themselves having to address greater needs from their clients. We assist the Mississippi Department of Employment Security (MDES), the Mississippi Department of Human Services (MDHS), and other departments that serve those who have a specific set of needs. This pandemic significantly increased that need in a hurry. One of the ways NSPARC rose to the occasion to help Mississippians and the agencies that we have long-standing relationships with was to modify some of the systems that we designed to better handle the volume of information that clients would enter into each system. We also bolstered our rapid response research team to provide information to agencies with little turnaround time.

As a result of the pandemic, NSPARC used our decades of experience with modeling, forecasting, and sophisticated economic analysis to produce information that was made quickly available to agency directors and members of the Legislature, and used by the Governor’s Office for short-term policy development purposes.

The work we do to support Mississippi’s unemployment insurance program is probably one of the best examples of our rapid response research. The information that NSPARC produced included forecasting Mississippi’s trust fund balance so that we knew how long the state could go and still pay unemployment insurance benefits for people. This information also impacts tax rates for businesses. It is very important work—being able to determine precisely how much you can pay, how long you can pay that, and then what it looks like on the back end when businesses have to start making the trust fund solvent again.

Smith: What are some of the common misconceptions about NSPARC?

Grice: There are a handful of common misconceptions about NSPARC. One misconception is that we are a private enterprise. Rather, we are a research center at Mississippi State University, and several of us have been at NSPARC from the beginning and have been a part of the University for over 20 years. Our research center is a part of the Office of Research and Economic Development and works closely with the vice president and associate vice presidents in that office. Another point of clarification is although NSPARC is the state data clearinghouse, the architect of the State Longitudinal Data System (SLDS) also called LifeTracks, and the entity that manages data and conducts research for LifeTracks, it is not the only thing NSPARC does. We are a full-fledged research center at the university. We conduct research across a variety of areas.

One other point I would like to make is a lot of people with a general understanding of NSPARC say, “oh, NSPARC creates software,” Absolutely, yes. NSPARC does create software, but the root of the software is in data science. NSPARC focuses on thinking about how to better collect and understand information to make an impact on how agencies conduct their business, so people are better served. We are not a typical software design shop, although designing and developing software is a big part of what we do here at NSPARC.

I believe one thing that might be difficult for some people when they conceptualize what a university research center does, is how the center decides what to research. At NSPARC, there are several ways that we choose a research path. We stay with our core mission, which is workforce and economic development, but also pay particular attention to how one collects, manages, and analyzes data.

Smith: What are the key attributors to NSPARC’s success?

Grice: The key to NSPARC’s success is its people. We have talented professionals from a wide variety of fields and places in the world that have come together to create an atmosphere where people can be creative, innovative, and excited about the work they do each day. There is always someone at NSPARC who can help solve any problem or explore an interest that you have.

Smith: The art of storytelling is often expressed as a priority at NSPARC. What is your opinion on the importance of correctly telling a story when it comes to translating data?

Grice: I would say that the art of storytelling is essential in research, and it is extremely important to NSPARC. Why is it important? We spend a lot of time analyzing very complex datasets and answering questions that may not be the kind of questions that people think about every day. However, the solutions that we provide impact people across Mississippi and the country. The key is to be able to tell a story with the data. This story isn’t fiction. It is nonfiction, and explanation of the data is key. You must have the ability to take very complex ideas and explain them in a way that everybody can understand the value of the information.

Smith: NSPARC has the talent, resources, and vision to help improve the lives of Mississippians. How do you see NSPARC taking advantage of these assets to sustain growth?

Grice: NSPARC has always taken pride in making Mississippi a model for the nation. Over the past 20 years at MSU, NSPARC has been fortunate to have created a team of experts who have found a home in Mississippi and developed additional data and software expertise to help Mississippi tell its
story. Something that we have always stressed with everybody that we work with in the state is that it is important to understand where you have been and how you want to move forward. We work diligently at NSPARC to help make sure that everyone can tell their own story.

In terms of sustainability, Mississippi is working on initiatives that can serve as models for the nation. The state is very progressive despite what others outside the state might believe to be true. NSPARC has been allowed to work on projects that might not have gained traction in larger states. We do some of the most innovative work related to unemployment insurance forecasting in the country. We have also created case management systems that don’t exist anywhere else. We have created other innovations that put Mississippi at the forefront of digital government, human services, unemployment insurance, and many different areas of applied research.

Smith: As interim executive director of NSPARC, what does the future of NSPARC look like to you?

Grice: NSPARC has a solid foundation that has been built over the past 20 years. We are at the point now, where we can start going in many directions. Part of what I imagine NSPARC doing is expanding our national reputation and highlighting our individual researchers. We have done work in a handful of other states, but I believe there are projects that we are working on today that have national importance. I have been able to witness the growth that NSPARC has done over the years. I hope to develop much stronger collaborations with other units on campus. We now have the ability to integrate NSPARC’s talent and expertise into projects that we have not been as involved with in the past.

Smith: What are you most excited about regarding NSPARC?

Grice: For me, it’s the work that gets generated here and is shared with state agencies and impacts so many people. Part of what makes me feel confident about our work today is that we can do it in the background. We don’t have to have a shining marquee that says, “NSPARC did this.” We are helping people be better at their jobs and ultimately help other people have better days.

One of my favorite stories that I have shared with several people is about one of our entry-level programmers. After graduating from MSU, he worked for a couple of years and was looking for his next big opportunity, and he applied here at NSPARC. We hired him and after a couple of months, I chatted with him about his experience. He told me, “Dr. Grice, I love this job because I get to help people. Before, I worked for a company and part of what we did was generate spam to convince people to buy things. But, at NSPARC, we are really working to make a difference in people’s lives.”