

Ramona Schindelheim, WorkingNation editor-in-chief:

You're listening to Work in Progress. I'm Ramona Schindelheim, editor-in-chief of WorkingNation. Work in Progress explores the rapidly changing workplace through conversations with innovators, educators, and decision-makers, people with solutions to today's workforce challenges.

Ramona Schindelheim, WorkingNation editor-in-chief:

Even before the coronavirus pandemic, there was a shortage of cybersecurity workers. With the increase in remote work and the increase in cyber attacks such as ransomware, that need for workers has grown exponentially. Joining me to talk about that need and also an interesting program that might help create a talent pipeline for cybersecurity workers is Mark Ouellette, senior director for ICF and program manager for the Cybersecurity Youth Apprenticeship Initiative. Mark, thank you for joining me.

Mark Ouellette, CYAI program manager:

Thank you so much for having me today, Ramona.

Ramona Schindelheim, WorkingNation editor-in-chief:

Let's start, Mark, by talking about the overview of what the unmet demand for cybersecurity experts is now, or even entry level.

Mark Ouellette, CYAI program manager:

Yeah, great question. So we use a tool and it's called CyberSeek. It's supported by really three groups, the National Initiative for Cybersecurity Education, which we've been a member of for a number of years and we work on a number of community interest groups, working groups to really address the need for more cybersecurity education. A group called Burning Glass, which really focuses on data. It gets data from the Bureau of Labor Statistics and creates it in an innovative way, and one of the leaders in cybersecurity education, CompTIA.

Mark Ouellette, CYAI program manager:

So they came together, they have a website called CyberSeek. [Cyberseek.org](http://Cyberseek.org), if you're interested. What it's done, CyberSeek, is it's identified there's about 465,000 job openings in cybersecurity across the United States. The interesting thing about this tool is you don't just go, "Wow, that's a big number," you can actually get into your community and look at a heat map, which will tell you what is the need, how many openings there are, what are the skillsets needed for both those entry level and the middle level professions, and what credentials you should be getting.

Mark Ouellette, CYAI program manager:

So that's really the data we use and that's really the need, and that need has fluctuated around the 500,000, 450,000, depending on the data they get.

Ramona Schindelheim, WorkingNation editor-in-chief:

What does a cybersecurity worker do? So I'm sure there's multiple levels, just like any job. What skill is needed? Let's start with the entry level.

Mark Ouellette, CYAI program manager:

The thing about cybersecurity is that it's really industry-agnostic. I mean, you're going to need cybersecurity folks in government, in schools, in banks, in hospitals now, because as you mentioned in the introduction, Ramona, there's so much ransomware happening every day. What was it? The pipelines were shut down in the Southern part of the US last winter because of a cybersecurity ransomware attack.

Mark Ouellette, CYAI program manager:

At our level, which we focus on more entry level and younger professionals, it could be anything from protecting data, to if you've moved to an at home environment because of the pandemic, how is my at home environment? Am I secure enough if I'm taking these secure files? Assessing, doing an audit of that environment. If you have a problem, something all of a sudden is going haywire and you don't know why, and you make a phone call and you have your IT help desk.

Mark Ouellette, CYAI program manager:

Those are all cybersecurity professionals, but it's also medical records in the hospital field, making sure that the data that you collect from all these COVID tests is secure and safe so someone doesn't hack into it and get your data and share it.

Mark Ouellette, CYAI program manager:

The other thing that I really like to think about is we all see these Facebook questions that come out and ask us what's our favorite color? You say, "Oh, it's red." Well, all of a sudden you've got all these hackers that have a million bits of information about you, and when they hack into your system, they're going, "The password might be red." "Oh, your dog's name is Purple? Maybe Purple is the name."

Mark Ouellette, CYAI program manager:

So people are constantly doing things, providing information themselves thinking they're being fun, but really it's making them more vulnerable to attacks. So a cybersecurity expert, even at the entry level, is really educating their coworkers about what they can do to protect themselves and their work environment, and actually their personal as well.

Ramona Schindelheim, WorkingNation editor-in-chief:

That's a really great point about Facebook, because I saw a couple of those ads and then I did see the stories around them saying, "Don't do this," and I stopped doing it.

Mark Ouellette, CYAI program manager:

Exactly, exactly. Yeah.

Ramona Schindelheim, WorkingNation editor-in-chief:

Yeah.

Mark Ouellette, CYAI program manager:

The other thing, even which I find still to this day, you have a Zoom meeting and you'll have 20 faces, first, last name, and somebody takes a picture and posts it. Well, all of a sudden, a hacker's got your first name, your last name, they know what groups you're in. So whenever I'm posting anything in any of the

Zoom meetings, I never put my full name. I mean, these little things that you think about are so random, so common, really they're providing opportunities for somebody to come in and steal your data.

Ramona Schindelheim, WorkingNation editor-in-chief:

How does the cybersecurity expert worker help you if somebody does take that information? How do they come in and fix the problem?

Mark Ouellette, CYAI program manager:

So, depending upon the industry where you're at and depending upon if it's a more of a personal or a larger hack, sometimes in a ransomware case, they'll pay the ransomware, or as what happened to my kid's school, about a year ago, they decided not to pay and kids had to go back to pen and paper for six weeks. And what they did is they had to go through and clear every single password, look at every single webpage, check, go behind the system to make sure there was no more spyware on them, clean all the spyware out. There are systems that you can use to do that.

Mark Ouellette, CYAI program manager:

So part of it is that aspect, cleaning your system out. Part of it is making sure that your phone's updated. If you have an iPhone, you recently got, because the spyware is now on your iPhone, you have to update it. So, constantly educating. I mean, I'm telling my kids all the time, "Update your phone." "Dad, I don't want to update my phone." I'm like, "You need to."

Mark Ouellette, CYAI program manager:

So part of it is helping your system, part of it is helping your files, part of it is making sure things are backed up. So if it is vulnerable, that you don't completely lose everything that you have, you still have records. So, those are all elements that they provide.

Mark Ouellette, CYAI program manager:

Then when COVID first hit, one of our clients, a local city, they had three of 13,000 workers working from home. All of a sudden 13,000 people working from home. And so, one of our registered apprenticeship programs developed an audit sheet and the young people that we support went into homes, virtually, called in, used assist software to go in, check the environment to make sure it was secure, that the person could work from home safely and the work wasn't vulnerable to attacks.

Ramona Schindelheim, WorkingNation editor-in-chief:

So, part of what you're doing now is working with the Department of Labor on this CYAI, as you call it. Can you explain how you're creating these programs for young apprenticeships?

Mark Ouellette, CYAI program manager:

Sure. So we support what's called registered apprenticeship, which is a national program where... and for our instances, because it's the youth apprenticeship, we are acting as an intermediary on the behalf of the Department of Labor. So, the employment and training administration within Department of Labor has funded ICF to go in and support or register 900 youth apprentices in IT and cybersecurity by 2024. I was just looking at our data. As of now, we're about 500 that we've been able to place.

Mark Ouellette, CYAI program manager:

What we do is we work with high schools, community colleges, community-based groups that are saying we see a need for better training. What curriculum is out there? We help them identify curriculum. If they need help recruiting young people, which nobody really does, but if they did, we help them with that. We help get the businesses to raise awareness about what does a young person do as a cybersecurity? What are their skillsets? Because apprenticeship for businesses are new if they're not in the traditional construction trades, and so a lot of employers are like, "I need help. I need help right now. But what's an apprentice? What do I have to do?"

Mark Ouellette, CYAI program manager:

And so, we are a bridge to combine those entities that are interested in providing training, we give them training resources. We help them align their training to their local employer needs, we help raise awareness with employers and then we also fund programs. We actually have money from the department. It doesn't cover the entire cost of an apprenticeship, but it does cover some expenses. And so, if you're a registered apprenticeship, we do give you funds per participant.

Mark Ouellette, CYAI program manager:

And then we also help out with what are called capture the flag events, ethical hackathons, where what we do is there's a series of questions and the young people show their skills. We encourage employers to come see what they're doing, see how qualified these individuals are, and that really is a match. You see light bulbs going off with employers all the time. "Wow, that person has that skill? How do I get them on my team?" So, that's really kind of our role.

Ramona Schindelheim, WorkingNation editor-in-chief:

So this is apprenticeships for young adults, 16 to 21. Are they through mostly businesses or through a school program? If I have a child 16 to 21, how do I get them hooked up into this kind of apprenticeship?

Mark Ouellette, CYAI program manager:

Yeah, good question. So, there's couple elements. So, an apprenticeship is a job while you're learning. So usually you'll register through either your high school, a community college, community-based organization, is usually who will do what we call the RTI, the related training instruction. That relating training entity will partner with an employer. So in some instances, it's large employers, Google. IBM has really been championing apprenticeship for a long time, and they've got a number of different programs and they've been very active with [inaudible 00:10:08], so I know them well.

Mark Ouellette, CYAI program manager:

They will find employers, and that's always the tricky part for any of these RTI programs, finding employers that want to buy-in. Sometimes it's small employers. So, the training program will work with the employer. The apprenticeship program, registered apprenticeship's not going to take you until they can guarantee you have a job. If they can't give you work, they're not going to sign you up. And mostly it's work and learn at the same time. That's what makes apprenticeships unique from traditional college.

Ramona Schindelheim, WorkingNation editor-in-chief:

So, it's a combination of classroom experience and practical experience?

Mark Ouellette, CYAI program manager:

Correct. It's a combination of practical. Some of programs like some of our high school programs, the individual will go to school for part-time, and then in the afternoon, they'll go to work. Some of our programs that are more community-based, you'll spend three months learning the RTI, getting a basic security plus skill, and then going in and working for nine months and gaining that skill, and getting mentoring and seeing how you do the actual work that you've just learned.

Ramona Schindelheim, WorkingNation editor-in-chief:

Do you think that there's certain skills that you need going in? Do you need to know any coding? Do you need to know any type of language, or is it something that can be taught as you go along?

Mark Ouellette, CYAI program manager:

You can really teach it as you go along. We've had a number of examples of folks who were in a completely different field. I have an individual, his name was Andrew, who was going to go to community college, wanted to be in finance, didn't really know a ton about computers or coding. Realized he couldn't afford finance, he couldn't afford community college, he couldn't afford the then four year degree to the transfer, and so somebody told him about a training program that was teaching him coding and basic IT and cyber skills. He went there and he's been there for about six months now, and absolutely loves it and thinks he's found where he wants to go.

Mark Ouellette, CYAI program manager:

So, it's not necessarily important. What's really more important is we're trying to push diversity in cybersecurity, and the reason for that is hackers are coming at it from different perspectives. If you have the same group think, the same people have gone through the same program, they're going to approach every problem the same way. Different opinions, different approaches, different ways that attacks happen have to be addressed. Always trying to stay one step ahead of what those are, it's really important that you have a diverse audience, and a registered apprenticeship provides that diverse audience to get into this space.

Ramona Schindelheim, WorkingNation editor-in-chief:

As we've said, this is a paid apprenticeship. What type of salary are these students getting?

Mark Ouellette, CYAI program manager:

So our salary has been a little lower [inaudible 00:12:38] in a lot of cases. So of those first 500, we've had a range from 12, again, we're national. So take that in perspective. We've had a range from \$12 to about \$21. I would say the majority of them are in about the \$15 range. But part of it is, the way apprenticeship works, as you show more skills and we only take entry level rate wages for hard data, as you show more skills through your apprenticeship, and you're able to demonstrate expertise in the skill that wage goes up. So by the time you exit the apprenticeship program you're on par with what an entry level person in the field would be getting. So depending upon where you're located, what actual apprenticeship you're in, it could potentially be a six figure salary. Just depends, really.

Ramona Schindelheim, WorkingNation editor-in-chief:

So this is a fairly new program, right? Is it second year, or?

Mark Ouellette, CYAI program manager:

We just started our second year in June. So we go June to June.

Ramona Schindelheim, WorkingNation editor-in-chief:

It's not like you have somebody might be who had graduated and moved on into a new job into the field yet?

Mark Ouellette, CYAI program manager:

Yeah. The way it works for us, and that's actually a great question. Department of Labor we have what's called the core contract officers representative. And they've asked us, they feel little problem with this old program is they never asked us for long term data. So we don't collect that. So we don't really know... Because what's happened a lot, somebody gets into an apprenticeship, we work with the apprenticeship provider or it's a year long program to finish it. And six months in, they've got enough skill that another employer might pull them out of the program, be like, "Hey, I want you." And "Wow, I can keep working for another six months at \$15 or all of a sudden I'm jumped up to \$19 if I jump out of the apprenticeship program."

Mark Ouellette, CYAI program manager:

So some of those people don't complete the apprenticeship program, but some of the guys I've talked to and there's a really great guy out in St. Louis. He's like, "At the end of the day, I'm frustrated because it hurts my numbers, but that person got a job. And that's what I'm trying to do in a career that's growing that's not just a dead end job for them. So I got to look at it that way."

Ramona Schindelheim, WorkingNation editor-in-chief:

Yeah. I was going to say that is not really a bad problem to have, that you're giving them the skills that they can actually get those jobs.

Mark Ouellette, CYAI program manager:

Exactly.

Ramona Schindelheim, WorkingNation editor-in-chief:

Because as you said, those jobs are well paying jobs and they're abundant.

Mark Ouellette, CYAI program manager:

Yep.

Ramona Schindelheim, WorkingNation editor-in-chief:

This would be a drop in the bucket actually, to what is needed out there. And I know this is a field that you look at quite a bit, the workforce development. Are there any other programs out there that you've seen that can help maybe somebody who's in their twenties?

Mark Ouellette, CYAI program manager:

Yeah. Department of Labor right now has been funding at extraordinary levels a registered apprenticeship program. So this is just a youth program, so we're focused to 21, but there's an industry equity apprenticeship where CompTIA, who I mentioned earlier, the Washington Technology

Association Urban Institute have a group called Apprenti, which has done some really amazing work up in Washington, who go beyond 21. And actually, a lot of community colleges that we talk to say, "Love your program, would love to work with you. Just our average age of our participant coming in is 27." And we try to tell them, "If you have a cohort and you got 20, you might have one or two that's in our age group and we'll take those one or two." I mean, we're trying to get to 900, hook or crook.

Ramona Schindelheim, WorkingNation editor-in-chief:

Is your background in workforce development in general?

Mark Ouellette, CYAI program manager:

Yeah. It's in workforce development. Specifically for a long time, I worked for a city agency designing programs for, we call out of school youth. So those 16 to 24 that are disconnected from work and disconnected from schooling and try to find opportunities for them.

Ramona Schindelheim, WorkingNation editor-in-chief:

What's next? You're trying to get up to the 900.

Mark Ouellette, CYAI program manager:

Yep.

Ramona Schindelheim, WorkingNation editor-in-chief:

Is there a way to expand that program for more kids or is this a trial balloon?

Mark Ouellette, CYAI program manager:

This program that we're working under from the Department of Labor was the first time actually the Department of Labor came together to focus on youth apprenticeship with particular money and just try to raise awareness. I think they're pretty happy with what we've been doing. There's four of us contractors. We're the only ones that focus on IT and cybersecurity others focus on manufacturing and healthcare and other areas. So they've been happy with our work.

Mark Ouellette, CYAI program manager:

Department of Labor has funded about 25 different grantees across the country, those are called [inaudible 00:17:14] grants, you can go on Department of Labor Office of Apprenticeship and get information about those. So they're looking to expand.

Mark Ouellette, CYAI program manager:

Some states now are starting to invest in youth apprenticeship at high levels. There's been a lot of money going now to states to rethink their apprenticeship strategies. Some are really cutting edge and innovative. A standard register apprenticeship program takes 2000 hours of on the job training and 144 hours of a of instruction. Whereas some youth apprenticeship, they realize they're in school and they reduce those numbers a little bit to accommodate for high school. We do have some high school programs where actually the CTE element is training on cybersecurity and then they're hiring the school district itself, because they can't compete with wages, are hiring those young people to work in the school district to address their cybersecurity needs, their security needs. There definitely are a lot of opportunities out there.

Ramona Schindelheim, WorkingNation editor-in-chief:

That's really fascinating because we haven't talked a lot about these youth apprenticeship programs here at Working Nation and I'm glad we can share it with the audience today.

Mark Ouellette, CYAI program manager:

Thank you so much, Ramona.

Ramona Schindelheim, WorkingNation editor-in-chief:

Thank you, Mark, for joining me.

Ramona Schindelheim, WorkingNation editor-in-chief:

I've been speaking with Mark Ouellette, the program manager for the Cybersecurity Youth Apprenticeship Initiative. I'm Ramona Schindelheim, editor-in-chief of Working Nation. Thank you for listening.