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Chairwoman Stevens, Ranking Member Baird, and Members of the Subcommittee, thank you for the opportunity to appear before you today to represent Ivy Tech Community College of Indiana and share with you the work that we, and other community colleges across the country, are doing to develop a skilled technical workforce of the future.

Today, I will discuss how machine learning and artificial intelligence are affecting how community colleges and vocational schools educate and train the workforce; how Ivy Tech Community College is working with industry, government, and academia to establish an ecosystem to address the changing demands for the skilled technical workforce; how Ivy Tech is using its Career Coaching and Employer Connections program to assist students in developing a career plan for the jobs of the future; and how the Federal government can work with community colleges and vocational schools to address future research and education needs.

Community colleges are the most common type of U.S. two-year colleges, and they offer millions of students a better way to reach their goals, whether their goal is to get a good career in a shorter period of time, or to get a better, more affordable start to a bachelor's degree by transferring credits on to a four-year school.

For its part, Ivy Tech was founded in 1963 as Indiana Vocational Technical College. Back then, we focused primarily on technical and vocational education. Now, we are Indiana's only community college, a statewide entity with 18 campuses and more than 40 locations. We are accredited by the Higher Learning Commission and offer programs in advanced manufacturing, engineering, and applied science; information technology; nursing and health sciences; business, logistics, and supply chain; public affairs and social sciences; and arts, sciences, and education. Additionally, we offer more than 100 transfer programs with in-state and out-of-state schools and provide students with hands-on experience in some of the state's most advanced technologies and training facilities. While we are the largest singly-accredited statewide community college system in the nation, we shape our curriculum with the needs of local communities in mind and keep higher education accessible for those communities' residents, which results in over 97% of our graduates staying in Indiana.

Our students typically attend on a part-time basis, and the average age of our students is 27 years old. Half of our students are Pell-Eligible and 24% have dependents.

Ivy Tech Student Demographics	
White	73%
Black/ African-American	11%
Hispanic/ Latino	4%
Multiracial	4%
Asian	2%
Other / Not Available	5%

How machine learning and artificial intelligence are affecting how community colleges and vocational schools educate and train the workforce.

Most conversations about the impacts of artificial intelligence (AI) and machine learning in the workplace end with one word: displacement. It is true. Research by The Center for Technology at Brookings states that 14% to 54% of jobs will be eliminated due to automation over the next 20 years. In addition, more than half of CEO's suggest they will be reducing jobs while only 16% plan on increasing jobs. Low-skilled workers in industries such as manufacturing, logistics, and customer service call centers will indeed be displaced, but that does not mean they will be unemployed or unemployable. According to Forbes, where the evolution of technology threatens jobs, it also creates new jobs. Because community colleges were created to be responsive to workforce and student needs in particular communities, AI and machine learning challenge community college and vocational school leaders to prepare a wide spectrum of students for industries that are changing faster than higher education has been able to move in the past. As such, community colleges are forming new partnerships with businesses to provide employers with exactly what they need out of their employees by developing new certifications and nimble programs to address the demand and changes that will inevitably arise from the implementation of AI and machine learning. At the community college level, programs of study have become more flexible in delivery methods by adding more online coursework and through restructuring traditional timing of course work through accelerated programs and shorter course offerings like eight-week courses.

How Ivy Tech Community College is working with industry, government and academia to establish an ecosystem to address the changing demands for the skilled technical workforce;

Ivy Tech is addressing the changing demands for the skilled technical workforce in many ways by partnering with industry leaders to develop flexible degrees that are interdisciplinary in nature, changing our delivery models for class offerings and receipt of payments to best meet student and employer needs, and establishing a comprehensive data-driven program and workforce demand review process to ensure we are keeping our fingers on the pulse of changes in our communities.

Partnerships with industry leaders enable Ivy Tech to address the changing demands. For example, the College has partnered with the Smart Automation Certification Alliance (SACA), other community colleges, and businesses across the country to develop certifications demonstrating competencies in Industry 4.0 skills. We are embedding those certifications in our current programs and training faculty to teach the content. These credentials can be stand alone in the form of digital credentials.

The College's partnership with Salesforce, called Pathfinder, provides students with technical and business skills training to earn a Salesforce Developer or Administrator certification. This qualifies them to fill more than 300,000 positions at Salesforce partner employers. In 2020, the School will introduce two certificates into the Informatics and Software Development associate degree programs allowing the certifications to crosswalk into new College credit-bearing certificates. We have partnered with Apple to build its Swift curriculum – the program language for development of the iOS applications – into our software development degrees, enabling students to earn

certifications and giving them access to Apple partner employers. Ivy Tech is also working closely with Cisco as they overhaul their certifications, which will also be embedded within our School of IT programs. The rising amount of data via the Internet of Things (IoT) requires technical solutions to both manage data and perform data analytics – data stored in the cloud. Via a partnership with Amazon Web Services, the School of Information Technology has created a framework for the creation of “Emerging Technology” certificates, including a Cloud Computing certificate with courses from the Amazon Web Academy. Ivy Tech foresees the creation of an Associate of Applied Science in Cloud Computing as well.

Through each of these partnerships, the College acknowledges that the future of education is through life-long learning that allows students to advance in their careers while they continue to earn valuable credentials that build on one another.

We know that in the future we will need to develop new degrees that support careers not in existence today. The model we have now will allow us to develop those quickly and align them with the needs of our employers in all areas of the state.

The College is also working to address demands by changing our delivery models for class offerings and receipt of payments to best meet student and employer needs. One change is through eight-week course format offerings, which allow students to focus on fewer courses at a time and to complete their degrees more rapidly. National data showed that eight-week course offerings support increased student success over the traditional 16-week sessions, and the results at Ivy Tech have been similar. We have found that our course success rates are higher and drop rates lower for students in 8-week courses than in traditional 16-week courses, and this is especially good for students who are working while attending school, allowing us to address the requirements of employers who continue to have business needs while wanting to encourage employee development.

Additionally, Ivy Tech has created an accelerated Cyber Academy in partnership with the Indiana National Guard at the Muscatatuck Urban Training Complex, the Department of Defense’s largest urban training center. Students earn a Cyber Security/Information Assurance Associate of Applied Science degree in an 11-month, 60 credit hour program, which includes flexibility to modify up to 20 percent of the course curriculum to meet emerging military requirements and needs for cyber-military occupational specialties.

Most notably is our Achieve Your Degree (AYD) program, a proven construct for collaboration between Ivy Tech and employers marketed through the Indiana Chamber of Commerce to offer employees the opportunity to earn a community college education at minimal cost aligned with employer professional development goals and business outcomes.

All degree programs and pathways are approved by the employer with the intention of supporting internal professional development and training opportunities to reduce turnover, foster loyalty and career advancement within the company. These employer approved program offerings include stackable credentials, cohort course offerings, individual academic plans aligned with employer professional development, and dedicated Ivy Tech courses.

Through AYD, the College identifies financial aid, if available, and uses tuition deferral, coupled with a company's tuition reimbursement policies, which serves to eliminate or greatly minimize student upfront costs. This is achieved through the use of tuition deferral, in-state tuition, scholarships, and gap funding by employers or community organizations.

Bloomington, Indiana-based Cook Group is one of 200 College partners in this effort and has been one of the biggest with nearly 500 Cook employees enrolled and 100 credentials earned within the last three years. Through Cook's agreement, participants can earn a certificate stackable through associate degree in seven programs including biotechnology, business administration, hospitality, and various computing and informatics tracks aligned to their business needs.

To ensure the College remains focused on the occupational demands in each area, in 2017, the College began classifying programs into one of four quadrants, developing campus-level and statewide metrics to measure annual progress toward the goal of producing graduates in high-demand fields, meeting the current and future needs of Indiana employers.

Those classification are as follows:

- Growing: High-Demand from Employers/Low Supply Completions (Quad 1)
- Capped: High-Demand from Employers/Limited-Enrollment Completions (Quad 2)
- Shrinking: Low-Demand from Employers/High Supply Completions (Quad 3)
- Equilibrium: Demand/Supply Equilibrium (Quad 4)



Ivy Tech campuses analyze local supply and demand data annually as part of their program review process, which guides decisions to grow or suspend programs. The program review process requires campuses to evaluate program offerings that do not meet enrollment and completion thresholds, taking market demand into consideration. Examples of programs suspended based on market demand data and employer feedback include: Criminal Justice and General Studies programs in South Bend and Anderson. Suspending programs that are not aligned to local demand allows campuses to reallocate faculty and resources to grow high-demand programs. For example, several campuses added faculty to the Supply Chain Management program, and every campus now has Information Technology programs aligned to their employer needs. Supply Chain enrollment grew 21.8% from fall 2017 to fall 2018, and this growth will accelerate due to the addition of faculty and active marketing and recruiting.



Ivy Tech's School of Information Technology focused on the continued growth of IT programs, reflective of the ever-increasing demand for IT talent statewide. Due to the strong marketability of skills attained by Ivy Tech students as well as the local, state, and national demand within the

Information Technology sector, the number of course enrollments in IT classes increased by 21.1% from spring 2017 to spring 2018. Moreover, the highest percentage increase in completions for the entire college came from the School of Information Technology over both recent one-year and two-year periods at 74.8% and 162.4%, respectively.

Responding to Indiana's tremendous demand for registered nurses and licensed practical nurses, Ivy Tech's School of Nursing optimized faculty loading, hired additional faculty where needed, more efficiently utilized campus resources, and took advantage of state legislation that allows the College to hire faculty with Bachelor of Science credentials who are currently pursuing a Master's degree or Nurse Educator certificate. These efforts resulted in increased enrollment in nursing programs, with 2,946 students enrolled in Associate of Science and Practical Nursing programs at 18 campuses in fall 2018. The school graduated 1,564 students from the Associate of Science and Practical Nursing programs in the 2017-18 academic year, with an on-time completion rate of 83%. Campuses continue to work toward the expansion of nursing programs, including building or re-modeling in Muncie and Kokomo. Parkview Health in Fort Wayne entered into a shared staff/faculty memorandum of understanding (MOU) with the College that allows a Parkview nurse to work as a full-time Ivy Tech faculty member for two years at the College's Fort Wayne campus. Ball Memorial Hospital in Muncie signed a MOU allowing for a "Dedicated Education Unit" that allows one unit of the hospital to be solely dedicated to Ivy Tech nursing students. All will allow for increased enrollment as long as the number of nursing and health sciences faculty also increases.

The College now integrates analyses of workforce supply and demand data into considerations of physical plant investments, equipment funding, and personnel decisions. In the area of physical plant investment, each campus is now required to tie labor market supply and demand analysis to their capital project requests. That analysis serves to illustrate current and future needs of employers in the service area. This results in renovations and other changes to campus facilities being tied directly to determinants such as the needs to grow, sustain, minimize, or eliminate programs. Coupled with this approach around capital projects and physical plant, all requests related to equipment, including annual Perkins Grants requests, are required by the College to be tied directly to the supply and demand analysis.

Overall, this strategic approach of leveraging supply and demand data has created more robust discussions for campus, employers, community, state, and College systems office leaders around the importance of thoughtfully utilizing scarce resources and their appropriate allocation.

How Ivy Tech is using its Career Coaching and Employer Connections program to assist students in developing a career plan for the jobs of the future

Over the past year, the College has worked to integrate career outcomes as a vital part of a student's academic journey from application through employment. The college's new Office of Career Coaching & Employer Connections (CCEC) will engage with students early, often, and proactively to provide career support and track completion of indicators. At the beginning of their Ivy Tech experience, students will utilize career exploration and clarity tools as well as labor market data to select a program aligned with their interests, skill sets, and desired wage and employment goals. As students make more informed choices about their fields of study, they will

switch programs less frequently and be more likely to choose a higher wage, high-demand career path. Students will develop a Career Action Plan (CAP), completing tasks strategically designed to lead to work-and-learn experiences, which in turn will make students twice as likely to secure employment. The CAP includes resume development, ongoing interview preparation, regular engagement with employers, and employability skill development. Employers will have defined points of contact to assist them in navigating the engagement and recruitment processes to connect with students, developing work-and-learn experiences, and securing talent.

Ivy Tech's new approach to career services emphasizes career readiness practices alongside academics throughout the duration of the student experience. Implementation of these strategies will result in a clear and meaningful pathway for students to and through Ivy Tech that equips them with the knowledge and skills needed to thrive in the workforce. Skilled graduates will leave Ivy Tech prepared to attain meaningful careers, which will ultimately enhance the Hoosier workforce and economy and strengthen communities across the state. Further, Ivy Tech's goal is for students to report earnings at or above Indiana's median wage by one year post-graduation. CCEC will measure its success in achieving meaningful employment outcomes through rigorous data collection. Students will share their post-graduation status, including job placement and wages, through Ivy Tech's First Destination survey. Ivy Tech will validate data utilizing its existing partnership with the State of Indiana Department of Revenue and the Department of Workforce Development.

Recommendations for how the Federal government can work with community colleges and vocational schools to address future research and education needs.

Going forward industry and government need to work together to identify those workers whose jobs will be eliminated and begin skilling up immediately. One way to do this is to rethink federal unemployment insurance (UI) allowing employers to deploy a portion of the funds they are required to pay towards skilling up employees they know will be displaced by technology within the next two years. Indiana currently has a nearly \$900 million surplus in UI and 50,000 open jobs that require a post-secondary credential. Federal regulations currently determine the number of days' notice employers must give to employees, so changes would need to be made to incentivize employers to give more advance notice, their ability to deploy UI funds towards upskilling, and enable employees to retrain before losing their job. Those jobs identified as more at-risk of being lost due to automation and digitization could receive a higher level of priority, and employees in those jobs, if given additional time, could spend a portion of the day on their existing job and portion of their day attending classes or training at a community college. While it is important to have funds to address needs during a recession, allowing a willing state and community college to serve as an experimental site would leverage the lowest cost training for individuals who will be most affected and reduce the amount of UI deployed as these individuals remain employed. The impact of unemployment is far more than loss of a paycheck; it has psychological, family, and financial impacts. Solutions that proactively upskill individuals whose jobs will be replaced with technology should be a top priority of the federal government.

The federal government can also work with community colleges to modify regulations that hamper schools' ability to be nimble and meet business needs. Many regulations, while intended to protect against harm, do not serve the intended purpose and slow down approval processes

needed to ensure that programs are financial aid eligible, and, on the student side, create additional obstacles for students. Programmatic reviews that are required for a simple name or course change can take months to receive approval, and students enrolling in short-term courses are still not eligible for financial aid because of program length. Additionally, student financial aid verification requirements result in lost aid to students who need it most.

States also need continued support of funding opportunities to support faculty training and equipment upgrades. Because technology so rapidly changes, it is important that students can train on current equipment. Use of virtual reality trainers can help some, but support of models like apprenticeships in nontraditional industries can advance work-based learning that is essential in developing the skills and experience employers require. Technology is constantly evolving and skills formerly required only by technicians and engineers like design, data analytics, and innovation are increasingly required by more entry-level positions.

Finally, the federal government can work in tandem with community colleges to reach underrepresented groups to encourage the attainment of post-secondary credentials in high wage technology intensive careers. Many of these potential students need wrap-around services like child care, transportation, healthcare, food, and even addiction services to successfully complete the credential that could help them improve their lives. Forward-thinking partnerships between community colleges and the federal government to develop holistic programs can help meet and anticipate the demand for skilled workers in an ever more AI, digitized, automated workplace.

Thank you again for the opportunity to appear before this Subcommittee and share the work of Ivy Tech Community College. I applaud and appreciate your leadership and service to our country.

Ivy Tech Community College and the Indiana Chamber are pleased to offer Chamber members a unique and innovative solution to meet current and future workforce needs. Achieve Your Degree allows employees the opportunity to earn a credential through a combination of online and on-campus coursework and defer the tuition payment until the end of the semester. Chamber members enrolled in the Achieve Your Degree program are eligible for a 5% rebate on paid employee tuition.

WHAT ARE THE BENEFITS TO MY ORGANIZATION?

The talent currently housed in your organization will be cultivated and developed; this talent will then become more involved in the community and will stay company-loyal due to your support.

WHAT DOES THE PROGRAM COST MY EMPLOYEES AND ME AS AN EMPLOYER?

You are responsible for anything the student's financial aid package does not cover, but Ivy Tech will help you design a tuition-reimbursement policy to cover these costs. The tuition payments for students will also be deferred until the end of the semester, ensuring students take advantage of financial aid opportunities. All employees will receive in-state tuition.

HOW DOES THE APPLICATION PROCESS WORK?

Ivy Tech staff will come on-site to assist employees with online applications for both the College and financial aid.

WHAT SUPPORT IS AVAILABLE TO MY EMPLOYEES?

Ivy Tech offers individualized advising, financial aid, admissions assistance, and tutoring to assist employees with their courses and help foster success. Ivy Prep, a program designed to develop skills to best prepare your employees for college math and English, is also available.

WHAT SUPPORT IS AVAILABLE TO ME?

Ivy Tech will provide you with all necessary collateral needed to advertise the program, as well as a point person to help coordinate everything for your employees.

Learn more at indianachamber.com/achieve
or call (800) 824-6885.

NEXT STEPS:

- 1 Complete the Memorandum of Understanding
- 2 Work with Ivy Tech to determine a date for an on-site information and enrollment session
- 3 Determine your point person for the Achieve Your Degree program
- 4 Identify academic programs to fund
- 5 Market Achieve Your Degree program to your employees

BENEFITS OF ACHIEVE YOUR DEGREE AS A MEMBER OF THE INDIANA CHAMBER

Your organization:

- Chamber members enrolled in the Achieve Your Degree program are eligible for a 5% rebate on paid employee tuition
- State funding through Next Level Jobs grant opportunities
- Ivy Tech will help design a custom program tailored to your company's employees

Your employees:

- Many class options, both in-person and online, available at multiple locations across Indiana
- Multiple start dates throughout the year
- Classes in 16-week and 8-week formats
- Expanded skillsets to become more valuable employees