WiCyS 2019 Conference Overview

WiCyS Evaluation
2018-2019
Year 6
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Organization and Conference Overview

Cybersecurity is a growing field in which women are drastically under-represented (20% of workforce). WiCyS (Women in CyberSecurity) is a non-profit membership organization based in the USA that is dedicated to bringing together women in cybersecurity from academia, research and industry to share knowledge, experience, networking and mentoring across North America. It is dedicated to the recruitment, retention and advancement of women in cybersecurity. The initiative was created through an National Science Foundation grant (Award #1303441) by Dr. Ambareen Siraj at Tennessee Tech University six years ago. This Conference was the first national event for women in cybersecurity. The Conference provided an opportunity for students, educators, and professionals in this field to both network and to develop new skills. Over the years, WiCyS has grown into a wonderful alliance among academia, government and industry.

WiCyS offers numerous benefits, including an "Online Community Forum," providing access to around 5,700+ WiCyS members, a community made up of 95% women in cyber and growing every day. The Forum facilitates sharing of resources, research, career and internship opportunities and regional/local events. In addition, WiCyS works with Strategic Partners and Sponsors that are aligned with the WiCyS mission of recruitment, retention and advancement of women in cybersecurity through a Job Board, Student Chapters, Affiliates, Webinars, Speakers Bureau, a Mentor Program, Virtual Career Fair and its Annual Conference.

The WiCyS Annual Conference is a networking, recruiting and professional development opportunity for students, educators, researchers, and industry. The event is an excellent opportunity for companies to connect with women candidates to recruit them into the field. 50% of the attendees are students seeking opportunities/resources who have been accepted through the scholarship program that sponsorships help to support. In addition to students, the other 50% is made up of experienced leaders and professionals in the field who share their knowledge and expertise with others, mentor those interested and provide opportunities and resources.

The WiCyS Conference registration is controlled to ensure 50% of expected attendees are students from 2- and 4-year institutions at all levels of education. Registration costs are subsidized at a very low rate for attendees (especially students, faculty and veterans). WiCyS provides two free nights' shared lodging to all students, and to at least 30% of faculty. The no-cost lodging enables many students and faculty to attend the Conference. WiCyS also works to secure from WiCyS industry partners

travel scholarships for students. The students and faculty receive such benefits by applying for and receiving WiCyS scholarships that are given in the supporting organizations' name.

A Career Fair is an integral aspect of the WiCyS annual Conference, along with dedicated sessions for academia, research and industry tracks. In addition to a Career Fair, the event offers invited speaker sessions, technical presentation sessions, panel and birds-of-feather sessions, lightning talks, student poster sessions, workshops, and mentorship through an onsite Career Village. Sponsors of the Conference are well-known leading organizations representing industry, academia, government, non-profits and research labs. In delivering the many aspects of the Conference, WiCyS also works with numerous volunteers who support and strengthen the WiCyS mission.

2019 Annual Conference Overview

The Sixth Annual WiCyS Conference was held March 28-30, 2019 in Pittsburgh, PA. Since its inception, WiCyS has worked with a local academic host or hosts to assist with logistics of the Conference, and in 2019 the Conference was co-hosted by Carnegie Mellon University at the Wyndham Grand Hotel in Pittsburgh. WiCyS established a 2019 theme of LEARN | WORK | LEAD: The WiCyS conference program offered many choices— "to LEARN new solutions, challenges, trends, best practices, career development tips, and resources; to WORK your skill and talent in presenting, asking the right questions, finding mentors, being a mentor, trying out for opportunities; and to LEAD initiatives for empowerment."

The Conference continues to grow in popularity, even with WiCyS capping attendance to maintain an intimate, accessible environment for networking and learning. Within 45 minutes of opening general registration for public, the Conference was sold out in attendance, leading the organizing team to plan for slight expansion for the coming years. 1,300 people registered for the 2019 Conference, almost four times the number attending the first WiCyS Conference in 2014. The attendees were students, faculty, researchers, and industry professionals. There were 365 organizations represented at the Conference in 2018 and 370 organizations represented at the Conference in 2019. The WiCyS Conference has grown every year from 350 attendees in 2014, 475 in 2015, 750 in 2016, 785 in 2017, 1000 in 2018, and 1300 in 2019. While NSF originally funded 250 attendees for two years, WiCyS has had approximately 4,660 attendees over the last six years.
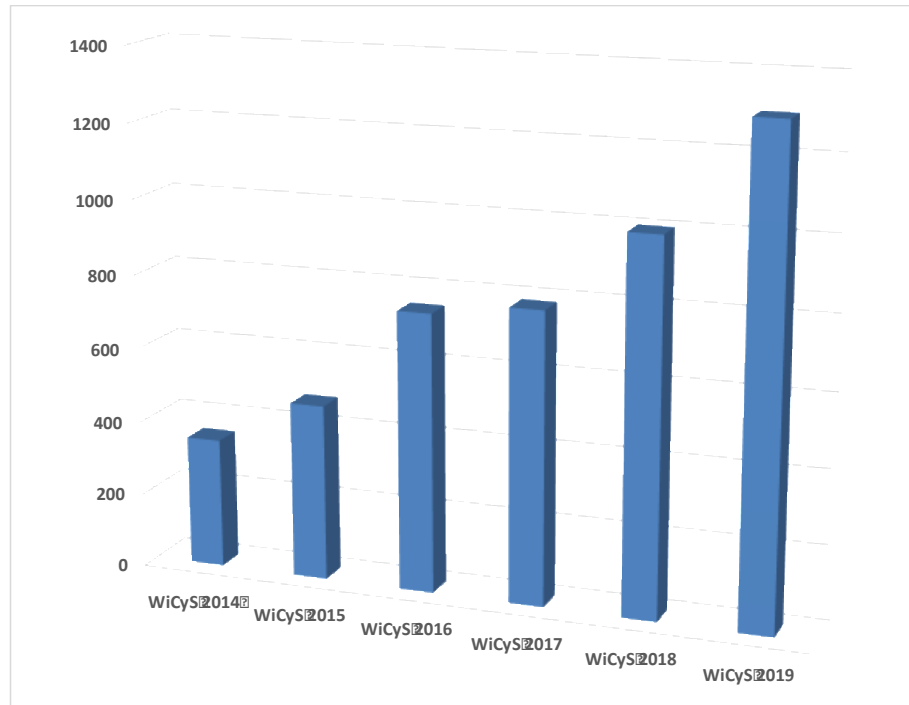
Figure 1: WiCyS Attendance

Evaluation Data Collection

1. Post-conference evaluation was done with a survey link that was emailed to all participants. This was delivered using a web-based survey program. Two follow-up reminder emails were sent.⌊SEP⌋
2. The evaluator both observed the Conference and conducted informal interviews of attendees at the Conference.
3. An on-site paper survey was distributed to all sponsors at the end of the Career Fair.

Conference Survey Results

Of the 1,300 attendees, a total of 289 attendees completed the Conference survey, and 39 sponsors answered the on-site paper survey for a total response rate of 25%. The following information is drawn from those surveys, with additional information included from interviews on-site and observations from the Conference.

Survey Respondent Demographics

Of those completing the survey, 93% were female, 6% were male, and 1% answered as other. Similarly, the attendees reflected diversity in their race/ethnicity composition. Compared to the first year of the Conference, the diversity has increased. This year, 61% of the attendees were white, 10% black/African American, 18% Asian, and 11% Latino/Hispanic.
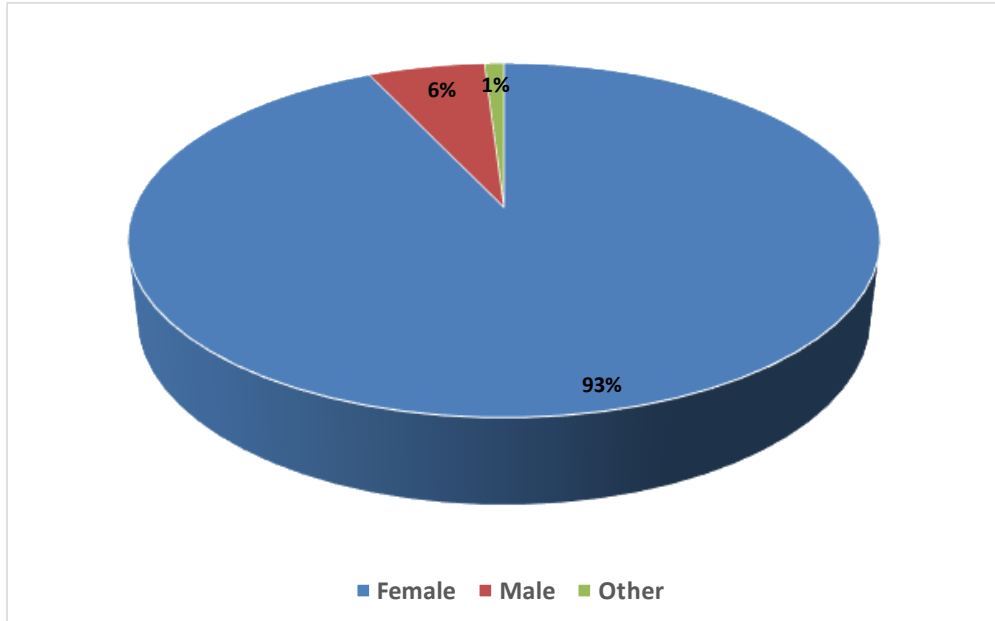

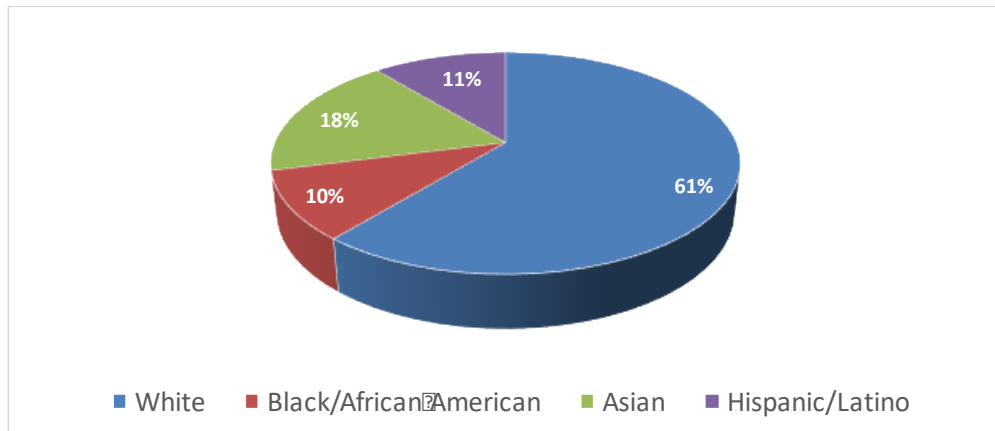**Figure 2: Gender of Survey Respondents**

Figure 3: Race/Ethnicity of Survey Respondents

The survey data demonstrates that the attendees included diverse categories: 51% were students, 14% were educators, 30% were professionals, 2% were human resource personnel, and 3% selected other.
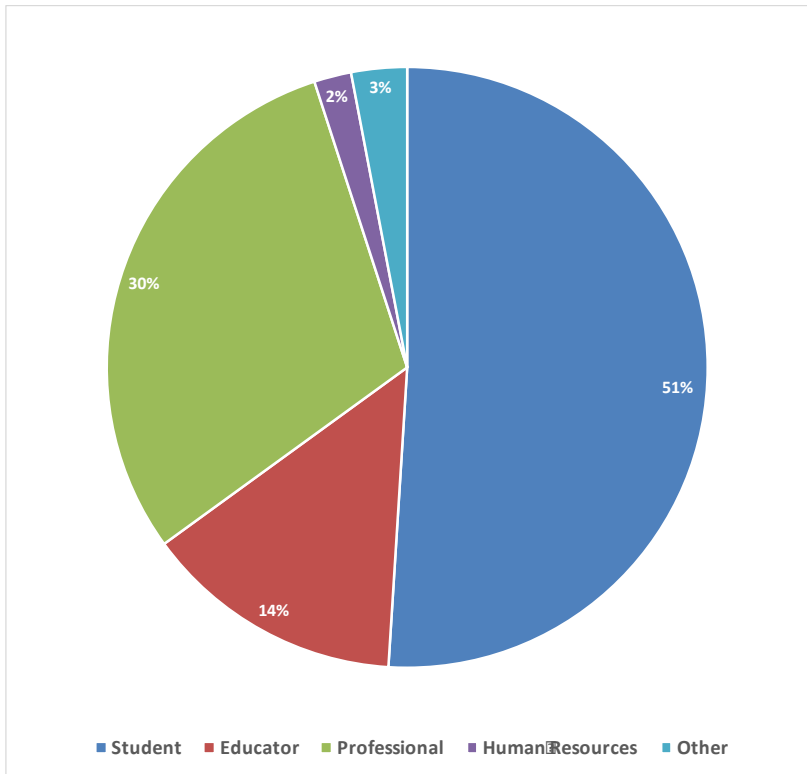
Figure 4: Survey Respondent Categories

The student categories included: 57% were undergraduate students, 36% graduate students, 6% were associate students, 1% were high school students, and 1% selected other. The educator categories represented approximately 61% at bachelor's level, 56% at graduate level, 17% at community college level, and 3% at high school level.
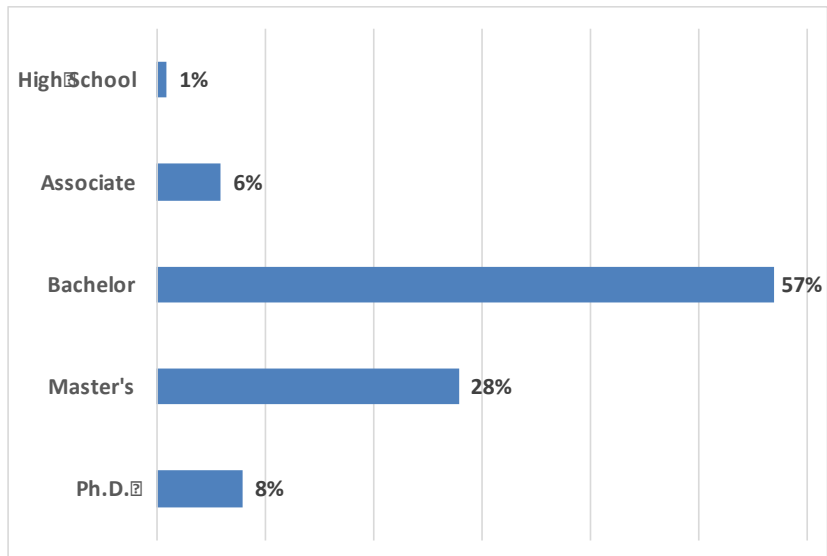

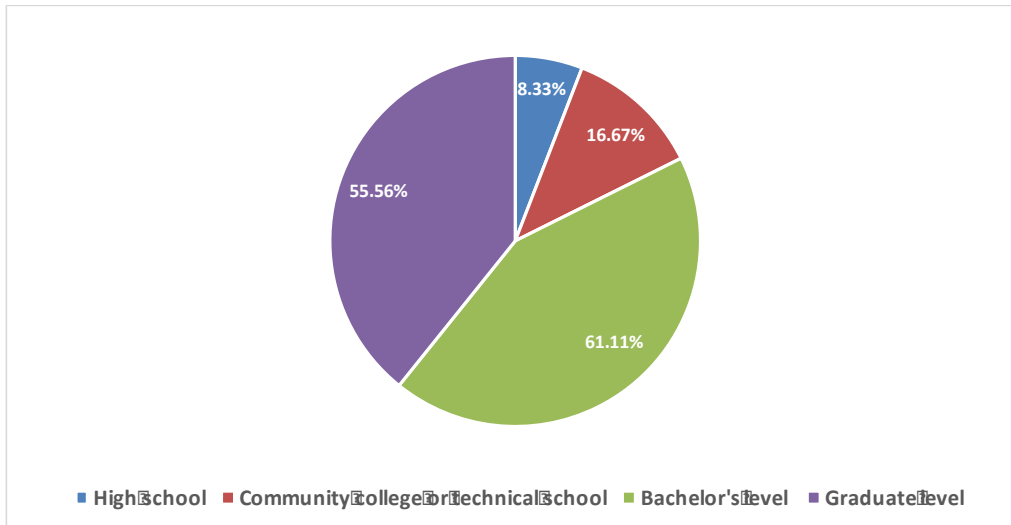**Figure 5: Survey Respondent Student Categories**

Figure 6: Survey Respondent Educator Categories

Coverage of Attendance Cost

WiCyS covered the cost of lodging for approximately 60% of the respondents, 16% were covered by their institutions as sponsoring partners, 18% by their institution, and 6% personally covered their lodging.
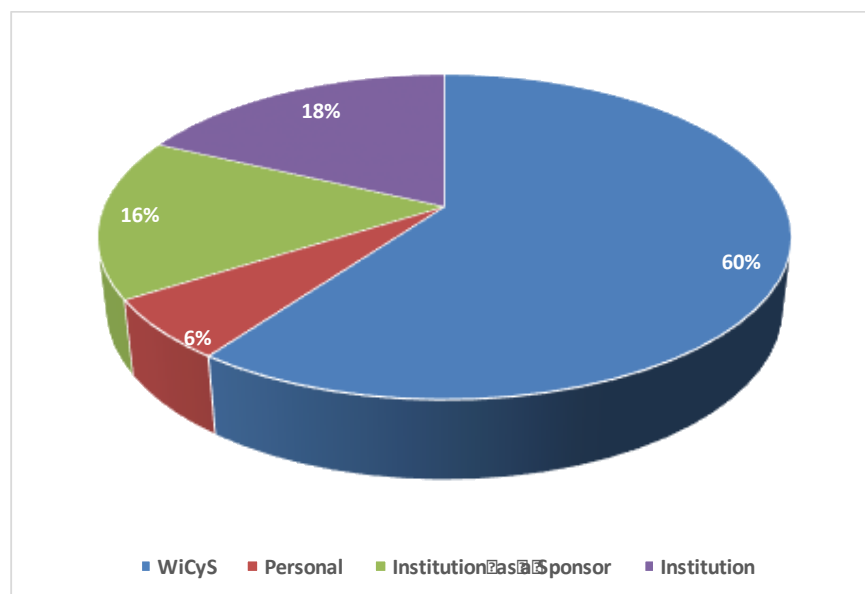

Figure 7: Coverage of Lodging

In response to coverage of travel, 54% of the responding attendees said their institution covered their travel. The second most frequent response was 30% of the attendees, who said they personally covered their travel. Seven percent of attendees said that their travel was covered by WiCyS Strategic Partners (Facebook, Cisco, Fidelity Investments) and 9% were covered by the WiCyS Project.
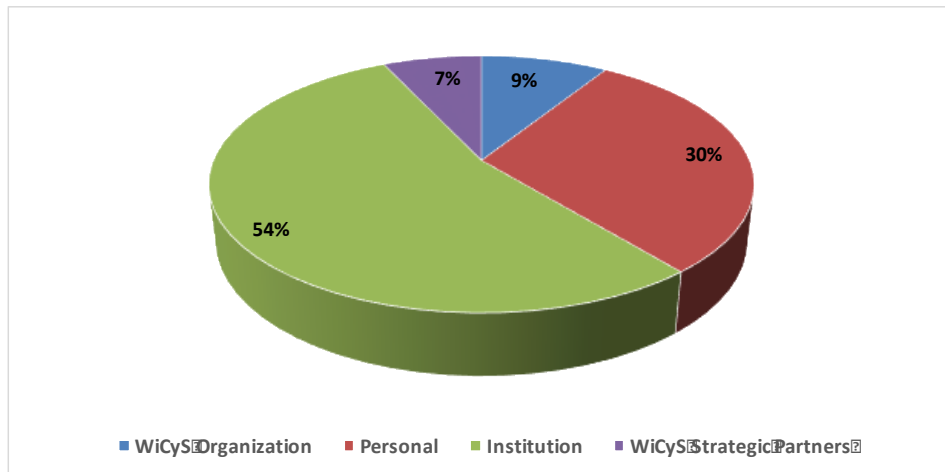
Figure 8: Coverage of Travel

While funding has had a major impact on attendance every year, the impact on students' attendance was slightly higher in two categories this year than the previous year. Funding was crucial for attendance at the Conference, as evidenced by both the open ended responses that we received from participants about whether they would attend next year, and noting the answers to specific questions about funding and conference attendance. Of those responding, 98% said that the low cost of the subsidized registration enabled them to attend this Conference. Similarly, 98% of respondents said that the no cost for meals enabled them to attend the Conference.

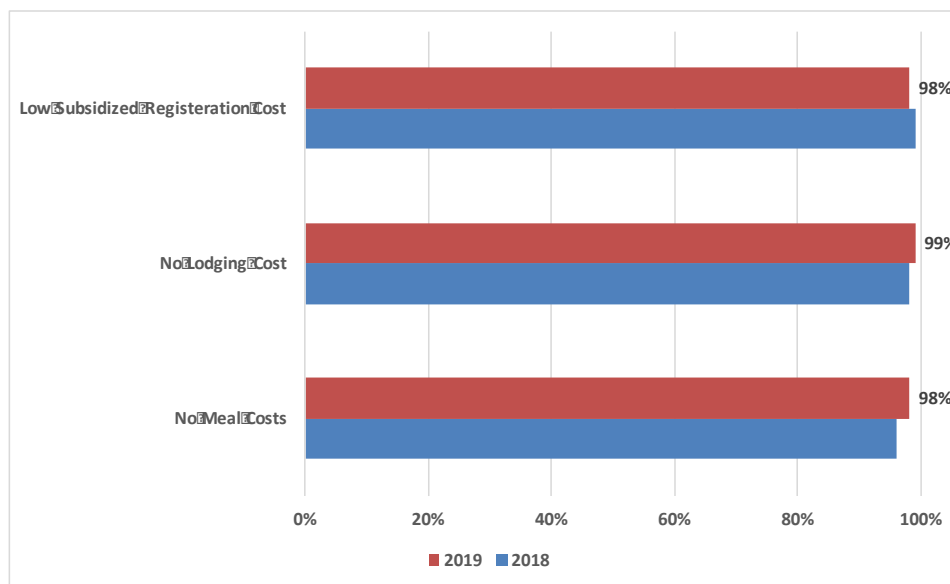Likewise, 99% said that no cost housing enabled them to attend the Conference.

Figure 9: Funding Impact on Students' Attendance

Asking the educators and professionals about the funding impact on their attendance next year, 78% of the respondents answered that the low subsidized registration enabled them to attend the Conference, and 81% responded that no cost for meals enabled them to participate.
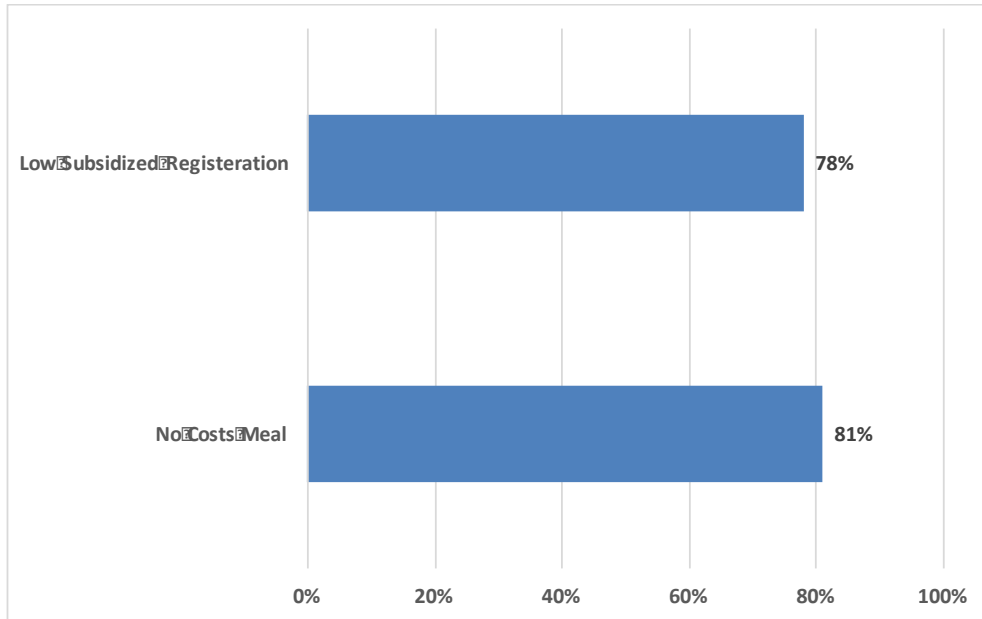

Figure 10: Funding Impact on Educator & Professional Attendance

Impact of the Conference

The response to WiCyS 2019 was overwhelmingly positive, as is evident from the survey responses as well as the growth in attendance, which was capped at 1,300.

Conference Observations and Interviews

Observations on the Conference were captured from a diverse group of attendees – diverse in terms of gender, race/ethnicity, education level, and type of attendee at the Conference. All the attendees were excited and engaged in Conference activities. Sessions were well attended. People were actively engaging in all interactive activities, asking questions at all events, from individual sessions to keynotes. Networking was occurring at all possible opportunities from mealtimes to the hallways, in addition to the formal and informal networking events. Resume Reviews and Mock Interviews, held as part of a "Career Village" were well organized and well attended. The one-day Career Fair was packed. The Student Poster

Competition was well attended, and students were actively answering questions. Registration was efficient and ran smoothly.

Students revealed numerous reasons to attend the conference, including networking, job hunting, and exposing themselves to the professional field. First-time student attendees indicated that the Conference was well organized, workshops were great, and lightning talks were quick and concise learning segments for novice students to learn security and cyber terms. For academic educators, some stated that they attended to seek funding to hire security faculty, or to seek Ph.D. students who may be interested in faculty positions. Academic educators along with some Ph.D. students noted that it was difficult for them to identify from the name tags who were in academics and who were Ph.D. students. They suggested a one-hour meeting for faculty members and Ph.D. students during the conference. Many attendees described the conference as "inspiring" and "empowering". Some professionals requested longer workshops sessions to address training purposes.

Of the attendees completing the survey, 97% rated the overall Conference as good to excellent, while only 2% rated it fair and 1% rated it poor. The most common modal response was excellent, with 65% rating it excellent, 24% very good, 8% good, 3% fair and 1% poor
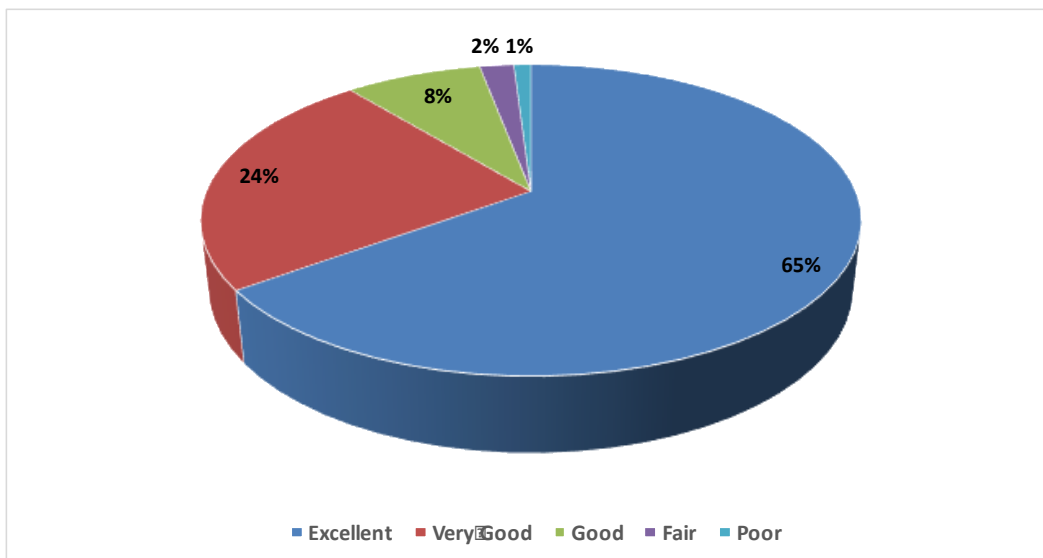

Figure 11: Rating of Conference Overall

Overall, people were pleased with the location, conference facilities, lodging, meals, and registration process. 97% felt that the location was excellent, very good, or acceptable. 93% felt that the conference facilities were excellent, very good, or acceptable. The registration process was rated as total of 98% of the answers

reporting excellent, very good, and acceptable. Likewise, a total of 92% rated the lodging as excellent, very good or acceptable. The aspect of WiCyS that attendees were least satisfied with were the meals and snacks, although a total of 87% of them reported that meals and snacks were excellent, very good, and acceptable.
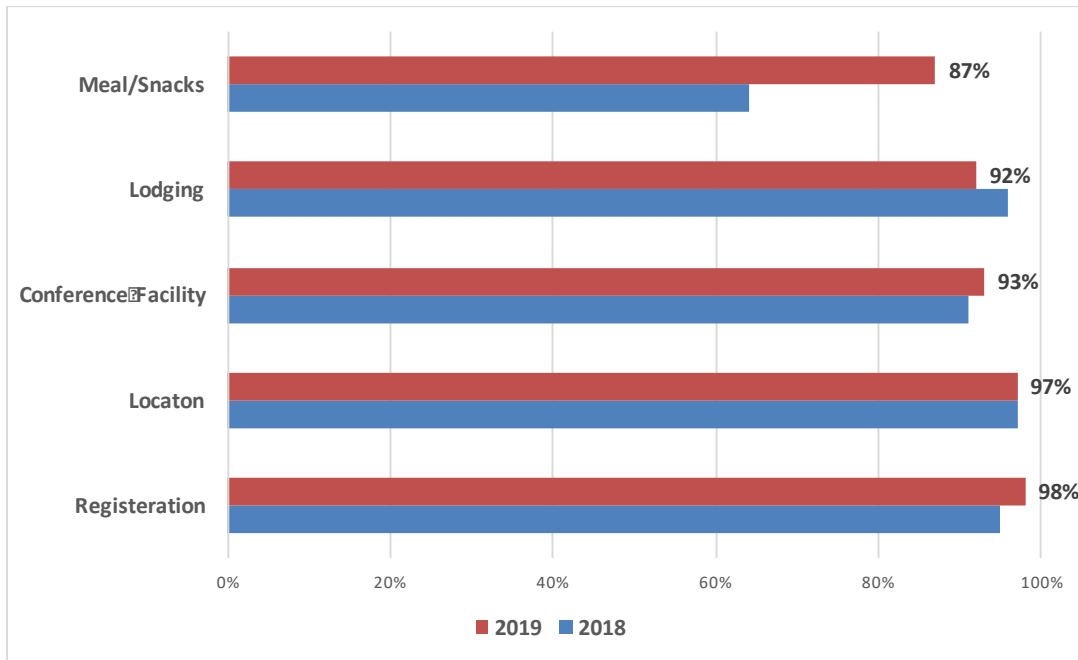

Figure 12: Rating of Excellence, Very Good, or Acceptable for Registration, Lodging, Location, Conference Facility, and Meals/Snacks

Overwhelmingly, the attendees felt this was a quality conference. This was reflected in both the surveys and interviews. Of the attendees, 97% found the content to be appropriate. Likewise, 98% felt that it was worthwhile.
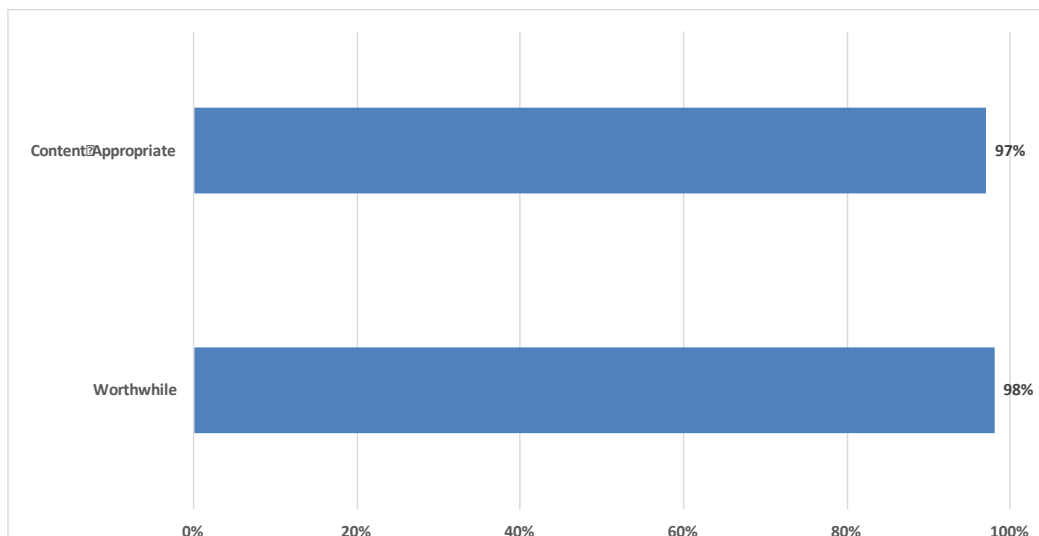
Figure 13: Percentage of Attendees who Found WiCyS Worthwhile

WiCyS plays an important role in networking and mentoring. Evidence for this can be found from the surveys and observations at the Conference. Cybersecurity is a male dominated field, and women in the field can often feel isolated. WiCyS plays an important role in reducing this isolation, with 96% of the female attendees responding that they felt less isolated as a woman in the field because of WiCyS. Similarly, 98% of the relevant attendees said that they felt a part of the women in the cybersecurity community as a result of attending WiCyS. These women found WiCyS to be an excellent networking opportunity, with 98% of attendees saying it helped them establish personal and professional contacts. Even more promising is that 95% of all responding attendees planned to keep in touch with people that they met at the Conference. This ensures that the Conference has more of a lasting impact. The women interviewed at the Conference appreciated both the opportunity to mentor others and to be the recipient of mentorship that WiCyS provides. Many indicated that they intended to be both a mentor and to find a mentor as a result of attending WiCyS.
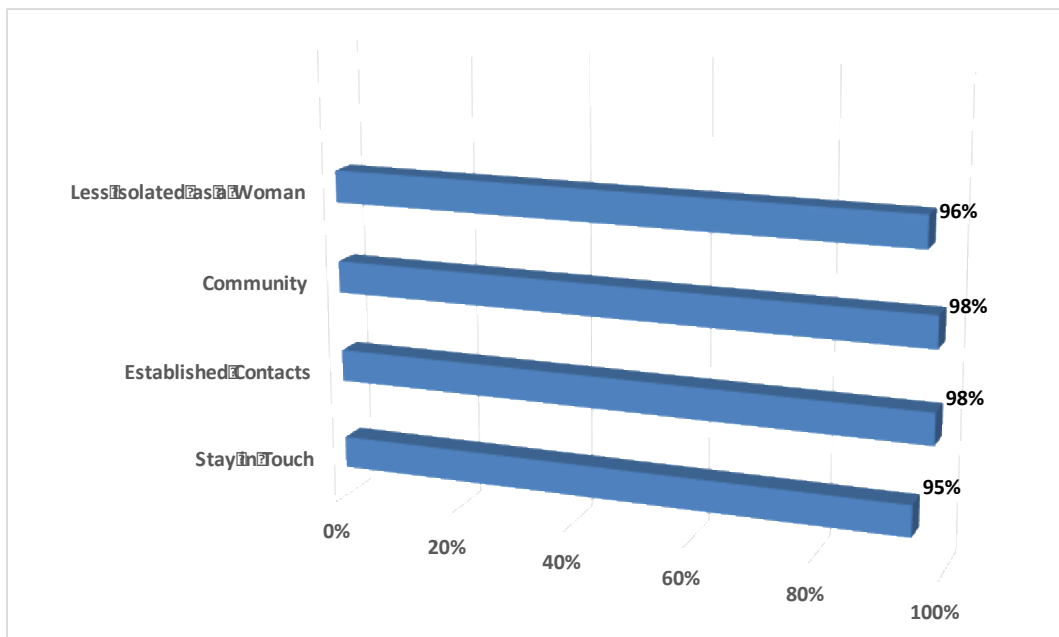
Figure 14: Networking and Community for Women Attendees

Of the attendees responding, 98% found the keynote sessions valuable, and 99% found the distinguished speaker sessions valuable. Of those attending the Student Poster Competition, 95% found it valuable, compared to 98% last year. Of those attending the technical presentations 100% found them valuable. This year the Birds of a Feather Sessions were rated 97% valuable, compared to 90% the previous year. This demonstrates that the Birds of a Feather session has improved over time.

The panels were rated valuable by 97%, while 98% rated the Lightning Talks as valuable. The workshops were found valuable by 99% of the attendees. The Career Fair was rated valuable by 100%, compared to 98% last year. The Mentoring Socials was rated valuable by 98%, and the Resume Reviews by 100%, compared to 95% last year. This indicates that the Resume review has improved. Similarly, the attendees rated the Office Hours (opportunity to meet with industry professionals) by 100%, and the Mock Interviews by 99%. 98% found the Meet Up for Educators with Funding Agencies valuable, compared to 92% last year. Finally, 98% found the SFS Meet and Greet valuable.
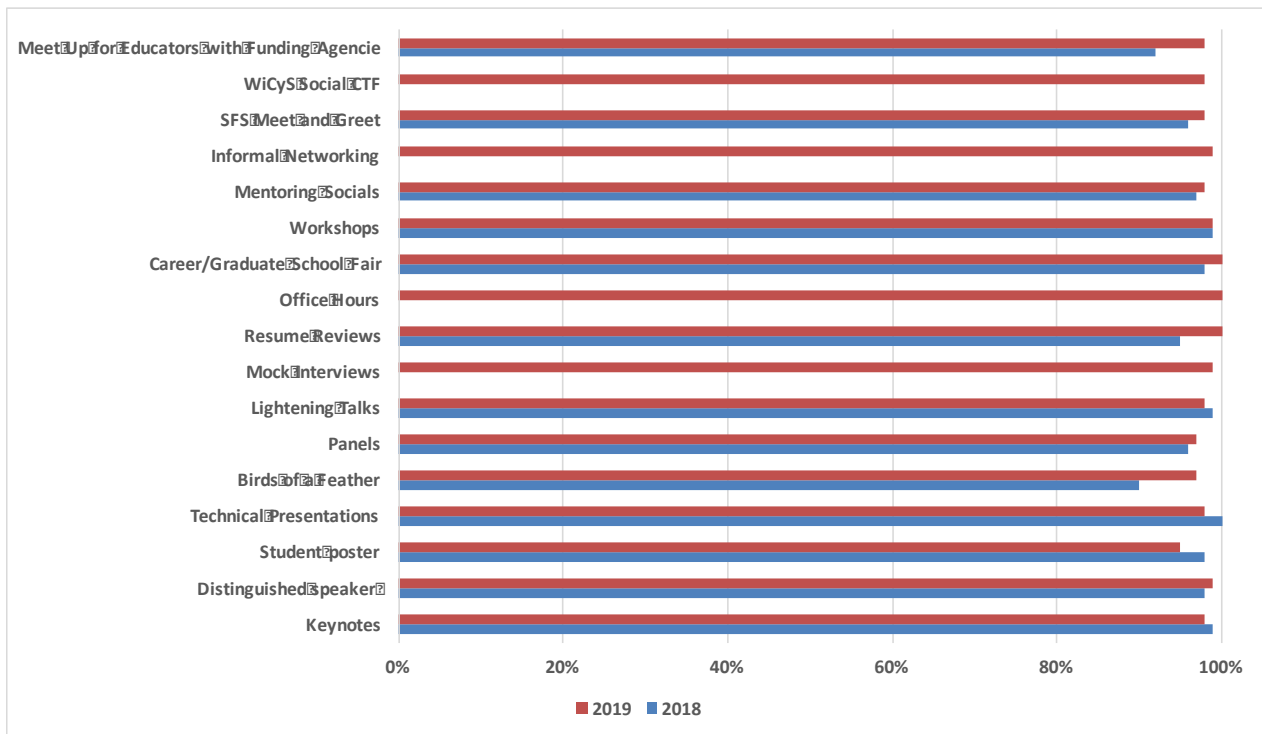
Figure 15: Ratings of Very Valuable, Valuable, or Somewhat Valuable for WiCyS Components

Other indications of the success of the Conference are the percentage of attendees who would recommend the Conference to others, and the percentage of attendees who plan on attending next year. It is important to note that 84% would definitely recommend, another 14% would probably recommend the Conference, and only 2% would probably not recommend the Conference. Another promising finding was that 57% of the attendees definitely plan to attend in 2020, with 32% probably attending, and 9% saying they probably will not attend. Only 2% of the respondents said they definitely would not attend. Some indicated that their attendance would be determined by funding, their job, or school status.
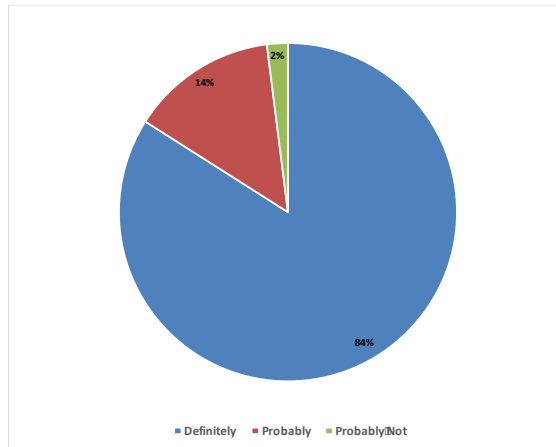
Figure 16: Recommending WiCyS to Others
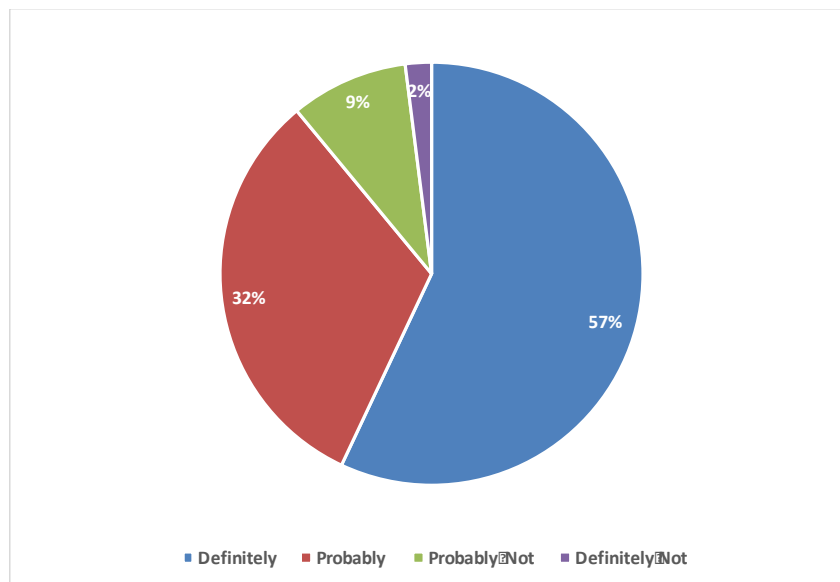
Figure 17: Attendees Planning to Attend WiCyS in 2020

Since the impact on students was a crucial component of the Conference, a separate part of the survey was answered only by students. A total of 139 students completed the survey. This section of the survey deals with issues related to the Conference's impact on students' commitment to a current degree and commitment to a career in computer security. Of the responding students, 95% said that the Conference increased their commitment to complete their current degree program, and 96% reported the Conference increased their commitment to pursue a career related to information/computer/cybersecurity.

The Conference also helped 96% of students learn about academic programs in information/computer/cybersecurity. Of the responding students, 95% of students reported that the Conference increased their intention to pursue a further undergraduate or graduate degree in a related field. The Conference provided

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opportunities for students to increase their knowledge of career opportunities, confidence in their abilities, and interest in pursuing a career in the field. An increased awareness of job opportunities in security was reported by 99% of the students. Many women leave the field because of their lack of confidence. The Conference worked to improve the confidence level of students and succeeded, with 97% of students reporting an increase in confidence in their ability to succeed in a job in information/computer/cybersecurity. Importantly, 98% of the students reported an increased interest in information/computer/cybersecurity. 98% of students were more inspired by the role models that they saw at the Conference. Finally, 92% of respondents were more interested to start/participate in a WiCyS student chapter.
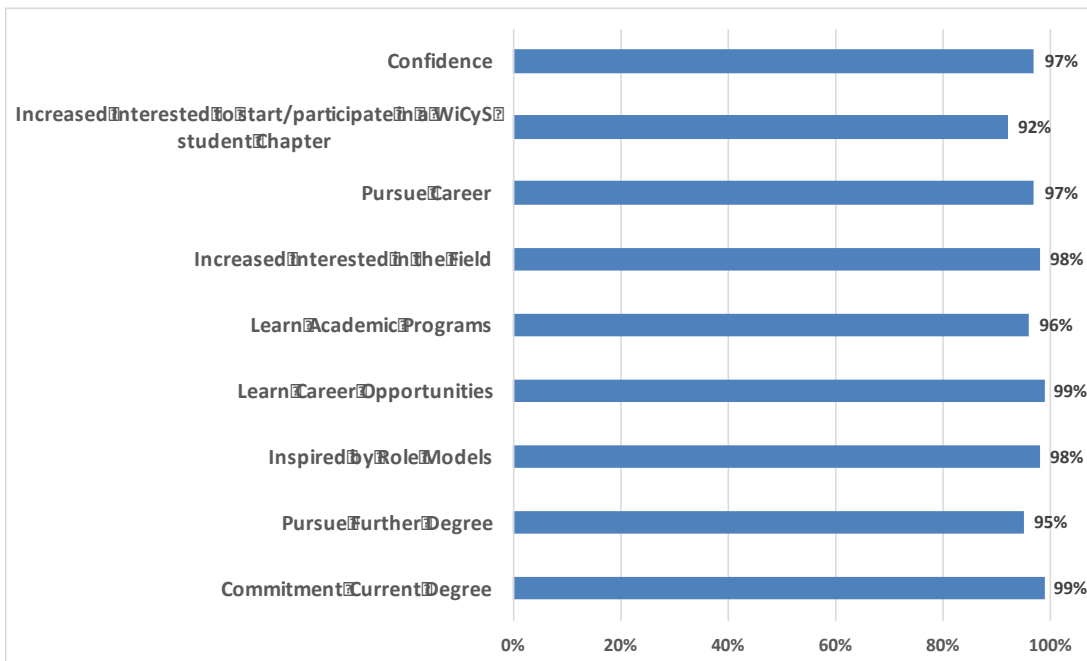
Figure 18: Conference Impact on Students

Some of the questions on the survey were aimed specifically at the educators and professionals. It is important to evaluate what these educators and professionals are taking away from the Conference to help them succeed in the field. A total of 116 educators and professionals answered the survey. Of the responding educators and professionals, 96% reported that the Conference gave them ideas to improve their skill set, compared to 89% last year. In addition, this year 97% said that the Conference gave them ideas to share with their colleagues back home, compared to 88% last year. Similarly, this year, 97% reported that the Conference helped them return to work with renewed enthusiasm. Likewise, 99% of responding attendees this year said that the Conference helped them feel more connected to others in the field. In addition, 94% reported that the Conference has had a positive impact on their

professional development this year. Overall, these educators and professors report a positive impact of this Conference. This indicates that the Conference improved in terms of addressing educators' professional needs.
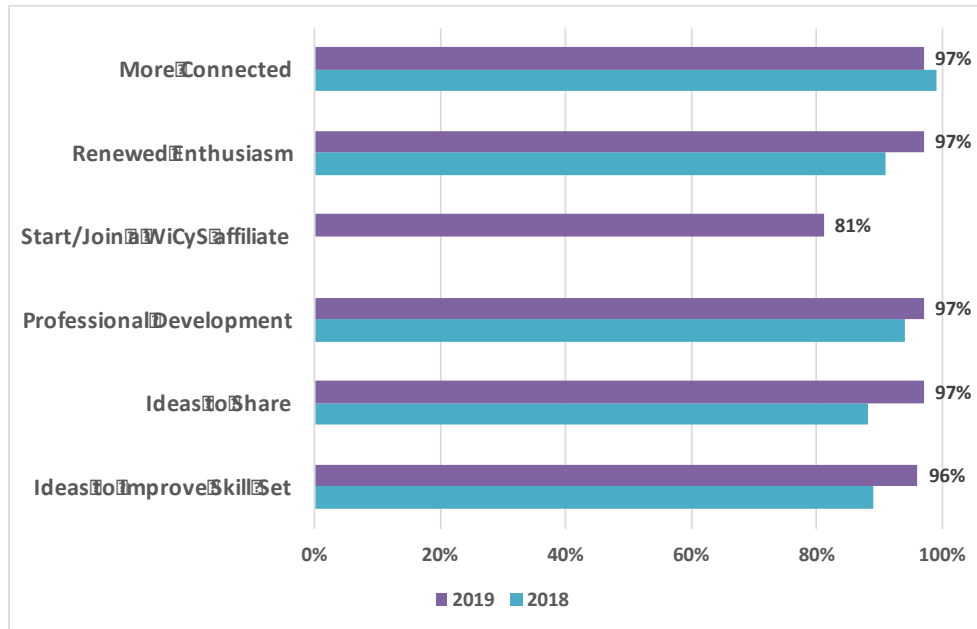
Figure 19: Conference Impact on Educators & Professionals

When attendees were asked to write a single word that best described their personal feelings after attending the Conference, their words were overwhelmingly positive. The five most frequent responses were "inspired," "motivated," "empowered," "energized", and "excited." The consistency of the top words from year to year is remarkable. One of the most valuable parts of the Conference from the perspective of the interviewees was the inspirational and motivational spirit of the Conference. This is important, both for getting under-represented minorities into the cyberfield and then for keeping them in the field.

Table A: Feelings about the Conference

2019	2018
Inspired (18%)	Inspired (22%)
Empowered (10%)	Empowered (7%)
Motivated (8%)	Motivated (8%)
Excited (5%)	Excited (3%)
Energized (8%)	

Attendees' open-ended comments demonstrated that the Conference was having a deep impact on individuals and organizations and was impacting them in various ways. Here are some responses when asked **"Please share with us how**

this conference benefited you personally." Note that a few were edited for typos, but none were edited for content. (Q25)

Table B:

Attendee Comments
As an older career professional, it was refreshing to see so many young women interested in computing and cyber security.
I found people who will help me with my interests and opportunities
meeting with others in the field and see what is new in research with students
Recruiting.
I was able to connect with young women/students that are doing work in the field that are not represented at other larger security conferences.
Omg, it is the best Cyber Conference I ever attended. It helped to connect with other professional, leaders, and inspire me as educator.
I am inspired with the conference and see myself as a speaker in next coming conferences
It was great to connect with everyone!
I was able to plant seeds to future generations. my panel was the night millennials in cyber panel. The feedback was overwhelming.
I felt confident mentoring other women and girls entering the field and enjoyed speaking with women who have been in the field for years. I gained a very powerful network of new friends!
great networking event
I gained confidence in pursuing my goals of wanting to do Digital Forensics. Upon talking to Google and Facebook sponsors and a company from the career fair, I gained helpful information on how to practice and gain hands-on experience using different tools.
This conference benefited me greatly for my personal career development. I was exposed to new knowledge I did not know before about Cybersecurity as a Computer Science student so I am definitely more aware of the many opportunities in the Cybersecurity field. I learned so much from the all of the events and took notes on how I can apply what I learned to my own career. I feel motivated to continue learning about this field and see how I could pursue graduate opportunities.
I was so happy to gain an insight to various approaches to cybersecurity, such as social engineering. I was also excited to learn how important diversity is to innovation and this field. It made me believe and feel I can truly contribute to the field.
Better idea of jobs and who is hiring. My degree has only 1 programming course and that is nowhere near sufficient. I'm glad I know that now, so I can work on that skill on the side. Found some great resources for graduate degrees. Networking with vendors and other attendees was priceless.
I enjoyed the time I was able to have with vendors that my organization works with.
Being new to Cyber Security, but experienced to IT, it was a great demonstration of areas to learn more about.

It sparked a fire in me to find internships over the next year and come back to the conference prepared to interview and land a job!

Some really great and exciting keynotes, Expanse gave a bunch of great talks, meeting people at the career fair was super fun and a great way to talk with other companies even if you're not actively looking for a job.

As a white male educator, I feel better prepared to serve as an ally to my students and hire a more diverse faculty pool of industry professionals.

Resume workshop and networking was the highlight.

Came away with additional tools to use in K-12 outreach at our institution and ideas for attracting younger girls to cyber.

As one of the only women specifically interested in cyber security at my institution, this was overwhelmingly positive to widen my horizons and inspire me

I learned the most in the Advanced APT Hunting with Splunk. I would've liked to have more time with that. I was able to have my resume perfected. I gained tips to interviewing. I was able to practice getting rid of my timidness. I learned several careers in the cyber field. I learned many cyber topics. I was empowered.

This conference made me realize that I was working in a field that was not filling me completely. I really love to learn and I realized that knowledge and solving complex problems make me feel alive. I was not pursuing and doing what I really feel passionate to do. So I realized that my heart and mind loves to be busy solving complex issues and being creative.

Getting connected with people in the academia, government sectors, and the industry.

The career fair and career village were invaluable resources.

I was forced to come out of my shell and talk to people more. I made a point to not hang out with the other students from my school so I could meet new people and network.

Increased my base knowledge and resources for my students.

I made important connections with potential employers. I am now honing my skills to mold myself into the type of employee that they need.

Terrific, inspiring speakers! The idea of 'security below the poverty line' was new to me and many others -- but very appropriate! I have many new perspectives now.

Strengthening the relationships with the women at my company.

I got encouraged to pursue and complete my MSc Cybersecurity in spite of my responsibilities.

It was a rewarding experience to meet the women working in the field and connect with them. The best part of the conference was having the opportunity to have a mentor to help you along in the career.

"I learned a lot by being able to explore different areas of cybersecurity that may not be offered at most schools. I also started doing ctf more"

As a nontraditional student changing careers, this conference motivated me to continue on this cybersecurity path. I am more confident that this is where my passion lies and that I have a larger tool box to achieve my goals.

"Light talks ideas. Networking with NSF. Grant writing training "

I'm a math teacher who is now teaching cyber security. Four days of training is simply not enough of a background to sufficiently teach the course. I met individuals who not only gave me ideas how I can enhance my current knowledge, but how I can continue my knowledge without being in the industry itself. The networking aspect was invaluable.
I met inspiring women that mentored me and gave me valuable advice for my career plans.
I was able to meet people in my company that are located across the country
I attended my first CTF which I learned so much and had a lot of fun. This helped me figure out what cybersecurity path I want to go into in the future.
It was great for my company as we brought a team who had an opportunity to spend more time together and meet and network with others in the industry. It helped get us excited to continue our work and make progress for women in cyber.
It helped with my imposter syndrome.
I got to meet and interact with students who may be employed by my Agency in the future... partially as a result of this interaction.
WiCyS helped me gain a network of fellow women who are equally passionate about security and taught me new and interesting concepts that I did not previously know. I met several future intern or FTE candidates, obtained a new mentee, and it was the first technical conference in my 20+ years in the industry where I felt I was able to be "me" and not worry about judgement (for being a woman) or having to field inappropriate comments.
I was able to reach out to two women, one who ran a panel and another I met during one of the socials. Both were enthusiastic in helping me out and I think I could develop a great mentor/mentee relationship with them.
Inspired me and gave me many tips and insights both as a PhD candidate and as a practitioner and professional. Plus collaboration is amazing. Thank you!
I always appreciate the reminder of how broad the cybersecurity community is. I learn new applications to incorporate into my classes.
"I learned so much. This conference gave me the opportunity to present a poster and participate in a CTF."
The panel sessions were incredible. The team from WorkDay genuinely brought me to tears. It is amazing to hear someone else talk about something that you thought only you felt.

Attendees were also asked **"Please share with us why this conference is a worthwhile event/community for funding agencies/sponsors to support."**, and here are some of their answers about why they thought the Conference is a worthwhile event to be funded by sponsors.

Table C:

Attendee Responses
I would say it has some of the better talks I've attended for folks focused on threat intelligence. Definitely heard new stories and ideas which was exciting.

Brings together cyber-focused academia, students and professionals to work toward filling the growing gap of cyber professionals and women in cyber.

connect the academia with the industry

Great to connect with college students in the field. The focus for recruitment is excellent when compared to "IT" in general.

It helped me connect with professional, faculty, students from all diverse background.

We certainly need more diversity and more women in this important career field. WiCys is producing tangible results.

It was vital for me as a Cybersecurity Consultant - I took the knowledge I gained back with me and shared it with my colleagues and clients. I also had the opportunity to connect with other people in the industry and learn about other services and opportunities.

Yes, the WiCyS conference is definitely worthwhile for funding agencies/sponsors to support because a conference like this enables students to belong to a network that is directly related to their career interests in Cybersecurity. This conference helps so much with creating connections and many networking opportunities. This is an excellent event for students to find a variety of job opportunities. In addition to being an amazing event for meeting people, I was able to learn about trends and specifics in the Cybersecurity field. I enjoy that the conference is small and not too huge because I was able to gain more depth from my experience rather than breadth. I would not have been able to have the connections I have if it wasn't for attending WiCyS so I'll always be grateful to have attended this event. Thank you so much again for sponsoring me!

Funding agencies and sponsors should continue to support WiCyS because it is such an important field that is deficient in employees and women contribute to the field in many ways according to studies.

As a woman who has spent her life working in male dominated industries, I know that change such as equal representation and pay will never "just happen". It takes a village of voices and support for people to start listening and to understand that diversity makes every industry better. Big events like this are exactly what needs to take place to inspire young women and let them know they are valued and supported members of the cyber security community.

It really is an eye opener for female who are interested in cyber to learn about the world put there and just other material that they can make use of to establish a better version of themselves in the field.

It gives the students experience with professionals with mock interviews and resume reviews. Professionals give them ideas on what to add to their resumes to really make the pop when recruiters look at them.

Career Fair - great opportunity; however timing does not align with our recruiting calendar.

Having this conference funded allowed me to participate, learn, and excel in the cyber security world and provided new insight on how to approach my final year in school and how to prepare myself for upcoming interviews. Without the scholarship and travel accommodations, it would have been a financial burden given my current situation.

Helped young women look forward to reaching their career goals in Cybersecurity.

Again, the networking is key! Also, (usually) the workshops/keynotes are focused on something new and exciting about cybersecurity.

Cyber is still an area that still seems to be a 'boys arena.' I think there is still a lot of work to be done to help young women feel like they can be just as good - if not better - at cyber. It's also such a broad field and I think more awareness from all the different topics like were shared help the students attending see just how broad cyber is and how they can play a role.

This conference has a LOT of women who want to pursue the cybersecurity field. There are ones who are learning but there also ones who already have the skills and its a plus for sponsors because here they can find women who are fit for any position they have available. One of the good things also is that people who attend the conference get to know those agencies and sponsors. Let it be socials, career fair or any other event. People get the chance to know the company and that way they'll have more people interested in their company. Companies need more diversity and this is a perfect way of getting it.

This conference is worthwhile for many women who are looking to jump-start their career in cybersecurity. Without funding or sponsorship how can we grow and advance women in cybersecurity. That is why funding and sponsorship is so important to help women advance in this field.

For people like me that enjoy working with diverse, and talented people. This conference encourage us to find for the jobs and companies that reward and nurture entrepreneurs, problem solvers to work in dynamic and collaborative teams.

There were a lot of potential job opportunities.

I think that beyond the content of the conference, just placing yourself in such a special context with such a special intention is what make WiCyS worthwhile. I have heard it said that "as the water level rises, so do all of the ships in the sea". I believe WiCyS raises the proverbial water level, and all of the individuals who are privileged to be a part of WiCyS are raised up as well.

WiCyS has clear focus and its goal is fit with SFS program; however, the one-on-one meet many be a bit superficial; if the WiCyS can conduct a CAEs/Advance/CyberCorp funded university meeting or panel to take on the mentoring relationship with other non funded schools, that will be helpful for those schools in pursuing SFS funding

It helps students like me who are not very well established to get a chance to attend a big conference and help us get exposed. My scholarship was a big reason for why I chose to attend it.

This conference is definitely one of the major reasons why I have stayed a member of the information security community and why I continue to work towards encouraging women to stay and grow in the field. Due to this conference, I have had several female students win awards / scholarships such as SWSIS and ISC2. I am also the faculty mentor for our WiCyS student chapter and the presence of the chapter has really improved morale of our students and I believe will help them continue to motivate them beyond graduation.

career fair and a chance to share what we do with potential new employees. To share our brand and what we do with others in security.

Frequently organizations do not have women at the table for cybersecurity especially at higher levels of the organization. For example, on International Women's Day our organization featured five SVP all men. The slogan was great but the message sent was loud and clear. This lack of diversity is not growing this field as much as it should.
It was helpful to attend to the #METOO panel and hear the experience of other women, how they rose above the nonsense they experienced and dealt with the issue.
This conference has reassured me that the choice I made to pursue this field was valid, and I can continue to pursue my dreams despite some difficulties.
This conference provided invaluable advice, information, and working sessions to help grow women as leaders in Cybersecurity.
My organization emerged with a good number of strong resumes, and we had opportunities to connect with those people at the conference. Leaders at my organization as well as recent graduates had level-appropriate opportunities to grow and learn new skills / professional development. Women are extremely supportive and interactions are less creepy; this was such a positive experience. This event was incredibly diverse (one of the most diverse conferences I've been to), which opens up organizations to many new networks that they otherwise might not be reaching. I brought back a ton of new, useful, and good ideas and perspectives to bring back to my organization (innovation happens at the edges of fields -- having people come together with enough in common to have a conversation and enough different for that conversation to be inspiring is incredibly valuable for innovation).
WiCyS helps students and others gain the experience needed to succeed in their careers. My school does not offer any security programming so conferences like this have helped me obtain internships and other professional skills needed to succeed.
Promotes diversity and inclusion in the workforce.
I got the chance to connect with more professionals in the field and became more aware of the opportunities in store for me. It also allowed me to become more confident in applying for companies I once thought were out-of-reach.
Because it increases the interest of women in a STEM related field.
This conference provides an opportunity for many students to have their first encounters with Cybersecurity. It has extremely intriguing learning opportunities.
This conference makes minorities in STEM feel welcome unlike any other. A diversity driven conference like this is an outstanding opportunity for women like myself that have felt isolated before in stem fields to make women feel at home.
"It increases my confidence to become a security engineer in the future. It provides me a platform to hone and practice my skills."
At my school, we only have computer science. Going to career fairs, it is hard to talk to companies about wanting to do security when my school has nothing in particular regarding this area of computer science. By attending this conference, I have made new connections and learned ways of increasing my knowledge of security so that I can become competitive in the field.

Solves one of the most important problems at its root cause in so many ways. This is a legacy creating conference. There is nothing like this that I have ever come across aside from GHC.

Mentoring.

Sponsoring Partner Survey

Sponsoring partners completed an on-sit paper survey at the end of the Career Fair. 39 sponsoring organizations out of 94 completed the survey. Of those completing the survey, 64% were industry recruitment, 20% represented academic recruitment, seeking promotions were 7%, and 4% of sponsoring partners responded as promotions and other.
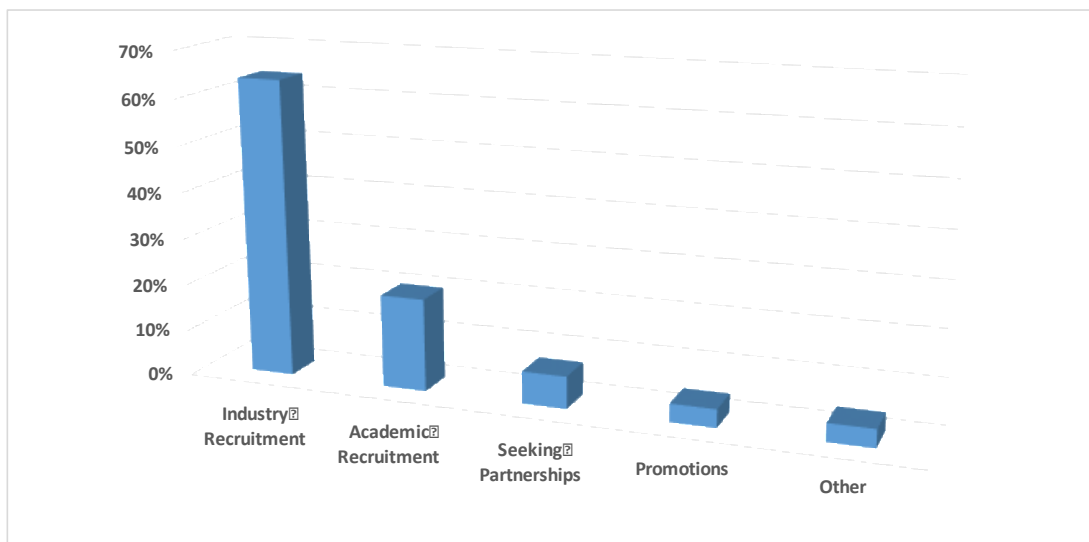

Figure 20: Sponsor Representation

More than half of the sponsors, 66%, considered the Career Fair was very important for their sponsorship decision with WiCyS, 18% responded that it was important, 11% of sponsors indicated that it was slightly important, and only 5% responded slightly unimportant. When recruiters were asked about recruiting participants, 60.5% of respondents answered that it was likely to recruit interviewees and 39.5% said it was highly likely to recruit participants.
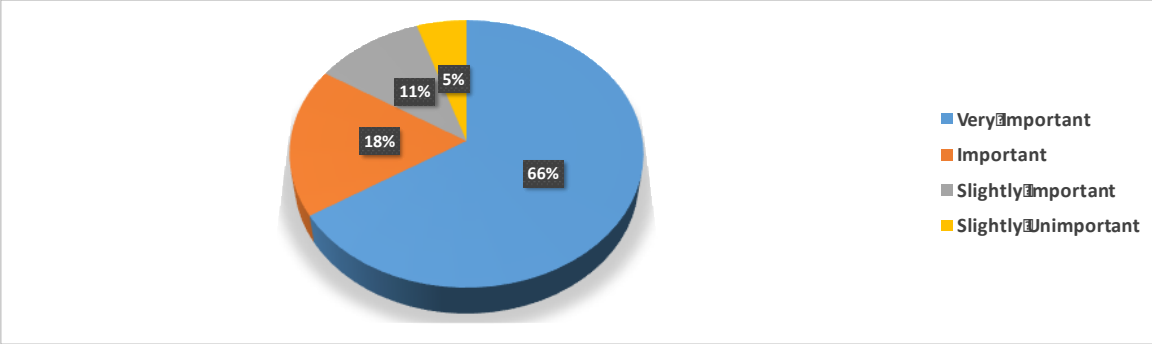
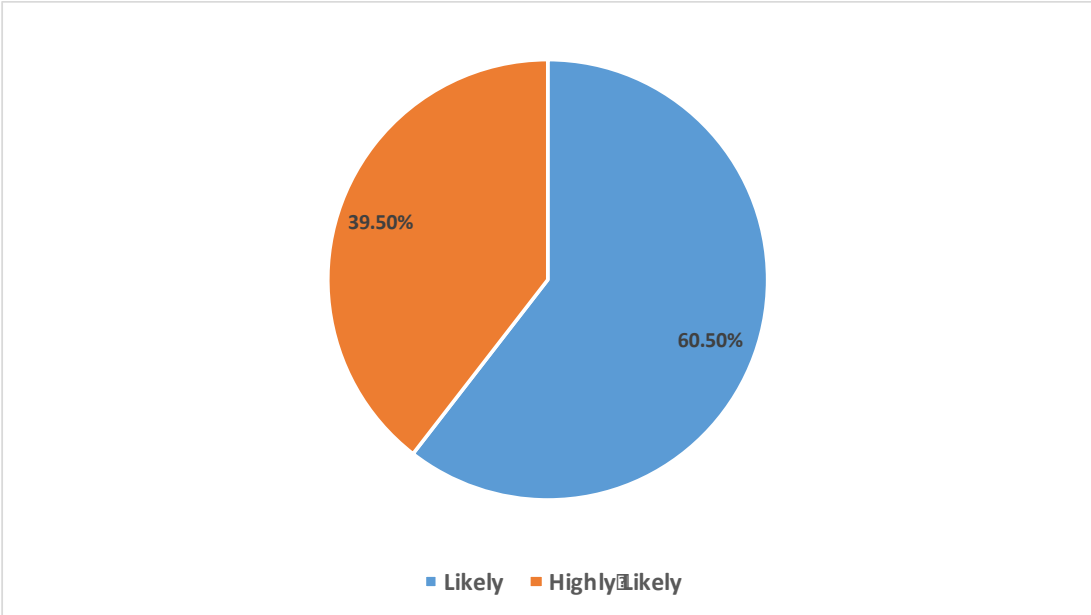**Figure 21: Career Fair Importance to Sponsors**

Figure 21: Participant Recruitment

Of the respondents, 98% of the sponsoring partners considered the quality of the pre-conference support as good. Similarly, 98% referred that the quality of Career Fair participants was good. 90% and 91% found the service of the job board by CyberSN and the job posting by Whova app as good respectively, and finally 95% rated the Career Fair logistics as good. However, some sponsors shared concerns about the Career Fair's small space and long hours.
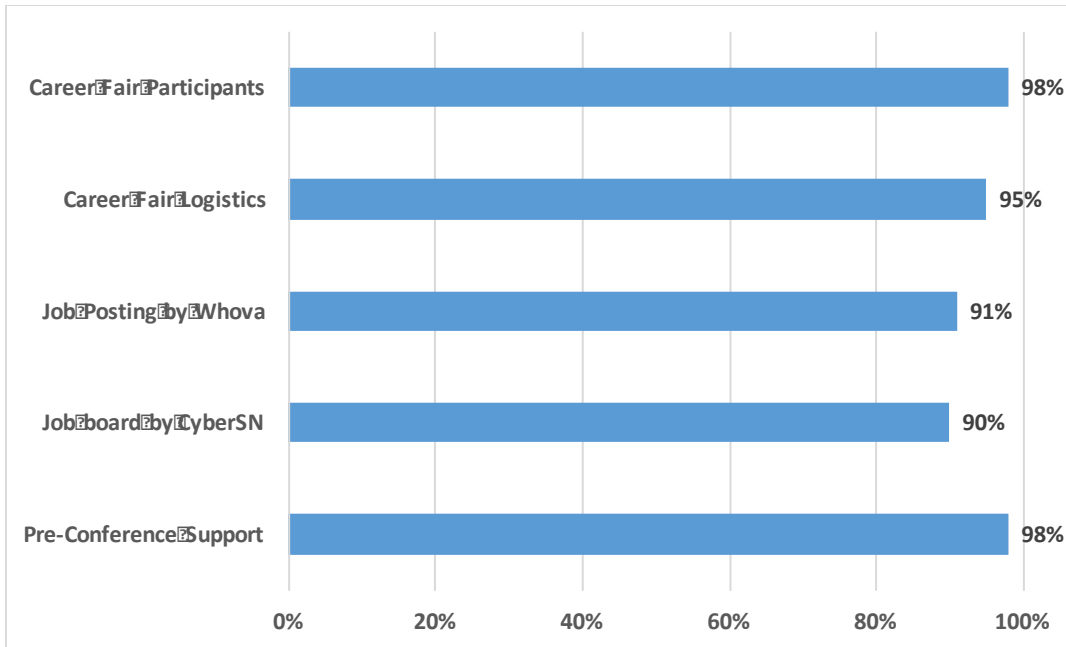
Figure 22: Ratings of Excellent, Very Good, and Acceptable for the Quality of Career Fair Components

Sponsoring organizations were asked about the biggest weakness that they saw in the Career Fair participants. Of the respondents, 27% answered that participants lacked resumes properly selling their qualifications, 23% said that participants were not prepared for meaningful conversations, 10% of sponsoring organizations suggested that participants lacked the ability to interact, communicate and sell themselves, and roughly 40% answered "other".
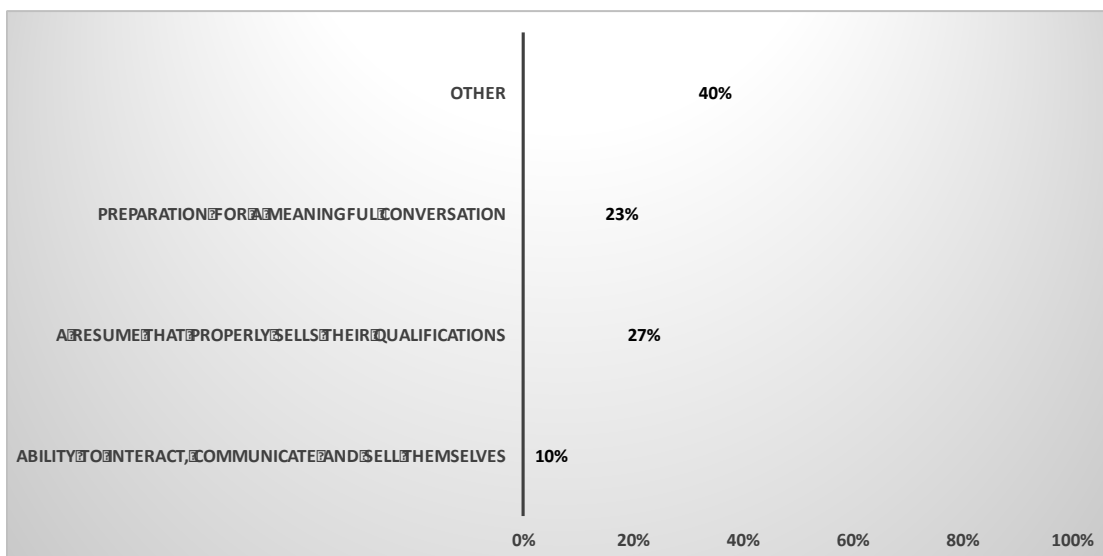

Figure 23: Participants' Biggest Weakness

In responding to a question about participants' strengths, sponsor partners shared that participants were mostly professional, energetic, and knowledgeable.

Table H

Participants' Strengths
Great energy and passion.
Participants were great.
Great Networking
very passionate about Cyber
All were knowledgeable and excited!
Good resumes
Participants love the subject matter.
Proactive, engaged, good communication
Eager and excited for opportunities
All dedicated to inclusion and diversity in a future work environment. Great!
Everyone seemed prepared and enthusiastic.
Nice to see so many from cyber programs
Know how to professionally converse.
Good communication Skills; professional
Enthusiastic & Intelligent
Good knowledge of their strengths and where they fit.

Summary

Overall, this was an immensely successful conference by any standard. The Conference was evaluated by personal observations of the evaluator, interviews, a survey of participants, and a survey of sponsoring organizations. All indications are that participants found the Conference well organized, meaningful, engaging, and a great networking opportunity. Participants' individual needs were accommodated. Sponsoring organizations found that the Career Fair was important for their sponsorship decision and that the quality of participants was good for recruitment.

Intellectual Merit

The WiCyS initiative aims to increase awareness, as well as capabilities of a greater cybersecurity workforce, with special emphasis on women who are underrepresented in computing fields and especially in cybersecurity. Full participation of a diverse workforce is crucial to integrate more creativity and multi-perspective problem solving to shape technology in cybersecurity. It is the only entity with national reach that aims to bring together students, educators and

professionals in the discipline of cybersecurity under one community to share knowledge, experience, opportunities and resources. It is an exclusive community dedicated for the recruitment, retention and advancement of women in this field at various levels of their careers and from various background.

Broader Impact

As a part of the broader impact, the WiCyS initiative contributes to increase the ability of the United States higher education enterprise to produce a diverse group of cybersecurity professionals. The WiCyS Annual Conference is limited in size and is focused on bringing together students who aspire to have a career in cybersecurity with those who are already in the field. An equal balance of participation from academia, industry, and government provides significant opportunities to network, deliver hands-on workshop sessions, share cutting edge research, and support conversations to expose and resolve discrimination and unconscious bias toward women and minority groups in the cybersecurity profession.

The 2019 Conference meets several criteria of broader impact. The Conference provided learning and mentoring opportunities for high school students, college students, graduate students and postdoctoral students, as well as junior faculty. It stimulated the interest of students in research experiences and provided a professional development opportunity for computer science teachers. It broadened the participation of women and minorities in computer security through both recruiting new women and minorities into the field and helping to maintain those already in the pipeline through support and mentoring systems. The Conference helped to enhance the infrastructure for research and education by establishing collaborations among researchers in industry and academic institutions. The Conference also provided an opportunity for other NSF projects to broaden their dissemination to teachers and industry. Through strengthening the pipeline for computer security, the Conference also provided benefits to society by enhancing national security through strengthening cybersecurity.

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