



Non-degree Credentials Research Network

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NON-DEGREE CREDENTIALS RESEARCH NETWORK (NCRN)
GW INSTITUTE OF PUBLIC POLICY
THE GEORGE WASHINGTON UNIVERSITY (gwu.edu)

ABOUT THE NON-DEGREE CREDENTIALS RESEARCH NETWORK (NCRN)

The Non-degree Credentials Research Network (NCRN) is a community of approximately 400 researchers and research stakeholders representing a wide range of organizations, including universities, community colleges, training providers, think tanks, government agencies, and membership associations who come together to learn about and share the latest research on all types of credentials. NCRN members study all types of credentials, focusing on credentials other than associate, baccalaureate, and graduate degrees. Credentials of interest include but are not limited to, certificates, certifications, licenses, apprenticeship programs, and digital badges.

This compendium contains transcripts from four key panels of the NCRN's 2023 Spring Conference, held on March 27th and 28th at the University Student Center on the campus of George Washington University in Washington, DC. Selected panels brought together experts on research and policy issues related to non-degree credentials. Transcripts in this compendium were edited for readability and clarity.

For more information about the NCRN, please contact Kyle Albert at the George Washington Institute of Public Policy (kalbert@gwu.edu) or sign up for email updates through the NCRN's webpage (<https://gwipp.gwu.edu/non-degree-credentials-research-network-ncrn>).

NON-CREDIT HIGHER EDUCATION: RESEARCH AND DATA NEEDS

MODERATOR

Kyle Albert, George Washington University.

PANELISTS

Becky Klein-Collins, Council on Adult and Experiential Learning
Julie Uranis, University Professional and Continuing Education Association
Michelle Van Noy, Rutgers University
Ann Kellogg, Maryland Higher Education Commission

Becky Klein-Collins: The Council on Adult and Experiential Learning (CAEL) is a membership organization, which forces us to do research with a strong focus on what is going to help our members in their work in supporting adult learners and workers wanting to improve their career options. Our members need lessons and recommendations that they can put into practice or use as a guide if they're wanting to do something similar. That's how we approach this question of non-degree credentials in community colleges. For this work, we recruited 10 of our member institutions which are community colleges working in this space to identify some best practices in developing, operating, and sustaining short-term programs. We focused on programs that were one year or shorter in length and tied to specific occupational opportunities for adults, keeping in mind the quality frameworks that we've been hearing about from various organizations like New America and the National Skills Coalition.

For those of you who are not familiar, there are multiple quality frameworks for non-degree credentials. The National Skills Coalition has one with four criteria; New America's has five. These criteria include things like whether the credential leads to high-value job opportunities, whether there's mastery of specific competencies related to that occupational pathway, evidence of employment and earnings outcomes associated with that learning, and stackability. Quality non-

degree credentials in general shouldn't be "one and done," but rather learners should be able to access opportunities like associate and bachelor's degrees. In addition, we analyzed our findings with a strong emphasis on equity; when we talked to these ten institutions, we went into detail with them about how they're approaching the question of equity in terms of who they're serving, and how well they're serving them.

Community colleges are a real economic driver in most communities. They exist to serve the needs of their community, including from an economic development perspective. We want to know how they approach prior learning and informal learning. We learned a lot about their practices, including equity-centered practices and their understanding of outcomes and impact. During these conversations, data came up frequently. We asked how institutions are using data, what are they doing that is not informed by data, and what their greatest challenges are in using data.

There were four major data challenges. The first was the use of labor market data: how do they use labor market data to determine which kinds of programs to offer? Do they remove programs that are no longer demanded by the local labor market? Do they even have a process for making decisions? In some cases, we were really encouraged by the systems that existed. Probably Dallas College was the one that had the most robust, institutionalized systems for using this data. We encountered some

interesting cases of programs in rural areas focused on oil and gas extraction, which is currently an industry in decline. In a couple of cases, these colleges were working with an energy company to transition their curriculum to focus on renewables. But that's not happening everywhere, and we found that colleges must be creative about how they make existing programs better align with labor market demand.

Labor market outcomes are another big data mystery for many colleges. Some are able to access state unemployment insurance (UI) wage records, but not all, and when they do access that data, it comes back in aggregated form. So, institutions are relying more on alumni surveys. There's also the "vote with your feet" method of collecting data, which is where you measure the percentage of employers that come back and hire more employees from you.

There are internal data systems. One interesting thing we noticed in our research is that often institutions will launch for-credit and non-credit programs at the same time. The non-credit will be ready to launch in 6 weeks, whereas it can take up to 18 months to get all the approvals for for-credit. We're also doing a better job of making sure that institutions can recognize when returning students re-enroll and making sure that there is good data on student demographics on the non-credit side. We need good data on the CTE and non-credit sides of the institution on demographics to be able to ensure that there are no gaps in equity. If necessary, we need to be intentional about recruitment to make sure that the demographics of those who enroll reflect those of the broader community.

Julie Uranis: The University Professional and Continuing Education Association (UPCEA) has been around for a long time. We have over 400 institutional members. Across our members, there are at least 13,000 individuals doing work in this space. We bring them together regularly for a lot of reasons, including figuring out how to convey the value and importance of non-degree credentials on university campuses, where degrees are the coin of the realm. As you can imagine, those conversations must be driven by research while really sharing the benefits of non-degree – how

non-degree credentials can create access points to the institution that previously may not have existed.

We have a model of how non-degree credentials should ideally be integrated into the curriculum for our members. We encourage members to build an architecture that creates non-credit to credit pathways and incorporates prior learning. Learning what was assessed or validated at another institution should count towards a credential – just assigning general elective credit doesn't really speed progress toward a degree. Cultural change is necessary. We need to find better units of measurement: clock or credit hours don't work well for non-credit. We need to have a conversation about what the appropriate units of learning in non-credit are. This is especially tricky when you have employers as a stakeholder in non-credit programs – they often just want to have a sign-up sheet at the door and take attendance, without tracking learning. Some employers care about performance, but others just seem to want to document attendance for compliance purposes.

When we think about the data issues with non-credit education, we need to remember that some of the non-degree and non-credit offerings in universities are highly transactional. If you ask for a social security number to enroll in a one-hour Microsoft Excel training course, you'll get pushback. For short courses, there's a legitimate fear that you'll lose registrations if you try to force people to provide personal data. In extreme cases, the decision not to collect personally identifiable data means that institutions are not putting programs on WIOA Eligible Training Provider Lists (ETPLs) that would otherwise be eligible. So, there's a long way to go before we have data systems that are going to allow us to effectively track the labor market outcomes of short courses for many institutions.

Michelle Van Noy: I want to share with you today something about a project that I am working on with several colleagues from other universities focused on community college non-credit education – specifically, building the data infrastructure to support the non-credit ecosystem. It's probably not news to anybody that there's a lot of interest in these data, and we've had a lot of good efforts to improve

data collection nationally including through IPEDS (the Integrated Post-secondary Education Data System). Even though IPEDS won't be mandating collection this year, there's now much more interest in data systems in individual states.

Our research project is based on the observation that there are some states that do have data on non-credit education. We decided to look at the types of data they have. How is non-credit data measured? Understanding that measurement and the decisions behind that is key to our project. How is non-credit measured, conceptualized – what exactly is “non-credit”? What are the program offerings? And what kinds of data exist? Our vision is that through our research, states will learn from each other and build some consistency in how they're collecting data, by seeing what's being done and trying to come up with some commonalities through that work.

I'm lucky to work with a great team of researchers who have been studying these questions around non-credit community college education for a long time, including Mark D'Amico of the University of North Carolina - Charlotte, who's here with us today; Peter Bahr, from the University of Michigan; Di Xu from the University of California - Irvine; and Anjali Srivastava at Rutgers, and then we have a great first round of state partners: Iowa, Virginia, and Louisiana.

What are goals of the project? The first goal is just trying to better understand non-credit. We are asking States to share some data with us, but not data on individual students. We're mainly interested in the program offerings on which they are collecting information. We're just trying to analyze the program offerings and understand the landscape of non-credit programs. We want to build a more common taxonomy around non-credit across our partner states. What is the common language that we can learn from these different States in terms of how they define and measure and talk about non-credit? We're right in the middle of answering that – we've now generated reports from the first 3 states that we're working with and are looking across those states and generating some cross-state findings.



One important goal of the project is to share these lessons more broadly. We've been incredibly impressed by the amount of interest from states in doing this work, and we have a learning community that we've created, and we're for happy to see. We've got over 30 States that are been involved in quarterly meetings just to share lessons. Our partner states have been sharing what they've done with other states. We're sharing what we've observed from analyzing their data and just try to generate conversations and connections between all these States that are engaged in this work. And, like I said, I think we've been really impressed with a lot of interest and movement in states in this area. So maybe we shouldn't all despair – the data is hopefully coming!

There are several phases for our work. We started off with some funding from the National Science Foundation to do an initial pilot, examining our first three States, and we're working on some other reports that synthesize across those states. We're moving into a second phase of the project with additional funding that to bring more states into that work, including a mix of states with established and more emergent data systems, data systems that may be in the planning phase. Eventually, we're hoping and planning to expand into another phase of this work where we're going to do a scan of all states. We won't be going into as much depth with the remaining states, but we will be doing a scan of who has data and what stages they are in their data and development as well as where they are in funding their data systems.

Eventually, we'll want to move into using student data, looking further into student experiences, and tackling the question of quality, which, of course, is the next logical question. In the long run, we want to be able to situate non-credit in the larger ecosystems of university credentials and non-degree credentials. There are a lot of data sources that need to be pulled together for us to really understand this landscape; we decided to start with community colleges, but they're just one part of this larger ecosystem.

What are we examining when we say we're looking at the program offering level? We're looking at basic things like the field of study and the type of program? Is it occupational, or is it contract training? Is it basic skills or pre-college? When you look at community college non-credit education, it could be many things.

We're not necessarily trying to quantify outcomes, but just see if outcomes data is collected and available. An interesting element here that we're able to gather is information on instructional characteristics. How long are the programs? Are there admission requirements? What about funding and finance information on enrollment? And, of course, we want to know if there are identifiers in the data that would permit us to someday link to wage data.

We have some initial findings. One is that data systems vary in the extent to which we can disaggregate between programs and individual non-credit courses. We're using the term "program offering" to be clear that a data system could have data at either unit of analysis. We're also seeing that states are finding innovative use cases for these data. They're moving step by step, gradually creating linkages to licensure and wage data. And they're using these data to make the case for supporting non-credit programs. Iowa is a good example. They've been taking the time and putting in the effort to build trust and partnerships between and across departments, including the state's education department, workforce development, and other state agencies. They've also invested heavily in using the data for analysis. There are a lot of useful, publicly available reports using the data on the

state's website. Virginia is another interesting case; data is essential to how they're funding programs through their Fast Forward program – the outcomes data they collect is used to direct funding to high-performing non-credit programs. Louisiana is also interesting; they've managed to get their community and technical colleges to move away from a separate non-credit data system to an integrated system for tracking credit and non-credit enrollment – that's a game-changer in terms of tracking how people move across the credit and non-credit domains.

In short, improving data collection on non-credit is not impossible. It can be done, and states are making huge progress in recent years. We have a lot of information on our website already about the landscape of non-credit program offerings, and more data and analysis is coming soon. And we're always looking to build partnerships with more states; state officials can contact our team to participate in our work.

Ann Kellogg: I'm here to present an overview of Maryland's efforts to collect non-credit data, which have come a long way in recent years. Our General Assembly wanted to know more about the non-credit world in Maryland, and we (the Maryland Higher Education Commission) constantly raised concerns about feasibility. But then, the state started to put money behind non-credit data. We also have a Maryland Promise program that was extended to non-credit education. As state dollars started to back non-credit education, there was really no choice but to figure out a way to improve data collection. But the most important support came from the community colleges themselves. The state really sprang into action when our community colleges spoke up about wanting to have their work in the non-credit space recognized by the General Assembly.

We started our data collection by looking at the end product, which maybe seems counterintuitive. The first data collection we undertook was about people who completed a workforce sequence, or, as we call it, a course or course sequence. It was very messy trying to think about people who start something and don't finish it. But ultimately, it was much easier

to start with people who had finished something. We knew they were done. We knew it was accomplished. We also focused our first efforts on activities at our community colleges, in part because of the need for data to inform funding for non-credit via Maryland Promise https://mhec.maryland.gov/preparing/Pages/FinancialAid/ProgramDescriptions/prog_MDCommunityCollegePromiseScholarship.aspx. So, it really made sense to focus our work there, and not think so much about the larger non-credit world that includes universities. We found that it was a lot easier to get started on data collection when there was a specific need to evaluate the impact of policy choices.

We already talked today about the dreaded unique identifier – the social security number. Some institutions were candid with us that it just simply wasn't going to be possible to collect social security numbers. We could have tried to force this issue, but we realized we were just never going to get anywhere in our data collection efforts if we insisted that the only thing that we'll accept is a social security number. So, we simply communicated to institutions that what we really care about is that you have a persistent identifier of some kind, a code that follows the student in some way, shape, or form so that if they come back and take additional education, we're able to link that and see that progression through different records.

One of the things we focused on in this collection was having more robust data in general because the MLDS (Maryland Longitudinal Data System) can do a lot of sophisticated algorithms for identity, matching, and reconciliation across collections. We decided that our interest was less about social numbers and more about having a key demographic string - a solid first name and last name and date of birth - because that does a lot for us.

Colleges were also doing a lot of different things in terms of how they measure enrollment. We've learned over time that it can be problematic to ask institutions to translate concepts themselves, even with guidance. So, we decided to go ahead and meet institutions wherever they are, and just record whether it's contact hours or something else that we

can convert on our end. This reduces the burden of reporting data, which is a real win for us.

We also realized that a lot of the definitions in IPEDS, which is really designed for the for-credit world, just weren't going to work for non-credit. We had anchored a lot of our data collections around IPEDS to develop a common language, and so there were several variables that we had very specific definitions in our other collections. Could we use those same data elements, or do we need to develop new ones like citizenship that are very specific?

The residency was a critical definition to work through because residency is more about the tuition rate that you're paying than it is about where you physically reside. And so, it was another place where that had mattered a lot to us in the for-credit world, and we realized that we wanted to have an equivalent in this data collection, but really, we had to rethink what it meant.

Another thing we did that really helped us was relaxing data standards. If we waited for systems to be perfect, we'd have to wait another five to ten years. We had to accept that there would be a high rate of missing data in these collections and engineered some flexibility into the system so that we were accepting higher rates of blank entries when it came to things like race because they simply don't even have a way to record it or capture it at this time. We also became more forgiving of issues with CIP (Classification of Instructional Programs). There were data fields that institutions simply didn't have, and we said that it would be OK to have missing data at first. It was more important that we made incremental progress that wouldn't have been made if we waited for perfection.

I want to share with you what these collections looked like on a high level. Again, we got from inception to completion in the space of two years, and frankly, I think that's pretty good to get 16 community colleges moving along to submit data that quickly. But it was really in part because in Maryland it was very driven from the ground up, not top down. The Maryland Higher Education Commission wasn't necessarily pushing this; we let

the colleges drive decision-making. We partnered with them to facilitate data collection, but we made a point of giving them space to show their expertise. We also think that it was helpful that we referred to the first years of the collection as a pilot. That helped reduce the pressure, to make clear that there was tolerance for missing or imperfect data.

I can't say enough good things about the 16 community colleges in Maryland. They were all outstanding partners throughout the process. Maryland is very fortunate that we have a very robust longitudinal data system, and these data are now shared with the MLDS – which enables matching to a lot of other data collections, including from the K-12 education system. We're now past the pilot stage, ready to think about scaling this data collection to universities and other higher education institutions. We'll continue to enhance this data with the support of a Workforce Data Quality Initiative (WDQI) grant from the Department of Labor. Please feel free to reach out if we can share our expertise to help your state work through the issues we faced!

NCRN Member: Ann, you had a chart on one of your slides showing how Maryland is linking together data from different agencies and one of the sources noted was computing certifications. Professional certifications are of major interest to many of the people in this room, and we've often wondered how we can improve data collection and find better data about who's earning these certifications. As you know, many certification bodies don't report lists of certified individuals to a centralized source. Can you say a little bit more about where that's coming from, and the scope of coverage that will be that will be there?

Ann Kellogg: In 2018, the State of Maryland passed the Career Preparation Expansion Act, and that legislative authority helped us invest in data collection. The law required that anyone doing business with the State of Maryland has to share credential information. So, essentially, it gives us the authority to collect all types of business licenses and any kind of occupational license. Maryland has about 20 separate boards that oversee different

types of licensing, so we are working with all of them to start bringing in data. We also have an initiative called "Computer Science for All," through which we were able to partner with Microsoft to begin getting Microsoft credential information. Therefore, anyone who's sitting for any of the Microsoft exams must provide their data back to the state.

NCRN Member: Can you (Ann) tell us more about how other types of institutions will participate in data collection? Also, how are legislators using the information being collected, or how do you think they will use it?

Michelle, can you tell us which other states have good data on non-credit enrollment and/or might be coming into your work going forward?

Ann Kellogg: We are just starting to undertake conversations with our four-year institutions. We did talk to them a little bit when we were developing our data system, but they weren't participating in those scholarship opportunities I mentioned so they weren't a high priority at the time. I will say that the initial work with community colleges has proven to be an important proof of concept. Four-year institutions are standing up and saying "Well, what about us?" I think there's going to be real progress with four-year institutions in the next year or two.

As for the second question about how the Maryland General Assembly will be using data, it's a great question but we don't yet know. We do file reports with the General Assembly. Some are legislatively mandated, which was an important motivation for collecting the data. We also do a few outreach initiatives with legislative services to help them with strategic planning. So even if the General Assembly isn't asking us, we're able to let legislative services know about the things we have.

Michelle Van Noy: We've confirmed New Jersey; other probable states include South Carolina and Oregon. However, there are many, many others that we're still talking with and trying to bring in. I think there's a surprising number of states that do have relevant data elements that we looked at yet. They haven't done any reporting or analysis on it,

so it's not necessarily visible. Other states are really trying to build systems up – Maryland is a great example. We know that there are other states out there with data, such as California, Texas, and North Carolina. We'll have more to report next year when we complete a scan of all 50 states.

NCRN Member: Sometimes there's a disconnect between how long things take and how long they should take. I'm just curious if you could talk about what a realistic timeline looks like for filling in the data on your projects.

Michelle Van Noy: It's going to vary a lot for each institution. For some, it's going to require some legal mandate to collect and report data.

Julie Uranis: I'd add that we should challenge our ed-tech folks to design better systems for capturing this data. For example, you can collect more data on a signup form for a pre-college program like a band camp. We can ask those questions so they're not sitting on spreadsheets that don't connect to each other. Another big variable is short-term Pell. If that passes, there's going to be an immediate incentive for many more institutions to collect more data.

NCRN Member: I have a question about the difficulty of collecting data in an uncooperative labor market. Couldn't this sort of data be used to make the case for the value of credentials – saying that we're going to find credentials that will aid in economic growth and recovery?

Becky Klein-Collins: Some of our work at CAEL is doing exactly this, figuring out which credentials are going to aid economic development. Community colleges can't collect data on local labor markets completely on their own. They must be working closely with economic development organizations in any market, with workforce agencies that are playing a role as well. Building a robust talent pipeline is a task that can't be handled by one organization alone. There are some very entrepreneurial workforce boards out there doing a great job of being collaborative and forward-thinking, but not every organization is that way. You need to have all the players collaborating.

WORK-BASED LEARNING

MODERATOR

Kyle Albert, George Washington University

PANELISTS

Lisa Lutz, Solutions for Information Design

Karen Elzey, Workcred

Amy Mackenroth, Dallas College

Tingting Zhang, University of Illinois

Lisa Lutz, Karen, Elzey, and Amy Mackenroth (co-presenting):

Let's start with how we're defining work-based learning, which provides structured opportunities for skills development within a workplace setting. As a form of workforce preparation, work-based learning programs have proliferated in recent years across many industries, including those that historically rely on traditional education. Work-based learning includes registered apprenticeships, other apprenticeships, internships, and anything that involves that connection to the workplace. These programs provide individuals with opportunities to develop valuable skills and gain experience relevant to a specific industry, positioning them for career entry and advancement through upskilling or reskilling

Work-based learning is important to a range of different stakeholders, which is why there's a discussion about creating a national standard for work-based learning. After sharing information about the development of the standard, we'd like to engage all of you in a discussion.

There are a lot of different flavors out there. As you know, probably the most common and the most well-known are apprenticeship programs. And, of course, there are registered apprenticeship programs as well as unregistered apprenticeship programs. What's different about registered apprenticeship programs compared to the other types of learning that we're going to talk about is that the registered apprenticeship programs have a standard around them. The Department of Labor

has clearly articulated standards in terms of how a registered apprenticeship program is developed and implemented. But what we're talking about today is less about registered apprenticeship and more about other types of things, which could include a pre-apprenticeship, an internship, a residency, or cooperative education. Work-based learning goes by a lot of different names.

The military has a workplace learning program called SkillBridge that's relatively new. It was mandated by law, but it led the Department of Defense (DOD) to develop its own standards. So, we'll talk a little bit more about that as we go forward.

Government: We've talked a lot today about the various government-sponsored work-based learning programs, whether it's through the Department of Labor with the Workforce Innovation and Opportunity Act (WIOA), the Department of Veterans Affairs and the GI Bill, or the Department of Education. GW has found over 50 different workforce development programs across the federal government in its research. At the federal and state levels you have licensing bodies that are interested in the types of learning that have occurred through a work-based learning program, because there's a possibility of using those programs to award credit for prior learning. And that's not unprecedented, at least as it relates to the military. There have been some initiatives underway where military training and experience have been accepted towards state licensure

requirements. Within the military, there is a long history of training with industry going back to the early twentieth century. But each one of the services has its own types of learning with industry. The army has probably one of the most robust where folks at specific pay grades or ranks can take a year and go work with industry. The program that I alluded to earlier, SkillBridge <https://skillbridge.osd.mil/> is somewhat unique. It allows individuals who are within six months of separating from the service to participate in an industry-led work-based learning program. They call them internships, apprenticeships, or pre-apprenticeships or training with industry. When that program was set up, they were forced to come up with some standards very quickly around work-based learning. What are the criteria that would be used for the industry partners who are offering the training? What's unique about this program, and what makes it so appealing to the industry partners, is that participants have access to their military salary and benefits while they're participating in the workplace learning program. And, in turn, the employer/industry sponsor basically must guarantee a reasonable expectation of employment. It's an interesting new model.

I will just mention too that within the military there is the United Services Military Apprenticeship Program (USMAP), which is a DOL-registered apprenticeship program. Service members who are in these programs earn credit for their formal classroom training within the military towards the classroom portion of the apprenticeship requirements and they get credit for their on-the-job training as well. That might be something to think about as we're talking about research opportunities: there are a lot of service members who enroll in the USMAP program but don't necessarily complete it. For some, it takes longer than their term of service because they haven't been given the work experience opportunities that would have been required. One of the things that the DOD is looking at is how they can give partial credit for partial completion of the USMAP program.

Academia: Some of you know that at Dallas College we've had a long-standing history of partnering with employers across the North Texas region, and then, more recently, over the last few years we've been able to scale some of our apprenticeship programs nationally. I think what we keep hearing repeatedly is. People need skilled workers, and they're not there. This is not a surprise to anybody in this room. From an academic perspective, degrees are a proxy for skills. We're moving toward integrating these non-degree credentials into degree pathways as well as continuing education pathways so that we don't have just a proxy for skills, but a way to truly measure those skills and demonstrate competency.

There's also quite a bit of movement within work-study circles to make sure that those work-study programs are not just sitting at a desk and answering phones, but they are participating in workplace learning that's aligned with their degree and their intended career pathway. There are a lot of opportunities to create competency-based workplace learning programs within academia on both the non-credit and credit sides.



INDUSTRY

With respect to employers, I would say that our experience is they've realized they must grow their own in many cases. For example, we've seen huge signing bonuses and employers poaching great employees from each other. More forward-thinking organizations are now integrating these programs into their talent supply chain and talent pipeline strategies. What we would like to do with this standard is to create an opportunity for third-party validation, so that we know that these programs are not just developed by a fly-by-night organization, but they have meaning. They are stackable and not just valid for that employer, but portable around the region and around the country.

Some of you are familiar with Industry-Recognized Apprenticeship Programs (IRAPS), which unfortunately came and went relatively quickly. They still exist, but DOL no longer recognizes them. It was unfortunate that they use the word apprenticeship within that term because I don't think that anybody, including unions who are typically the strongest apprenticeship supporters, would debate the fact that there are very strong work-based learning programs out there. As it relates to unions, in our experience it's not unusual for them to have work-based learning programs outside of the formal registered apprenticeship program. Oftentimes they'll create something called training-to-placement programs where they need to move people very quickly into an area where there's a significant labor shortage.

Why do we need a national standard for work-based learning programs? How do we define standards and why do we have them? Standards usually exist to protect health, safety, and the environment. And while we may not all be super familiar with standards, we all engage with standards every day. All the devices that you're on, regardless of whether you're on a Mac or a PC, can connect to the Internet because there were standards developed.

We already have standards related to personnel, for example, we have standards for professional certificates and certifications, whether through

the National Commission for Certifying Agencies (NCCA) or the ANSI National Accreditation Board. Those personnel standards exist to guide the development of those programs and lay out the processes that those entities should follow to create high quality credentials.

Similarly, we have accreditation within higher education, but we don't have any type of standard within work-based learning. And, as Lisa said, there are a lot of different types of work-based learning programs out there, and we're just going to get more and more of them. From the perspectives of students, employers, or government agencies, we have a very difficult time knowing what a learner got out of a specific work-based learning experience. The question is whether a standard could help us develop that process and guide quality programs that people and organizations can understand.

As we think about that, we think about the development. There are organizations out there called standards-developing organizations. One is ASTM International, which is in the process of developing an American National Standard for work-based learning. The process of developing a new standard involves several elements. There needs to be verified interest in developing a standard before moving forward. The drafting of the standard is then done by a subcommittee. We've already mentioned that there are a lot of work-based learning opportunities in existence. That means there are a lot of different entities involved, and you need different entities involved in that subcommittee as well to figure out what the standard should consist of. The subcommittee focuses on that specific technical area by drafting something that other people can review. That draft then goes into the review and comment period where the chair of the Task Group puts out the standard to others for several processes of review and iteration.

Through this review process, you get comments from people in government, employers, labor, trade associations, and other organizations. This is a voluntary, consensus-based process. After the review and comment period, you have a final vote.

People vote on whether to accept the standard as an ASTM International standard, which would then be recognized internationally. This is a process that anyone can participate in.

The intent of the standard development process is to provide a framework for cross-sector agreement on the components of the standard. There are three different components. One is guidance for the developer of the work-based learning program and for the stakeholders who want to understand the quality behind the program. Another is articulating the criteria for both the entity that's offering the program as well as for the program itself. What are the specific elements of the program? And those two things are not unlike what you would see for a standard around certification or certificate programs. It's usually looking at the organizational entity, as well as the program or the credential that's being provided. The third thing is to establish the foundation for those third-party reviewers, the accrediting bodies who will determine the extent to which the organization and the program meet the various standards or criteria specified within the standard.

We wanted to provide a conceptual model of the process ahead. There is a task group of around 12 people who will put pen to paper after having done a lot of research and they will put the draft out for review. Then there's a larger group, the actual subcommittee. That's a working group that will review, edit, provide comments, ask questions, and help debate some of the concepts. Then, there's a much larger group of people, the voting members of ASTM, who will vote on it to make it official. Once more, it's a voluntary, consensus-based process. Industry is paramount to the success of this standard: after all, there's no point in developing standards that will not be used. We want to make sure that industry representatives participate. We've worked hard to get some of those folks into this group, and we'll continually share the standard for their review, as well as with the other key stakeholders such as government, academia, think tanks, and so on.

Anybody can participate in the standard development process for free. But if you want to have a vote, you do have to pay \$75 to be an ASTM member for a year. We're already having people

participate and send in feedback – thanks to those who are doing so. Don't let that \$75 deter you from sharing your feedback, but we do sincerely appreciate those of you who are willing to become paying members to participate in that final vote.

As of late March, there is a first draft. There will be feedback, and additional feedback based on those drafts. The process is like when federal agencies post proposed regulations to the Federal Register in that we must address all of the comments that are made or any negative votes and continue to evolve the standard until we can get to an agreeable point. Our goal is to get to a final vote by the end of 2023, and we would very much appreciate your collaboration.

NCRN Member: After next year, if the standard is approved, what's it going to look like? Let's say that someone has completed a program that used the standard. Is there going to be a seal, like Good Housekeeping? And how will that seal of approval be interpreted?

Amy Mackenroth: We don't know that we have an exact answer for that now. I think that the goal is that they would have a badge at a minimum. Then, the program could be recognized by an accrediting body, and they would get whatever recognition is passed along from that accreditation body.

Lisa Lutz: I'd add that once the standards are developed, we must have a third party who agrees to be the accrediting body, and there are two accrediting bodies that are already participating in the process. Those are the ANAB and NCCA. So, I wouldn't be surprised if each one of them is looking towards potentially developing an accreditation program.

I'd reiterate that the goal is to increase the transparency behind the learning, which makes it more portable and stackable because it could be integrated with other types of credentials. So, in some ways, I see this as becoming another type of non-degree credential. Potentially, this will lead to the recognition of new credentials, which matters when we're trying to count and map the landscape of credentials.

NCRN Member: One thing we've really struggled with and want to do is better understand how much employers are investing in their workers right? There was a survey done a few decades ago, the Survey of Employer-Provided Training <https://www.bls.gov/ept/>. I don't think anything else has really been done since the 1990s. What would you recommend trying to measure that right now? Is there any sense of how much money employers are putting into training?

Lisa Lutz: Great question. One place to look for answers might be the SkillBridge program at DOD. The program is growing exponentially, and there are more employer applications every week. There's a lot of interest for obvious reasons. However, there's not a lot of data collection in terms of completion, and that's one of the things that we're hoping that this could help with. But there are organizations that have talked about the investment that they've been making in training - and some others here might have more information to share. Understanding the outcomes of work-based learning is hopefully going to be one of the long-term benefits of the accreditation process.

Kyle Albert: I can answer from another perspective. The answer is that we don't have very good data points. The National Training, Education, and Workforce Survey (NTEWS) <https://www.nsf.gov/statistics/srvyntews/> is intended to provide some of those data points for a nationally representative sample. The National Center for Science and Engineering Statistics (NCSES) participated in past NCRN meetings. If they were here today, they would probably note that they do have some questions

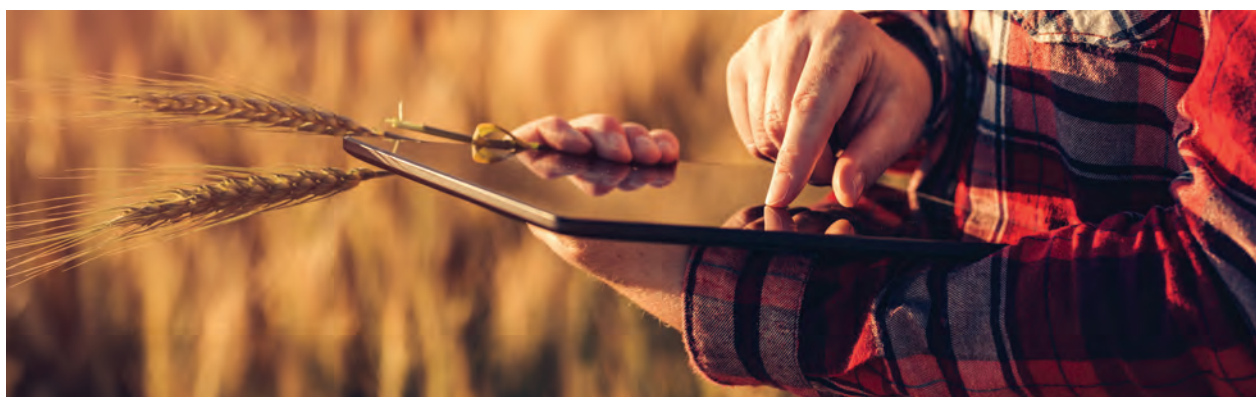
about employer-provided training on the National Survey of College Graduates (NSCG). The problem, of course, is that it's a survey of college graduates, a population you could argue is not the one most in need of employer-provided training.

The PIAAC, coordinated by OECD and implemented in the U.S. by NCES, is another source of data. They have some items about employer-provided training and informal learning on that survey. It might be the best data source we have right now that cuts across the entire US population.

Tingting Zhang: Today, I'm sharing a research project that's still in the early phase. I'd really love feedback from my fellow NCRN members since we're really laying the groundwork and doing exploratory work right now. We're learning that we don't know what we don't know, so ideas on where we focus our efforts are most appreciated.

Now, we have all learned about how important the agricultural sector is during the pandemic. A lot of sectors were negatively impacted by the pandemic, but agriculture was not one of them. Employment remained consistent nationally, and output has increased significantly in the last few years. So, this is an exciting time to be studying agriculture.

My work focuses on Illinois. We usually think of Chicago when we think of Illinois, and we don't associate Chicago with farmland. But agriculture is the largest industry in the state. We have 72,000 farms taking up 75% of the state's land. And 97% of them are small, family-owned farms. These small, family-owned farms are a challenge when we start



talking about future work in the agricultural sector across the state. How do we train our agricultural workforce of the future?

We should remember that these small farmers are not making a lot of money out of their operations. Much of their wealth comes from the land itself. That's the reality. We're dealing with small farms, a lack of resources, and significant levels of poverty. Which is a problem.

We can't really import food from other countries reliably and profitably anymore. So, it's not surprising that people are talking about rebuilding the supply chain within the country again. Agriculture needs help, yet it's essential for our future. Illinois is trying to do a few things to help the sector. We probably need to consolidate small farms because you need large-scale production to get economies of scale. There's also an effort to improve the food supply chain system within the state and nation to make sure that we can deliver food to the table.

We're trying to make sure that farmers have the skills to keep up with the technology in the field. We have observed in Illinois that precision farming has been adopted in some large farms. You literally see little robots traveling through farmland. That's what we are talking about right now. These systems allow farmers to have information that supports decisions about, for example, how much water to apply precisely in a very small area. Obviously, we don't talk much about agriculture when we talk about the future of work. But if you start drilling down to individual farms, looking into the technology being introduced and adopted, especially in those large farms, you'll see some incredible technology. It's like the advanced technology we see in sectors such as high-tech, services, healthcare, and manufacturing.

These advances lead us to ask what the future workforce in agriculture looks like. We no longer have all those people working on the land and driving the tractors. Now we're using drones to monitor the crops, we're using little robots to test how wet the field is, how much water we should be applying when crops fall, and the workforce is going to be incredibly different. We are still going

to have manual labor. We might encounter a higher polarization in terms of the quality of jobs and how much people get paid. We still need to protect the rights and safety of workers who are doing those labor-intensive jobs. At the same time, we ask: Where can we find programmers with the skills we need? Who can run those decision support systems? How would we build a workforce of the future to meet the expectations and demands of the industry?

We started asking these questions. We have those new technologies being introduced. They are not necessarily being adopted at this moment, because Illinois has a huge number of small farms, which has the facility and the resources to implement the new technologies. But they are the future. So, we started by asking, where are suitable education and training programs across the state? First, we looked at four-year baccalaureate programs such as computer science and engineering. But, if you go back to the state map, there's a spatial mismatch between where the farms are and where you can get that advanced training or even technical or non-degree training in agriculture.

We can zoom out to the national level. Across the whole country, there are about 52,000 degrees in agriculture awarded annually. We mentioned that there's a workforce of around 1 million in agriculture in Illinois alone, and 52,000 degrees in the entire USA – that's a huge gap!

At our own institution (the University of Illinois), we developed a master's program in precision agriculture <https://aces.illinois.edu/news/university-illinois-precision-agriculture-program-debut-summer-2021> and we're introducing a digital agriculture certificate in partnership with other universities across the state. We're starting to provide this education, but we're nowhere near the scale that's needed. Therefore, we need to talk about training in the workplace, on-the-job training. Speaking of on-the-job training, we assume that employers often have the clearest idea of what the most advanced, most practical skills are. We, in higher education, want to bring our students into those workplaces. However, in the case of agriculture, a lot of cutting-edge technology is being developed in universities like ours. Our

students are being trained with the most advanced technology and they're learning how to come to a farm and implement it. If we drop our students into workplaces, the employers will be the ones who lack resources and knowledge of technology. So how do we deal with this gap?

We also have the problem that our students with technical skills, those with computer science degrees, are not very interested in working on farms. Some of the jobs just might not be that attractive to those with advanced STEM skills. If we try to force them to do work-based learning in the agriculture sector, they might not like it. We're trying to figure out how to bridge this gap between labor market demand and student interests.

One of the bright spots is in our community colleges – 29 community colleges in Illinois offer associate degrees in agriculture. But students are using those associate degrees to transfer to four-year degrees in other fields. So, our efforts to create a career pathway here aren't having the intended effect of placing students into agriculture jobs, even if students are experiencing career benefits from these programs.

At this point, you might be thinking that apprenticeship could be an answer for bringing the skilled workers we need into the sector. But you must remember that most farms are small businesses. They don't have the resources to manage apprenticeship programs, and sometimes they just don't want to invite people they don't know – again, a lot of these are family farms – into their businesses. Now, the Illinois Farm Bureau offers some leadership development programs and specialized certification programs, most of which focus on safety, conservation, and water quality. Yet, there's a lack of competency-based certifications and licenses that really focus on the

nuts and bolts of farming, let alone the advanced farming technology. Even with all that the State of Illinois is doing to expand career pathways, there's just not much to help people get training for the agriculture jobs of the future.

My research at the University of Illinois aims to explore whether we can build a credential that truly supports the upskilling and career mobility of agricultural workers. However, we realize that it's surprisingly hard to define the agricultural workforce – which ranges by some definitions from the food supply chain to distribution processing. We want to simultaneously support the acquisition of skills needed to operate the high-tech farms of the present and future and provide an agricultural career pathway that reduces some of the churn from agriculture into other industries. And, of course, we want to fight poverty, which is a real problem in agricultural communities – many of which are quite distant from even the nearest community college. We're thinking about embedding some of the training in high schools in cases where even the community college might be too far away. We have a lot of work to do on this project, and we'd welcome feedback as we try to make this a reality in the coming years.

NCRN Member: Thanks for all this interesting information. I believe there was some attention to agriculture in the CHIPS Act. The NSF is receiving some funding to support food supply chains. There could be a lot of opportunities to think about the agriculture workforce as part of giving small farmers the ability to be part of this critical supply chain and to think about how the workforce and training matter for the procurement of food. During the pandemic, we saw how critical agricultural supply chains can be, so there may be an opportunity to leverage government funding for some of this work. Thank you.

NON-DEGREE CREDENTIALS, SOCIOECONOMIC MOBILITY, AND LABOR MARKET EQUITY

MODERATOR

Kenyatta Lovett, Communities Foundation of Texas

PANELISTS

Christine Barrow, Education Strategy Group

Colleen Malloy, Coursera

Meena Naik, Jobs for the Future

Kenyatta Lovett: We've all heard today that there's a lot of evidence that non-degree credentials are growing everywhere, both in the US and globally. But there are critical questions about what the growth of these credentials means for economic mobility. Some preliminary evidence suggests that non-degree credentials are more useful for those with the degree than those without. Nonetheless, the final verdict is still out when it comes to saying whether non-degree credentials support the American dream. There are cases and stories that offer clues and valuable information to researchers out there that seek to understand the impact on equity that comes with cost-effective and accelerated opportunities for learners to engage in post-secondary education experiences, namely, through non-degree credentials.

This is the core impact of the NCRN. Whether you are a researcher or a policymaker or a practitioner, the research we discuss here really focuses on evaluating the promise of equitable economic mobility through this new form of credentialing. These discussions take lots of different forms, including how we look at access, how we look at affordability, or, more importantly, how we look at overall mobility. This session will provide additional context for the great studies and initiatives that have been highlighted today. Today, I've got three unique voices that are here that are going to share their perspectives.

Dr. Christine Barrow is from the Education Strategy Group, and she'll share experiences working with systems, states, institutions, and local communities to bring forward and leverage non-degree credentials. Then we have Meena Naik from Jobs for the Future, and she joins us to share the national perspective, driven by a variety of projects and efforts to promote multiple pathways and more efficiently to meet labor market needs more efficiently through non-degree credentials. Then, finally, we have Colin Malloy from Coursera. She'll share some updates on the implementation work being done by state agencies and institutions to create new pipelines of learning to address talent shortages across the nation.

Christine Barrow: I just wanted to take a couple of minutes to first introduce myself and introduce a little bit of the work that we do. We do a little less research and a little more of that implementation support for states and systems. I want to share just a little bit about some of the projects that we're doing that are specifically related to non-degree credentials. I work as the director of the post-secondary attainment for the Education Strategy Group. We're a mission-focused consulting firm. Everything we do is approached through the lens of economic mobility. We're laser-focused on economic mobility because we believe that is very much impacted by educational attainment.

There are three different places we do this - three different nexuses, if you will. One is the post-secondary transition, i.e., that critical point between high school and post-secondary. Then there's post-secondary attainment. And then there's career readiness, which for us is heavily focused on CTE (career and technical education) these days.

I'm going to share just a little bit about four projects that we're working on. These are just a sampling of the things that intersect with non-degree credential work, but I wanted to touch on a couple of them. The first one is racial equity for adult credentials and higher education. We also have the non-credit and credit alignment lab. You heard earlier about that nexus between the basically separate institutions within most colleges, particularly community colleges. You've got a non-credit side that's often quite isolated from the credit side of the institution. The non-credit and credit alignment lab is all about bringing them together to meet student needs. Then there's creating conditions for credentialing. That's a new project that we're embarking on, and we continue to work on credentials of value and credential currency. My descriptions of these projects are at a very high level, so please feel free to reach out to learn more.

The REACH project, <https://edstrategy.org/esg-featured-work/racial-equity-for-adult-credentials-in-higher-ed-the-reach-collaborative/> with generous support from Lumina, involves working with 6 States and 139 community colleges to create conditions to increase credential attainment for adult learners of color. And we're doing this in 3 different ways. One is about credential alignment – that means making sure that non-degree credentials aren't dead ends, but rather stepping stones to additional credentials. We created a stackability guide that helps institutions to focus on the second piece of the work, that is, bundling and sequencing supports. We must remember that these institutions are serving adult learners of color. They have lives - in some cases, very complicated lives - and histories that have brought them to our institutional doors, and so we want to make sure that we are providing support to them in a way that's accessible. We also focus on culturally sustaining practices, recognizing



that when you emphasize the importance and recognize the importance of everyone's contribution, then it creates a more welcoming environment that improves student success.

Another big project is the non-credit and credit alignment lab. It's directly connected to our goal to make sure that community colleges are aligned in terms of non-credit and credit. So, instead of being able to say that there are separate non-credit and credit sides of the house, we are talking about one institution, no wrong door. All students are students, so making sure that we are providing the resources they need. We find that you need to align the governance and the back-end systems we already heard a little earlier around the data systems, and how in many cases they don't even talk to each other – that is, if they're even collecting good quality data from their non-credit students.

Through this program, we're making as many programs as possible credit-worthy, or credit based. These are non-degree programs, but we want to make them credit-worthy so that we remove barriers to transition between programs.

We also have the Conditions for Credentialing Network, known as C3. This is all about getting state higher ed institutions, higher ed leaders, and workforce leaders to come together to create a shared vision for non-credit education and training.

Finally, we must work on credentials of value. Earlier today, it was mentioned that there are over one million credentials in the United States. Not

all of those credentials are credentials of value. Credentials of value are the ones that lead to better labor market outcomes for our learners. Thus, we've been working with states and systems to identify credentials that have value. From the student's perspective, they might be thinking that if I'm going to spend my resources in terms of time on this, then I want to make sure that I get a return on my investment. So, we are working to identify, validate, incentivize, and report on the value of non-degree credentials.

Colleen Malloy: I'm representing Coursera, where I work on the government team. However, I've spent the past 20 years working with higher ed from an educational technology and e-learning perspective, going back to the early days of online learning with learning management systems putting syllabi online and posting grades. Over time I've helped institutions create fully online degree programs and worked with the schools of professional education to help them reach adult learners and learn as we needed to learn in different ways. So, when I joined Coursera it was still the same mission to help those adult learners, but from different angles and with different services.

And for those of you who are not familiar with Coursera. I just wanted to kind of share what our model is. We partner with universities as well as the industry to create content that we distribute on our platform. Individuals can come to Coursera on their own, to audit courses or to pay for access to assessments to receive their certificates. However, we also have the Enterprise side of our business, where we partner with employers. A few minutes ago, there was a question about how we measure employer-provided training. We have over 7,000 employers who are partnering with Coursera right now, whether that be firms, universities, or governments, to upskill and reskill their employees.

We partner with both community colleges and universities on both the non-credit and credit side to leverage content where they may have gaps in their curriculum, where they may want to provide non-credit certificate programs incorporated within the curriculum or a pathway into their degree

programs. And then my responsibility is on the state partnership side with the workforce commissions, departments of labor, and, at the local level, with the workforce boards to help those who are unemployed to get access to content. I'll focus today on the content we're bringing from our industry partners like Google, IBM, and Meta, for example, where they have created certificate programs that lead to specific job roles. We started with the Google IT support certificate program in 2018. Google was one of our partners in implementation; we've now served over 800,000 learners in that program. Over 76% of those learners report that they've had an improvement in their career trajectory, whether that be a new job, a new position, or higher wages based on survey data, and it's also a quite diverse population that we're serving there.

We also built pathways to university degree programs into these certificates, so that once individuals are hired they can also move towards a university credential, either a bachelor completion program, or, for example, a computer science degree program. We partnered with the American Council on Education to provide a credit recommendation for the certificates to help build those pathways. And that model is how we've continued to build these certificate programs. We now have 27 certificate programs with a variety of these industry partners, and our goal is to have 50 of them by the end of the year.



Meena Naik: I'm the director of Skills First Design for Jobs for the Future (JFF). And while that's not directly labeled as credentialing efforts, I think, given the full lens of conversations we've had today, you can understand why efforts around skills first initiatives inherently involve incremental and non-traditional credentialing pathways, which include non-degree credentials.

Jobs for the Future is a national nonprofit that drives the transformation of the American workforce and education systems to achieve equitable economic advancement for all. One of the big prevailing things we're working towards is this North Star: 10 years from now we will have 75 million people who face systemic barriers working in quality jobs. That's a huge, huge goal to get to. And one of the big ways we see that happening is through sort of this dual transformation of our systems of being able to bring in emerging and innovative opportunities, much like what we see with employers coming to the table of building credentials that align exactly with the jobs that they're seeking and finding ways to partner with higher education and other training providers. The other side is examining how we bring our existing systems along through that transformation. What are the policy changes that need to happen? What are the regulatory changes that need to happen? How do we take multiple pathways, like apprenticeships and other work-based learning models, and leverage them for mobility? And then there's a practical question behind all of this: what is the infrastructure that it'll take to get there?

As we've heard, there are so many data gaps. There are so many other opportunities for better policies and better outcomes if our systems are communicated more effectively. If our data was more matched if we could start to track what we see and start tracking outcomes. We could do so much if we had better reporting, and part of what that'll take is an infrastructure that allows for these credentials to move, that is, to be portable. We need infrastructure that allows individuals to own their data so that they don't have to turn back around to their campus to validate their learning. Ordering transcripts after being out of school for years is difficult, and dealing with non-degree credentials is even worse because sometimes there is no formal assertion or recognition.

JFF has lots of partners in our work to fill some of these gaps and transform our systems. Google is one of them; we also have partnerships with organizations like IBM and Verizon, where we are working to accelerate employer-driven or employer-motivated credentials and bring them into classrooms, bring them into nested credentialing models, and bring them into other spaces that might otherwise be difficult to break into without some sort of support and assistance.

The other piece that plays into our work building partnerships is figuring out how to build a pipeline from getting the individual new knowledge to having a pathway forward and visibility into what future labor market outcomes can be. So, we're very active with multiple credentialing initiatives. Then we work through digital infrastructure and technology efforts around LERs and digital badging to start to figure out what it takes to have that infrastructure work. We also have projects that look at labor market outcomes. And then we also do a lot in narrative change and behavior change that results from those outcomes.

One of the biggest questions that we've heard time and again is how we start to make our systems match up. How do we have the skills and competency to speak to each other? Part of that is also human behavior change. How do we start to change? Obviously, one can drop degree requirements. But how does that translate into hiring practices and



outcomes? We're partnering with organizations like SHRM and other industry partners to see how that plays out. You've got this full portfolio of work that is interspersed across vendors, education providers, and across the labor market, from large corporations all the way down to the individual experiences of workers themselves. We like to hear from those workers about what a quality job looks like and how we can work that back into our system to start to see this change that allows these non-degree credentials to become just another pathway, instead of being thought of as a special or unique alternative pathway.

Kenyatta Lovett: You all have been working across the nation on different projects when it comes to non-degree credentials and the implementation of them for the larger vision of making sure individuals have a viable path forward in their careers. Where are some areas where things have not worked well, and why? And how could that inform researchers in this space?

Colleen Malloy: I'm going to talk about a couple of examples. As you know, we have multiple statewide partnerships. A lot of these grew out of work that we did during the pandemic called Coursera for Workforce Recovery, where we gave access to states to serve those that were unemployed and to universities to help those who couldn't get to college campuses. Another partnership that I want to highlight today is our work with the Milken Institute, the Milken Center for Advancing the American Dream. Through the American Dream Academy, <https://theamericandreamacademy.org/> we provide access to 9 of our certificate programs with some additional course work available in durable skills as well as job search skills and career readiness skills. One of the places that things have fallen short has been with making sure that every learner that comes through the door via a partner is well informed. Sometimes our partnerships are at the state level, where there are great intentions and funding. But to get the message down to the person that welcomes the person in the door can be a real challenge, and there are a lot of layers of politics between Coursera and those individuals with direct contact with workers being served.

We've learned that we need a multi-layered approach with multiple stakeholders. We partner with community colleges, libraries, and workforce development organizations like Goodwill. You can find the same populations in a lot of different places, and it's been a challenge to make sure that they are all getting access to the same high-quality information wherever they go.

Meena Naik: We have this idea of "build it and they will come" - and that's not always true. We see this with some employer-driven credentials where you know the name brand. You'd think people would clamor for these credentials. If I am a major company putting out a credential and offering it for free to colleges to embed in their curriculum or use in their coursework, I might think "Surely they will take and like it." to feel free to use, to put into their coursework. We consistently see that, and part of it has to do with the lack of outcomes information. Post-secondary providers are going to be nervous about taking a freely available credential or training model, particularly if it's a huge time investment or they must go through approvals to get it worked into their for-credit curriculum if they don't know the ROI if they don't know what the outcomes are going to be for the individual. They need to be tracking outcomes to make that case for the institution. Institutions are going to ask hard questions: is there always going to be demand for this? Is it always going to respond to market needs? Is the quality always going to be sustainable? Is this partnership going to be viable beyond a pilot or initial implementation?

At JFF, we're excited about the opportunities with employer-provided, employer-sponsored training and credentials. However, we recognize that there's more to be done on data reporting, increasing transparency, quality measures, and the actual learning experience. We haven't fully figured that piece out.

To be sure, there are some innovative institutions willing to experiment. They are the ones that are testing the waters. They're the early adopters. They're willing to try everything. So certain populations are getting a lot of opportunities

to experiment with new credentials. But other populations are continually being left out because they're not able to be in that early adoption, early innovation space.

Christine Barrow: I will say that I think one of the places where we're falling short is state-level taxonomies for non-credit programs and creating some state-level definitions so that we are clear about how we define a quality credential and where they lead upon completion. We want to make sure that learners know that there is a return on investment for pursuing these credentials. We simply need to do a better job of that.

I'd also mention the transition point between non-credit and credit. It's a critical transition point, and we're not measuring it. A few institutions have and are looking at their own data: it's just not happening systemically. So, I think that's a clear opportunity for us to do more. We talked earlier today about state non-credit data systems. If you've got a separate system for non-credit and there's no good integration with the data systems for for-credit, it'll be hard to do the analysis that's needed to make sure that we know who is taking advantage of the opportunities that we create for the students in these programs.

NCRN Member: I appreciate the point about how we have essentially two separate and unequal systems at play here. And I just was wondering about your reflections on policy recommendations, especially around short-term Pell – what would they be from your perspective?

Meena Naik: I think the biggest issue is to avoid the chicken-and-egg problem of what we change first. Can we get some movement going somewhere within our institutions? Can we at least get some policies in place for data, transfer transparency, and translate the data into action? Because if that starts, then we can lean on taxonomies or develop better, more widespread definitions. Do the credit hours start to change? Does completion start to become something else? Then we might see some domino effects down the line.

The other thing to consider is our choice of language around what these credentials are. Should we talk about the differentiation between post-secondary accredited credentials, workforce-based credentials, and so on? Right now, we have these overwhelming binaries of credit and non-credit, degree and non-degree. We know there isn't a lot of room for nuance or flexibility in how things are defined in legislation, which can be limiting. If we start to shift our definitions a bit and get a little more precise, we might be able to catalyze policy change.

NCRN Member: In one research study, it was reported that about 5% of students that start a non-credit credential successfully transition to for-credit. If that's accurate, we can see that this is a major challenge. We can remove degree requirements for entry-level jobs, but won't those individuals be unable to move up if they can't transfer their non-credit credentials into degrees that may be required to move up in the organization? How can we mitigate the risk of a divided system? It seems like we might have a real problem in 10 years if we can't figure out how to help people make that transition.

Colleen Malloy: We're committed to building pathways, whether the starting point is a small incremental credential or a full degree. We really make sure we're educating learners on their pathways. So, for example, with the Milken Center for Advancing the American Dream's American Dream Academy we established pathways with the University of North Texas and their bachelor completion program, where you know exactly how many credits can be transferred from the American Dream Academy into that program. We're doing the same with Western Governors University. That gives working learners the clarity they need to plan around their existing work commitments.

Meena Naik: Adding on to what Colleen said, we often ask ourselves at JFF what the future will look like if we center our efforts around lifelong learning. We're brainstorming new models of the four-year degree or the two-year degree, and then thinking about what incremental credentialing means in the

context of the “60-year curriculum” - this idea that people are going to be learning throughout their lives. You expect to have this relationship between employment and work where you advance your skills through your employment, and you advance at work with your skills. The challenge of the 60-year curriculum is that it requires coordinated investment on the part of employers, training providers, and higher education. We have to be able to work together, to move people incrementally through their careers over a lifelong journey. There’s a tremendous payoff in terms of improved job satisfaction and mobility, but it requires investment.

It’s a lot different to say that I’m maybe one short-term credential away from my goals than to say that I’m a 4-year degree away from something. The costs and time investment begin to shift. We really must break away from preconceptions to create a little bit of opportunity, to envision a future where maybe what counts as completion in higher education isn’t a four-to-six-year effort, but something more incremental where I’m able to enter and exit and retain my credits.

Some of you might have heard of the Kalamazoo Promise, it’s one of the original promise programs across the nation, established for high school graduates in Kalamazoo. They have up to 10 years to exhaust those funds. They can also earn an associate degree and then move on to a bachelor’s degree, so they can earn both, which is typically not permitted in promise programs. As of late, they’re looking at registered apprenticeships, work-based learning, and workforce education as potential options for their participants. We should be studying these sorts of programs. We could see how it makes a difference if funding is available for 5 years, 10 years, or even 15 years – how does that extra flexibility help?

NCRN Member: We’ve talked a lot about community colleges. What are the challenges at the university level? What are some of the barriers that people are trying to overcome? I also wanted to ask about Coursera, including the partnerships with Google and Meta. Is there a way those certificates could focus more on competency? Maybe there’s a

way to make those credentials more flexible, so we expand access to competency-based education.

Christine Barrow: I think you sort of answered the first question with the second: universities need to think more about competency-based credentialing and microcredentialing. There also has to be a mindset shift from the traditional age learner to lifelong learning. You can’t just be focusing on the 18-year-old coming out of high school. Messaging also matters. You have to be able to message about the credential pathway and career outcomes simultaneously. And I will tell you that institutions are struggling with this – they need help from employer partners. What does a credential pathway look like? And how do we map that to a career path so that folks are seeing this at the front end? I would take a look at what UMGC (University of Maryland Global Campus) and the University of Colorado are doing. They’re both leaders in terms of tackling these issues internally through policy changes.

Colleen Malloy: It’s great that institutions are working together to increase portability and transferability. But we also know that it can still be a headache to transfer credits. For us at Coursera, competency is what really matters. We don’t care so much whether you completed the credential; we care whether you gained the associated skills. We’re really trying to track whether you gained skills through our courses. We’re also thinking about early exploratory pathways into our degree programs, to give learners the flexibility to explore before committing to a degree and to earn potentially useful credits while they explore.

NCRN Member: I’m wondering about how we ensure in the conversation about credentials of value that we don’t exclude credentials that prepare individuals to enter occupations that don’t pay particularly well but are very important for society. How do we address this from a policy perspective – ensuring that we don’t lose skills that society needs in the push to elevate credentials of value?

Part of the answer is to build career pathways that run through those less-compensated occupations to better jobs. We need to explain to learners how those entry-level jobs lead to something greater.

Meena Naik: There are clearly huge risks, especially with the potential for technology like AI that could displace workers. But, at JFF, we're trying to think creatively about how these new technologies can fundamentally reshape occupations and create new opportunities. There are a ton of new occupations and new types of jobs that are coming up on the horizon – we just need to provide training. There's a real opportunity here to say, "Let's create a different type of job." We need to focus on building forward at this moment in history, to create new partnerships right now that will help us prepare for the future.

Kenyatta Lovett: I had the opportunity in San Antonio to interview single mothers who are attending a community college. Some surprisingly beautiful insights came out of a conversation around short-term and non-degree credentials. There were a few mothers who had their kids enrolled in an early childhood program and they were offered the opportunity to earn a non-degree credential. This credential didn't lead to jobs that pay enough to be considered a credential of value. But here's the beautiful outcome that came from it: it wasn't necessarily that it was about that one non-degree

credential getting them to economic safety. It was that they gained the confidence that they could go to college, and it sparked something in me to realize that we might need new ways of thinking about this juxtaposition between non-degree credentials and credentials of value.

Maybe we should think of a typology of three different varieties of credentials. One is obviously the credentials of economic value. These credentials have wages attached to them. Then, there are credentials of mobility – these are credentials that can easily be stacked to get you to wherever you need to go. Remember, not all credentials of value are portable. Then, finally, you have credentials of engagement, which is what we think about when we think of credentials targeted to those not going to a two or four-year college. These credentials are intended to be a new access point to the labor market. Overall, I think we need to think more about whether credentials give individuals confidence. Do credentials give individuals an access point to pursue the American Dream through higher education?

FINDING AND PREPARING A DIVERSE RESEARCH TALENT PIPELINE

MODERATOR

Holly Zanville, George Washington University

PANELISTS

Mark D'Amico, University of North Carolina-Charlotte

Kathleen DeLaski, Education Design Lab

Michael Fung, Technologico de Monterrey

INTRODUCTION

Holly Zanville provided context for the discussion. Several years ago, the NCRN surveyed its membership to ask which universities were working in this space, and if an undergraduate student or working professional asked where could they go to prepare for careers in learn- and work-ecosystem jobs, what would be the recommended universities and pathways? We learned that university programs are primarily discipline-focused (e.g., economics, sociology, political science, education), and the disciplines do not focus on the broader learn-and-work ecosystem. The prevailing view seemed to be that it is the job of the think tanks and governmental agencies to prepare folks in a two-step process: acquire foundational preparation in traditional academic disciplines, then work in various types of organizations for more specialized training. This would be a two-step process.

With this background, panelists provided self-introductions.

Mark D'Amico, professor of higher education at the University of North Carolina, at Charlotte. My remarks come from the perspective of a higher education faculty. My area of research is largely focused on community colleges. I've done a lot recently on non-credit community college education, as well as associate and applied science transfer (transfer from those more workforce-oriented degrees) I've worked in higher education for about 28 years. I

spent the first half of that working in administrative roles in colleges at the community college and state system levels. I bring some of that practical background to scholarly work.

Kathleen deLaski, I'm just stepping down as founder and CEO of the Education Design Lab. A new project I'm taking on is facilitating design sprints for the future of learning and work at the intersection of this learn-and-work ecosystem at Harvard University. We're working with students across the Schools of Business, Policy School, and Education. I'm going to be teaching at George Mason University in social impact design in the learning ecosystem space at the undergraduate level in the honors college in the fall. I was a journalist for 15 years, so I bring a storytelling lens. I was also in government for a little while as a political appointee. So, I have a political spin on things. But I was in early consumer product development when AOL America Online was a startup back in the nineties, and we were trying to figure out how to bring this thing called the Internet to consumers. The Education Design Lab which I founded is focused on helping colleges figure out how to design education for the future of work. So, all of these experiences prepared me to help colleges be entrepreneurs and face this new age.

Michael Fung, Executive Director at the Institute for the Future of Education in a university system in Mexico. We are a large 26-campus university, and by default a national one, because we are in almost all parts of Mexico. We serve 90,000 students.

Prior to joining Institute, I led the SkillsFuture movement, where I was a policymaker building a comprehensive workforce skills development and lifelong learning system in Singapore and matching the demand and supply side of skills. This is very much a part of what we were trying to do in Mexico, in Latam, and around the world. The way research comes into play is to understand where the market is going in terms of where the skills needs are, but also understanding the behaviors of learners in the workforce, companies, and institutions, and making sure that we are addressing all the important elements that lead to effective learning outcomes. In my current role, I work with institutional leaders and policymakers to bring about transformation in higher education and lifelong learning so that we have systems that are responsive to the changing needs of industry and society.

PANEL DISCUSSION

Holly: Do you think the talent development pipeline for researchers is primarily a two-step scenario—earn an academic degree followed by work in an intermediary or government job? Is this the likely path in 2023 and beyond to prepare people well? Are you seeing universities move to cross-disciplinary programs to prepare people for researcher and policy analyst jobs in the learn-and-work ecosystem?

Mark: I think it is probably not the pathway but one pathway. Preparation to work in this space is seldom just one step. It's not just a degree. It's not just a position. This makes me think about something I worked on years ago—the idea of career capital, and how individuals build a career these days that are really boundaryless careers. This accumulation of capital is a focus on why to pursue a career, how which involves knowledge and skill acquisition, but also whom you know—the networks you work in. So, when thinking about boundaryless careers, it's hard to say. You can't be in a boundaryless career and expect to get everything you need within the boundaries of one organization or program.

To the second question, is a graduate-level degree adequate? As someone who teaches, has created

graduate programs, and has been a department chair over many graduate programs, I am immediately going to say no—a degree alone is not solely adequate; however, it is incredibly important.

Then how do we prepare for these types of careers? First, I don't think we should focus on a graduate program as even necessarily the primary experience though it is one of the very important experiences. Rather, let's think about the graduate experience as one of the key ways to accumulate capital. What else is part of the mix? Inherent in this question is the 2-step process is sequencing. I don't think there's one sequence, so there could be the "after the degree." This might be a postdoc, a first role in the workplace, or one trained in the field.

But it can also be "during," not a linear sequence. Many of the people who come to us now have significant work experience. Granted, I'm at an R2 university and in an education program. We're preparing people for a variety of roles in research and practice, and many of our learners are already in full-time positions. They're also advancing in their positions over time. That's critically important to their development to work in this space. But also, they're seeking out internships and fellowships. They're engaging in research independently or with faculty. So, the during piece is also important to layer when accumulating capital.

Then what about before for a program like mine? We require three years of professional work experience before we even consider a candidate for our program. I know that's not the same in a lot of Ph.D. programs. When we hire a new faculty member, we will often get faculty applicants who are incredibly well prepared in terms of scholarship, but we don't feel that they're necessarily a good fit for preparing our student population who are advanced practitioners. I know that a lot of programs are admitting folks who might go straight through but that is not our program philosophy. My emphasis is figuring out, how do we value what they did before? We think it's important to leverage what they've done before. Have they come from a career that's in this space? How can they layer upon that graduate and scholarly training to help round

out those experiences, to prepare them to play in this space a little bit more deeply? Those are some initial thoughts.

Holly: What you've laid out is a hybrid in many ways—graduate-level degrees plus significant work experience prior to entering the university plus concomitant development of research and application of skills in projects and internships along with coursework. This is not the model of many universities but is a model that could be promulgated to recognize the importance of the during and before you identified.

Holly: Where are Mexico and other nations finding researchers, what disciplines are they coming from, and what can we learn from one another?

Michael: When I reflect on the issues we're talking about, it's the same set of issues that I was working on in Singapore, the same set of issues the European Union is now starting to think about, the same set of issues that perhaps the federal government in the U.S. is now starting to focus on. I think that some U.S. states have had more traction in the past, and of course, the private sector and entrepreneurs that have been doing a lot of work in those spaces. These issues are common across different countries and jurisdictions.

When I was in Singapore, we were working on both the supply and demand side of the picture and very quickly knew that we needed to develop research capabilities to better understand the space. So, we invested in that. As part of my work in the government, we established a Workforce Development Academic Research Fund. We gave part of that fund to researchers at the local universities and had an open competitive call for international collaborators. They would be working on a range of workforce development-related research topics. We set up an Institute for Adult Learning that spearheaded quite a bit of the commissioned research work as well. So, it was a supportive government-led perspective in Singapore.

At the Institute that I'm at now, it's everything but government-supported, as those of you who are familiar with Mexico's investments in education and research will know. We are a private university, so we are investing our own resources in the Institute. There are about 120 people at the Institute—half of them work on research, some are research professors, some are post-docs, and some are Ph.D. students. The other half are working on a range of impact projects—translating what we know about this space into specific projects, with institutions, companies, governments, and so on.

Where we see traction in the Mexican context is at the state level. In the state of Nuevo Leon, we are working with the secretaries of economic development, labor, and education to align the agenda, With the skills development impetus coming from the industry associations. For example, there is strong demand from the energy sector and automotive sector for upskilling.

Our researchers come from many disciplines. We have academics from engineering, education, business, public policy, and government because these are multi-disciplinary issues and efforts. As we think about the work for skills development, it cuts across various disciplines. So, I do not think that we can have a single program in a single school — it would be too limited. Our Institute sits outside of all the schools and reports to the university leadership directly. One suggestion that I will make is to rotate, if it is possible, government people into the academic institutions, and back out. That is what we did at SkillsFuture. I think it really helped our researchers understand policy imperatives, and policymakers to understand implementation challenges on the ground.

Holly: We've heard that word went out to students at Harvard University that they could participate in a Cross-Sector Futures Group, where they might learn about the future of work. There were some 200 applicants but with space limitations, only 60 could join the group. Kathleen deLaski is involved in this effort and will fill us in more about this approach to help learners

in traditional academic disciplines expand their learning opportunities.

Kathleen: The intent of this effort was born in recognition of key professors at Harvard doing research in this area, like Joe Fuller at the Business School, David Deming at the Kennedy School (Government Policy), and Bob Schwartz at the Graduate School of Education. The collaborative work they're doing around workforce issues started a couple of years ago. They started a study group a couple of years ago for students, and it started snowballing in terms of the interest level of people wanting to participate.

My new role is as a Lecturer in the project. I will help with some sessions that have come up around design questions across the learn-and-work ecosystem—around what they want to work on. For example, the business students may have an idea, like a startup they want to do. The students in education want to think about how to develop approaches around how to reform, making approaches more uniform training options to meet the demands of the workforce in particular occupational pockets and regions. Some are working on equity issues—how do people of color mobilize in their careers when they're already in a job (social and economic mobility)? These are the kinds of questions we're addressing.

This comes back to the central question for today: how, and where should researchers train? I think we're seeing that cross-disciplinary work is critical, to be able to have a voice in this. We live in such an information-heavy world, where many kinds of research are not actually getting read by anybody. So the idea is that if you want to be relevant in today's research world, you have to know how to deal with outlets like Twitter Tik Tok, and LinkedIn—social media, and you need to be able to speak effectively in various venues.

You need to start with your outcome when you're trying to make a point or have a research project that's going to be meaningful. We have learned at the Education Design Lab where we have a lot of researchers and what we call education and work designers who are piloting new ideas with colleges,

employers, cities, and states that they need basically four skill sets.

The first is the skills you can only typically get in the higher form of education training, for example, working on your Ph.D. But there are other skills you need—besides the disciplined training and “how to” to conduct a randomized trial, a research project. A second skill is storytelling which I mentioned earlier. A third skill is entrepreneurship and project management, to understand how to put people together, how to put ideas together, and how to take ideas and bring them to action. A fourth is understanding and empathy of people and ideas, and how to lead with who your user is. That is a human-centered design focus.

I think the students at Harvard and the ones I'm going to be teaching at George Mason may not know all this. That's why they're signing up, that's what they're looking for. How do I get started in this exciting world of school and work design, learn-and-work ecosystem? It is an exciting field because it's changing so quickly and dramatically, and it has the possibility to have more of an impact on equity than probably anything you know any of your friends and colleagues are doing. So, in addition to the research skills they probably can only get in the Ph.D., there are these other skill sets. A good question for us is what to tell them—what is necessary for the traditional skill sets, and what are the new things that are necessary or sufficient?

Holly: How do you think we can create a more diverse pipeline of new researchers?

Michael: Building a more diverse pipeline of folks is a big challenge because our universities are structured predominantly by academic disciplines. That really shapes and clouds the approaches that we take. Not many universities have a setup like mine, where we are able to bring faculty from across various disciplines and take a wider view. I think that we do need to take such an approach. Kathleen, you had mentioned creating research groups, centers, or institutes, to bring people together. I think that's a great way of doing this. I just recently reviewed our hiring plans with our research lab director. And when I look at the disciplines that

we're hiring for, it's across various disciplines. We're looking for data scientists in AI and computer science. But we're also looking for educational psychologists. And we're looking for people with labor policy backgrounds, economists, and design thinkers from the human humanities as well. So, it's kind of over the place. We must center our attention around the grand challenges that we are tackling and figure out the disciplinary expertise that we need to work on those challenges. I'm also seeing a wave of undergraduate students that are becoming interested in our work. We have an undergraduate major in educational innovation, and those students are also very interested in getting exposed to our work.

Kathleen: I think we must take new approaches, but I don't have a good answer on how we structure this. But if you have the mechanism that allows you to bring students and faculty from across different disciplines, it's going to help us take a very different approach, a multidisciplinary approach to addressing some of the research questions and the issues. One reason I agreed to teach a course at the undergraduate level starting next year at George Mason, which is a minority-majority college, is to try to help expose students to this and that speaks to the cross-sector group at Harvard, which I hope there will be writing about how that goes after it's more well developed. The faculty and students will likely impact changes in the traditional programs.

Mark: I think about two avenues. One is McNair Scholar programs—there are 151 nationwide—through the federal trio programs. We're talking about first-generation college students, low-income students and students from underrepresented groups being mentored toward advanced degrees. I would begin building and filling the talent pipeline now, and I would go to those 151 places to do it.

Another one, thinking about talent development, whether cross-disciplinary or just providing those additional intentional experiences, is the example of North Carolina State University's CTE (career and technical education) Fellows program, which is funded by a grant from ECMC. They've brought together four different cohorts over the last four

years where they're identifying scholars in doctoral programs or postdocs from around the country and providing them a yearlong intensive experience where they receive both internal and external mentorship, and they receive a stipend. It helps guide them through the dissertation on CTE-related topics, if not beyond. They bring them together around two national conferences a year and provide them with wraparound conference experiences where they're learning additional research methods beyond what they're getting in their respective doctoral programs. In addition, they are with folks from different places to have cross-pollination. This is a positive.

I've had three dissertation advisees go through these different cohorts over the years. They joined us with valuable work experience, developed their research interests, developed new capital networks, and expanded their knowledge and skills, which opened new opportunities for them. When you think about my point earlier about boundaryless careers, this underscores the reality that you cannot learn everything you need to know within the boundaries of any setting. Multiple paths are important, and talent is developed in different ways—gaining experience not just through graduate programs but coupling with other avenues.

CHATGPT & AUDIENCE ENGAGEMENT

Holly: We submitted our major panel questions to ChatGPT to see what responses would come back.

ChatGBT responded that an academic degree is important for providing a foundation, and work experience is also vital. This response suggests the two-part scenario for preparation is prevalent—school and work.

ChatGPT also told us that multi-disciplinary approaches have grown in popularity in the US over the past decade, but the pace varies, from institution to institution. It is moving more quickly in data science, entrepreneurship, and public policy. A takeaway may be that innovations in graduate-level programs are moving slowly except in disciplines driven by rapidly changing industry sectors.

The diversity question was interpreted by ChatGPT in a STEM education context. We can draw from this that the wealth of material AI is drawing from shows that a lot of the good jobs are occurring in science and data-related areas. ChatGPT finds that the approaches are to put more funding into programs, foster inclusion in the workplace, and encourage entrepreneurship.

Holly: Are the graduate schools moving and making changes? And how are they addressing some of these implications? For the graduate students in the room, what are the universities teaching? Are you getting what you need? Are you going to be able to have a dissertation that will help you in your pathway? So, tell us whatever you can't tactfully about your doctoral program.

Matt Linton, Council of Graduate Schools: Graduate schools are enthusiastic about the cross-disciplinary and nontraditional credentialing space, but the movement has been uneven. The CGS has been working on a project for about 18 months with the support of ETS looking at the relationship between post-baccalaureate certificates, digital badges, and the master's degree. One of the interesting things we found is that the new boss is the same as the old boss for many programs. This work is going to be faculty-directed, and depends on the enthusiasm of faculty—do you have a faculty champion willing to push new ideas and bring the corporate partner to the table? The graduate deans are relying on their faculty to drive the conversation and act as champions within the faculty to say, 'Listen, I created this data analytics certificate. It wasn't hard to do. You can and should do it too. Look at our enrollment. Look at our corporate partner we brought in.' This is a lot of what we found in terms of cross-disciplinary movement. A lot is happening.

Our report (coming out this summer) will include the finding that many of these certificates feed into multiple programs. The most popular case is data analytics. The setup is a "hub and spoke model." Institutions have created 4-5 course certificates in data analytics. They are not bringing in many students who are solely enrolled in that certificate. Instead, they're advising students to look at 5 or

6 master's programs. The master's students are advised to gain additional skills and data analytics to be more competitive on the job market, have more career diversity and opportunities, or in many cases be more competitive for the Ph.D. program they're looking for after their master's is done. This is one way interdisciplinary and cross-disciplinary partnerships have been working.

Another effort is the National Name Exchange which the Council of Graduate Schools took over from the University of Washington last year. The Exchange focuses on DEI (diversity, equity, inclusion) for graduate programs. We work with more than 50 member universities to identify underrepresented undergraduate students interested in pursuing a graduate degree. We encourage students to submit their information, and indicate the fields they're interested in, the types of programs they want to go to, and whether they are thinking master's or Ph.D. or both. We put them in contact with graduate programs looking to diversify their student bodies. These programs then present targeted recruiting materials, as well as listening sessions where they hear what barriers students are facing, as well as special materials about how to apply to graduate school to erase some of that hidden curriculum. It's a partnership of these types of different resources that help create a more robust diverse workforce coming through graduate programs.

Diamond Williams, Corporation for a Skilled Workforce and Ph.D. student: I participated in a high school to college Upward Bound program—it was the first time I remember feeling smart and that college was something I could do. Fast forward to me going to college to be a dancer but then finding out, I wanted to do something else. I ended up in hospitality because I needed a job while in school. I really liked it and was good at it. I wanted to be taken seriously and move up so decided to get my master's degree in hospitality management. I didn't need it but did it anyway. When I was furloughed during Covid, I researched doctoral programs and found the best program for my interests and experience would be a Doctor of Business Administration. I wanted to apply real-world situations to my studies and had always been

interested in succession planning and training and development. I am in a DBA program for Human Resources and working on my dissertation. I'm very interested in how work and learning can be applied to human resources but wouldn't necessarily say this is a path anybody would take. Mark D'Amico's earlier points ring true. All my experience got me here. So, while the actual doctoral program is on labor relations and management in the twenty-first century and this isn't exactly what I wanted to learn, the dissertation is my opportunity to take what I am learning and put it to my interests again. This is helping me get to what I want at the end of this.

Madeline Rowe, Ph.D. Student, University of Minnesota: I am in the Ph.D. program but started to work recently for the Council of Graduate Schools. I knew that various credentials exist at the undergraduate and graduate levels and that people are pursuing various credentials in lieu of graduate-level degrees. I did not find a lot of interest in that at my university, at least within my department. Students in my department are mostly working full-time on campus—they get a great deal at the university to work and be a student. There's a small number of us who are full-time students. We have different emphases in Education Policy, Leadership, and Comparative and International Education so there are lots of people doing lots of different things which makes for great opportunities for collaboration, especially with some of the other large programs on campus—like at Humphrey, the business school and law school. But it's mostly student-directed with faculty guidance to get you there. But you must be the one pushing for that—the faculty are not. They're supporting you but aren't leading you to those opportunities if that makes sense.

Ethan Ellis, Ph.D. student, University of Minnesota: Having applied to a mix of traditional economics Ph.D. programs, applied for economics Ph.D. programs, and cross-disciplinary public affairs Ph.D. programs, it came down to a couple of schools that I got into, was interested in, and was the best fit for a variety of reasons. I developed an interest in non-degree credentialing through my advisor who does a lot of occupational licensing research.

He encouraged me to look at the intersection of occupational licensing and non-degree credentials and alternative education programs. Another faculty member also encouraged me in this area. My coursework has been traditional economics so am pushing myself to work with scholars from other disciplines and working with practitioners. This really does have to be self-directed and that includes attending conferences like this and making sure that I'm not working to take advantage of these opportunities.

Isabel Cardenas-Navia, Workcred: In my previous work I focused on how to build a STEM research workforce. Billions of dollars have been spent on a STEM research workforce and one of the things to think about is the difference between building a research work workforce and a diverse research workforce. While both must be intentional, they're intentional in different ways. Money is a part of the solution. I don't think that's been explicit enough in our conversations today. When you think about many biology biomedical postdocs now, it's because there is a boatload of money to go to graduate school in the biomedical, biological sciences, and postdocs. Those credentials matter to get up to the levels needed. I'm not saying it's the only path but it's part of that gatekeeping. In the short term, that's part of what the NCRN is going to have to grapple with. If we're thinking about this in the long term, there must be an investment to build this workforce in an intentional way, in addition to those other pieces which must come together to bring folks exposure to cross-disciplinary programs. There are lessons learned to be from other disciplines which have focused on building up a research base.

Julie Uranis, UPCEA: Many of us in this work completed PhDs. We researched something we knew about. But to continue that research once working, we'd have to be able to do so, and most of the folks at our organizations don't do ongoing research because it's not part of our charge. We're practitioners. So, when we participate in research, we're very active where we can be, but we don't earn anything more by participating. We don't get tenure or promotion as an administrator. So, there's a different perspective at play when you're in this

work. I agree with Isabel that this is both a resource perspective as well as finding those opportunities. Finding incentives for folks to do research, when you think about Ph.D. programs, are mostly offered at the R1s. They are the universities least likely to have incremental credentials or microcredentials. It's the R1s that start to shift where we will likely see more research in this space simply because there will be more people interested because they will be exposed to it more and because the data exists at these institutions. So, it will be a slow slog in some ways that might need more money behind it, but aligning those incentive factors will have a huge impact.

CONCLUSION

Holly: Panelists, what is the best idea you heard today to address the talent development pipeline?

Mark: I don't know if there's one best, but I do like what we were just talking about in terms of an incentive structure. Incentives play out in multiple ways. There could be incentives through opportunities for undergraduates to be exposed. And incentives for graduate students to get those additional experiences. And an incentive structure around faculty, faculty incentivized to do cross-disciplinary work. In my experience, there have not been incentive structures around creating an environment to help develop this talent pipeline.

Kathleen: In design thinking, we often use mental models where we think about a traditional model and then flip the model based on changing circumstances. When I heard the graduate students talk about what they were not getting in their coursework portion of their Ph.D.s and what they were getting at the places they are working on the side, it made me think that what we need to suggest is this type of scenario: Start your Ph.D. at an approved workplace, for example, intermediaries like Jobs for the Future or Education Design Lab where you're setting the stage for the research you then want to do for your Ph.D. Then you have all the contacts you need, and maybe you get training in the quantitative methods at the university, and badges that may be increasingly available for

different skill sets coming from different providers along the way. This may ruin the business model of the college because who is getting paid in this more decentralized model? That is a problem. But in design thinking, we're supposed to think about what would serve the learner and the organization before we worry about how to prop up the college. That's my probably unhelpful suggestion for what might happen. Some of the intermediary organizations like mine need to work harder to get the scholarship dollars, or even see us as tracks of talent development. I have had two people go into Ph.D. programs from the Lab, and they continued to work while they were in the programs. It is hard but they were able to do it.

Michael: I'm thinking about incentives from a different perspective. If the university or a community college is innovative, and we're trying new things in terms of transforming how we are educating students, the models that we're adopting create a strong incentive for faculty and students to really want to do research in that space. At Tec de Monterrey, we've transformed into a completely competency-based education model. It was a difficult journey, and we lost faculty in the process. The new educational model is also a challenge-based model. It's our version of a work-and-learn continuum where we bring industry-relevant problems into the curriculum, with employers actively designing parts of the curriculum with us. This is sparking a lot of interest among our faculty and students to do research in these spaces because these are novel areas of educational innovation. I think they can see that the university is being proactive and transformational, and that creates interest across multiple disciplines to be involved. In addition to addressing funding, budget, and resource issues, having that guiding light and innovation push is helpful as well.

Holly: Diversifying the talent development pipeline is an issue the NCRN and many other networks could be/should be writing and talking about more. There is power in collaborative voices — we know we will need up-and-coming researchers, policy analysts, leaders, and others to take positions in the learn-and-work ecosystem.

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