

**WiCyS Evaluation  
2015-2016  
Year 3  
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Project Evaluator**

## WiCyS Conference 2016

The Third Annual National Women in Cybersecurity Conference (WiCyS) took place in Dallas, Texas on March 31-April 2, 2016. The event had approximately 750 attendees, which is more than double the number of attendees of the first WiCyS in 2014. The attendees were students, faculty, researchers, and industry professionals. The conference was evaluated by a general survey. In addition, the evaluator both observed the conference and conducted informal interviews of attendees at the conference. The WiCyS Conference has grown every year from 350 attendees in 2014, 475 in 2015, to 750 in 2016.

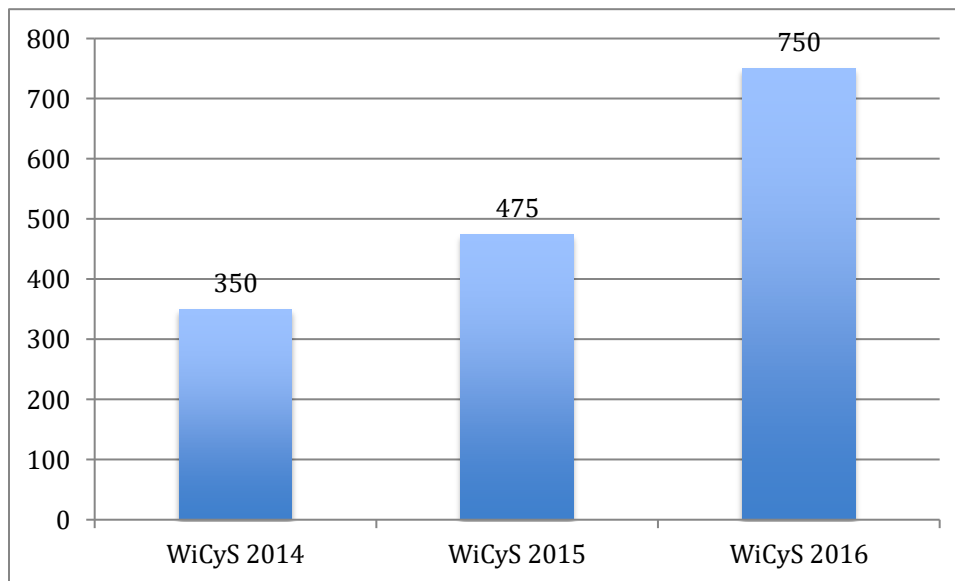
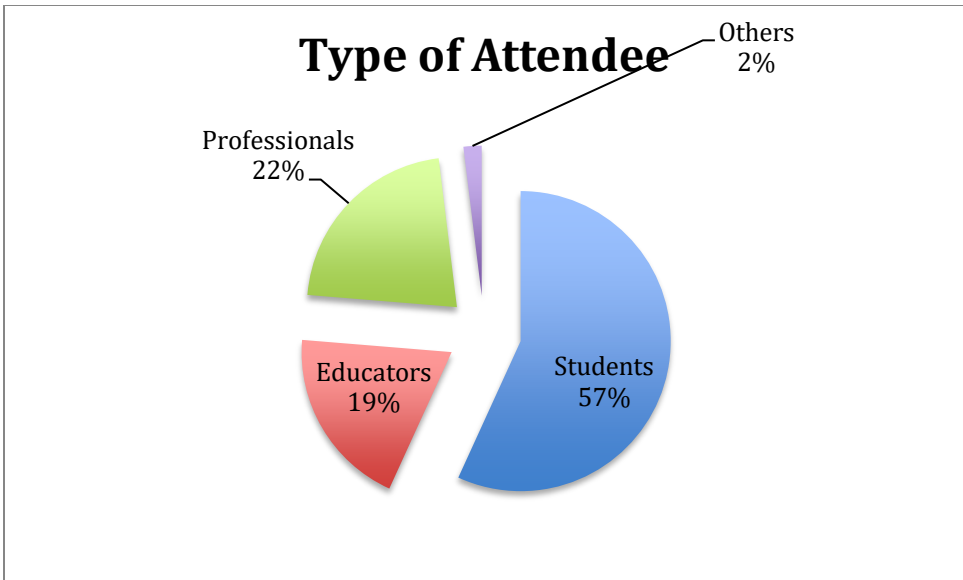


Figure 1: Attendance Over Time

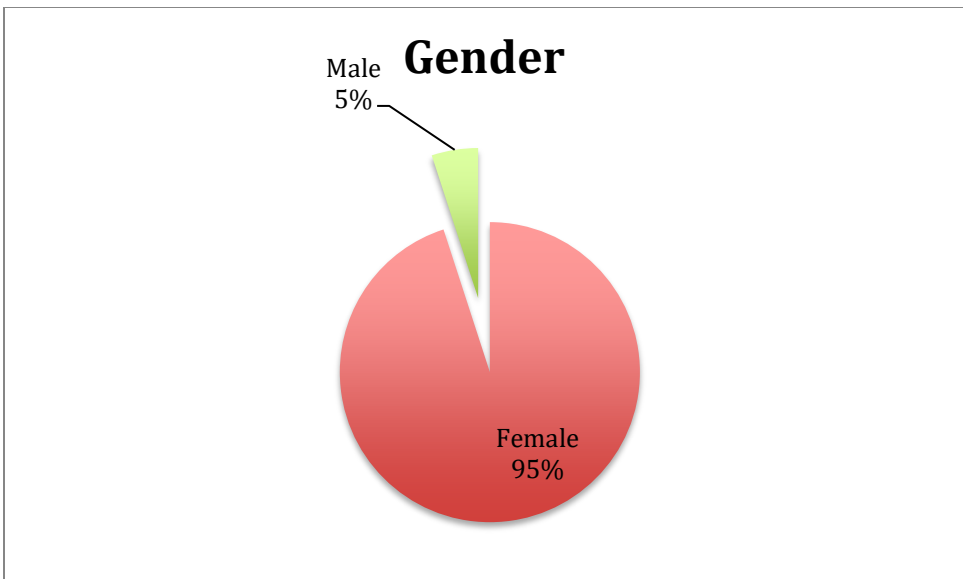
### **Diversity of Attendees**

Of the approximately 750 attendees, a total of 308 attendees completed the conference survey for a response rate of 41.1%. The following information is from those surveys with additional information included from interviews on-site and observations from the conference. The attendees were from different walks of life. On the survey, 57% classified themselves as students, 19% educators, 22% as professionals, and 2% as other. Other included grant manager, recruiter, and individuals who fit multiple categories.

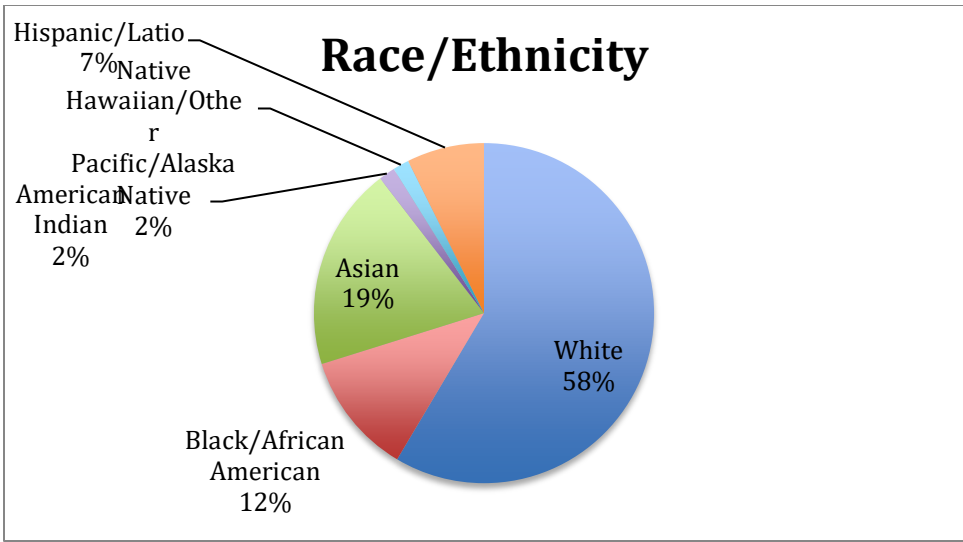


**Figure 2: Type of Attendees**

Of those completing the survey, 95% were female and 5% were male. Similarly, the attendees reflected diversity in their race/ethnicity composition. Compared to first year of the conference, the diversity has increased. This year 58% of the attendees were white, 12% black/African American, 19% Asian, 7% Latino/Hispanic, 2% American Indian and 2% Native Hawaiian/Other Pacific Islander/Alaska Native.

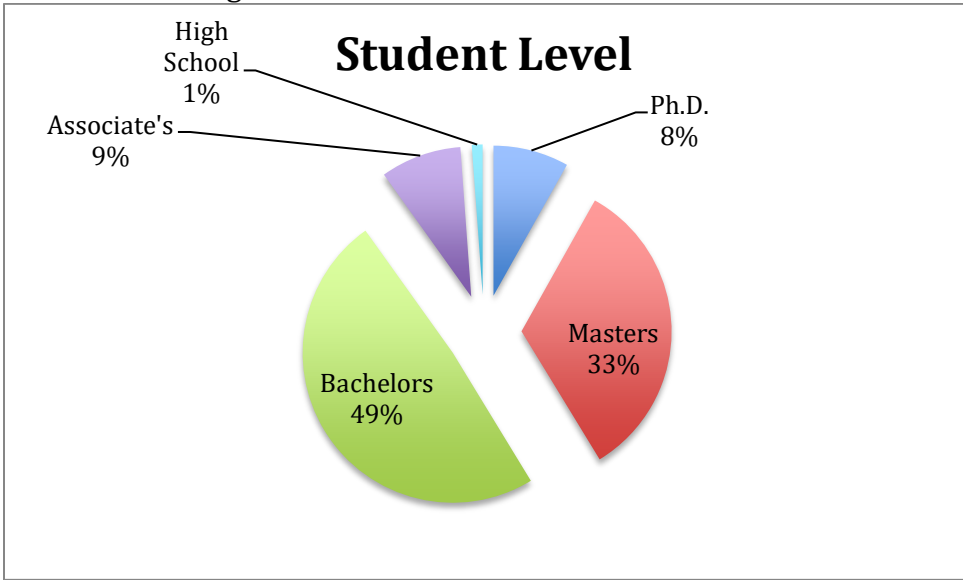


**Figure 3: Gender Composition of Attendees**

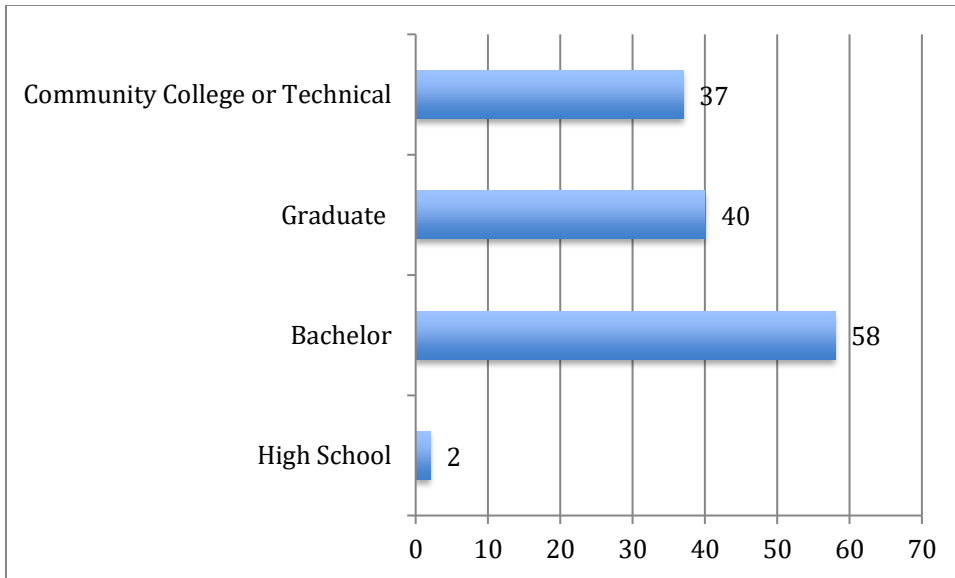


**Figure 4: Race/Ethnicity of Attendees**

There was also diversity among the student attendees as to where they were in their academic career. Approximately, 8% of the students were working on their PhD, 33% were working on Master’s degrees, 49% were undergraduate students at a four-year institution, 9% were working on an Associate’s degree, and 1% were high school students. Based upon interviews at the conference, it was ascertained that students also came in with different backgrounds. Some came from traditional computer science backgrounds while others came from fields such as psychology and mathematics. The faculty also taught at diverse levels of education with 37% teaching at community or technical colleges, 58% at bachelor level, 40% at the graduate level, and 2% at the high school level.



**Figure 5: Level of Education of Student Attendees**

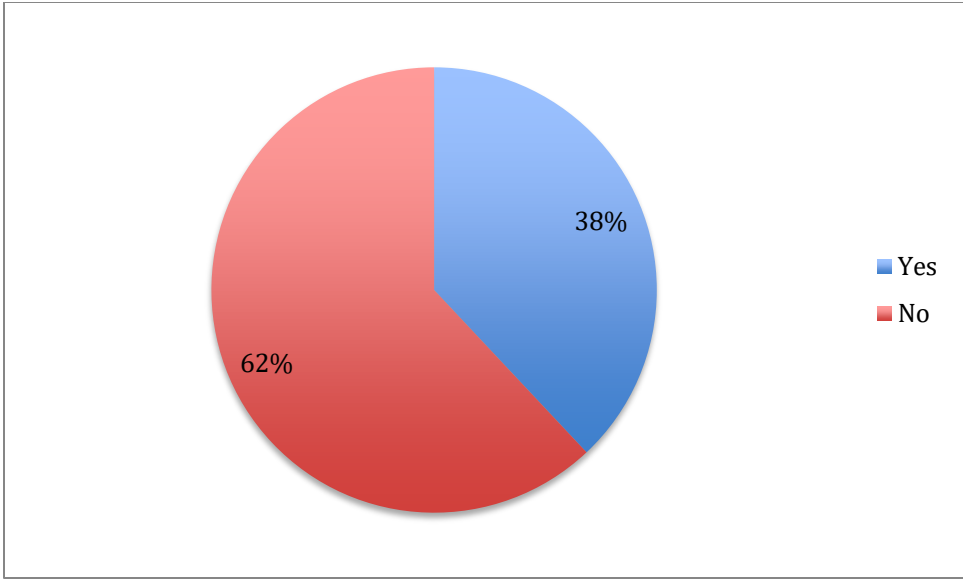


**Figure 6: Type of Institution Where Faculty Teach**

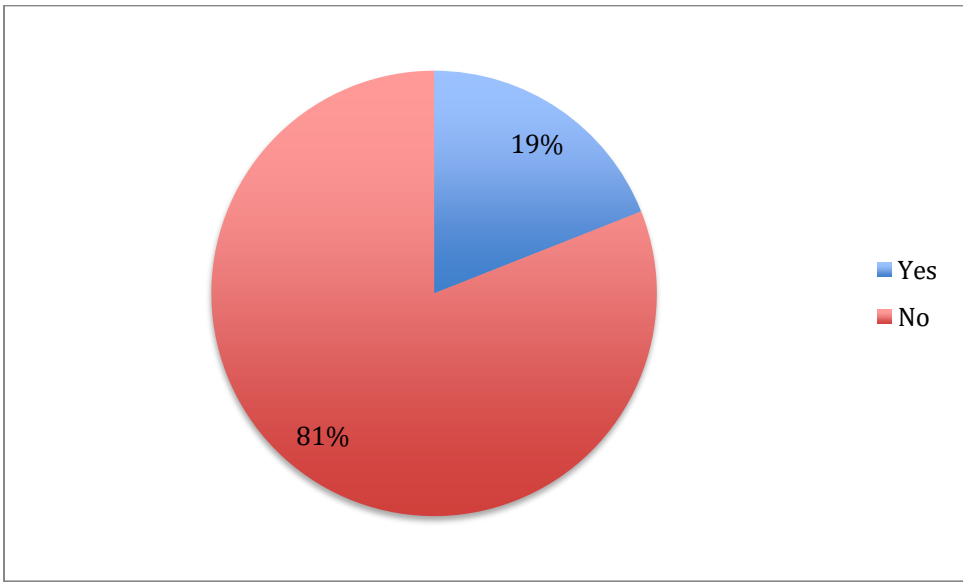
Overall, slightly more than one-third (38%) of the attendees had attended other women in computing conferences. However, the vast majority of the attendees (81%) had never attended other women in security conferences.

Thirty percent of students had attended other women in computing conferences. Thirteen percent of students had attended other women in security conferences. Four percent of students had attended WiCyS in 2014 and eighteen percent had attended WiCyS in 2015.

Of the educators, 54% had attended other women in computing conferences while 46% had not. Only 30% of the educators had attended women in security conferences before while 70% had not. Approximately 22% of the educators had attended WiCyS in 2014 and 39% of the educators having attended WiCyS 2015. Overall about 8% of the attendees had attended WiCyS 2014 and approximately 23% of the attendees had been at WiCyS 2015. This is an excellent composition with approximately one fourth of attendees coming back for a second year and three quarters of the attendees being first timers. We would expect more faculty than students to be repeat attendees since students graduate and new students enter cybersecurity.

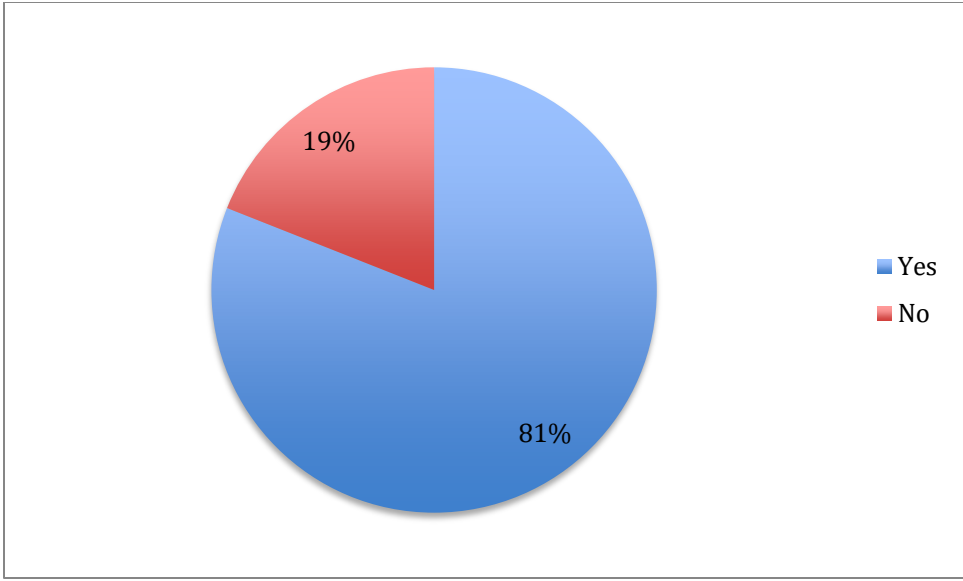


**Figure 7: Percentage of Attendees Who Have Attended Other Women in Computing Conferences**

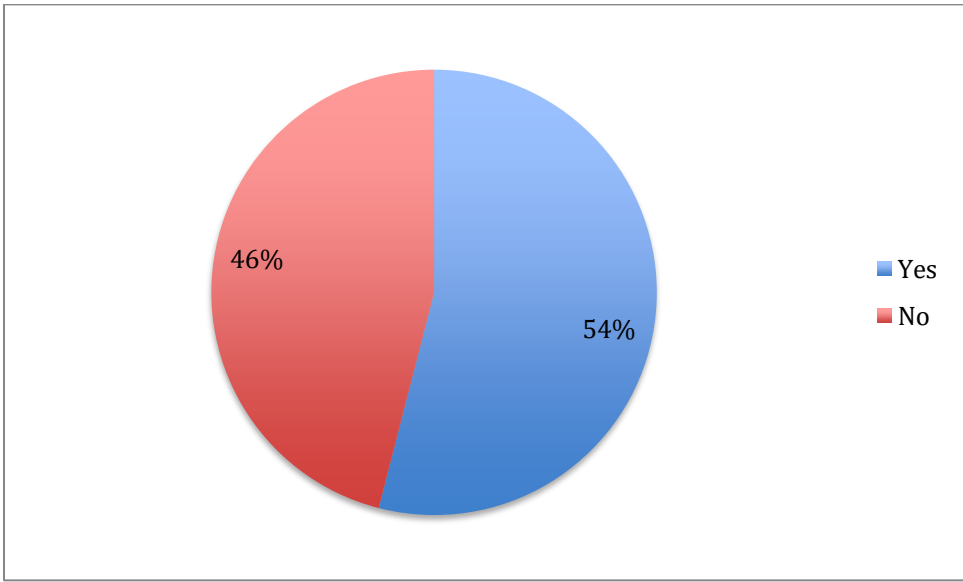


**Figure 8: Percentage Who Have Attended Other Women in Security Conferences**

Approximately 59% of the attendees received a scholarship through WiCyS to attend. Breaking this down further, we see that 81% of the students received WiCyS scholarships and 19% did not. Thus, the vast majority of students attending received a scholarship from WiCyS. By contrast, only 54% of Educators received a WiCyS scholarship, while 46% did not.

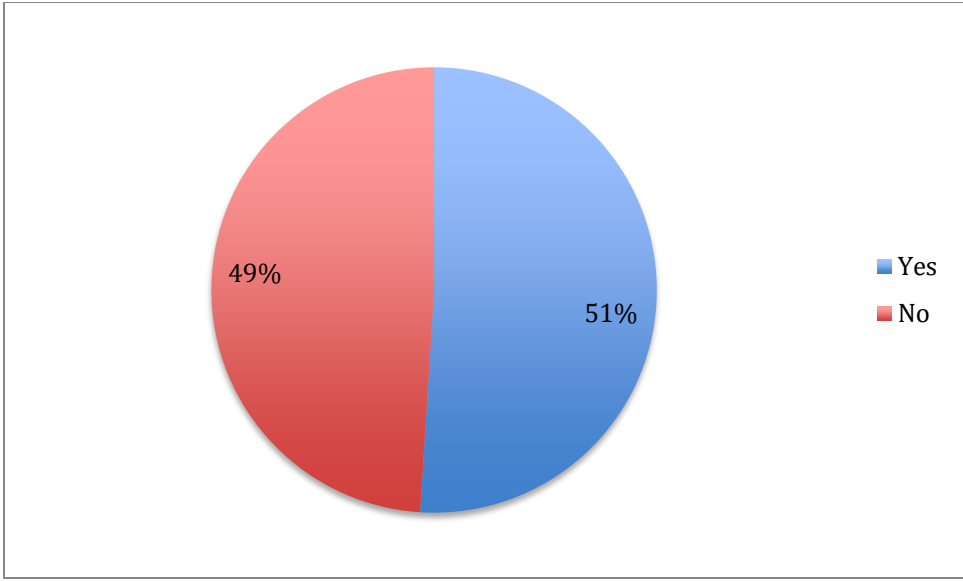


**Figure 9: Percentage of Students Receiving WiCyS Scholarships**

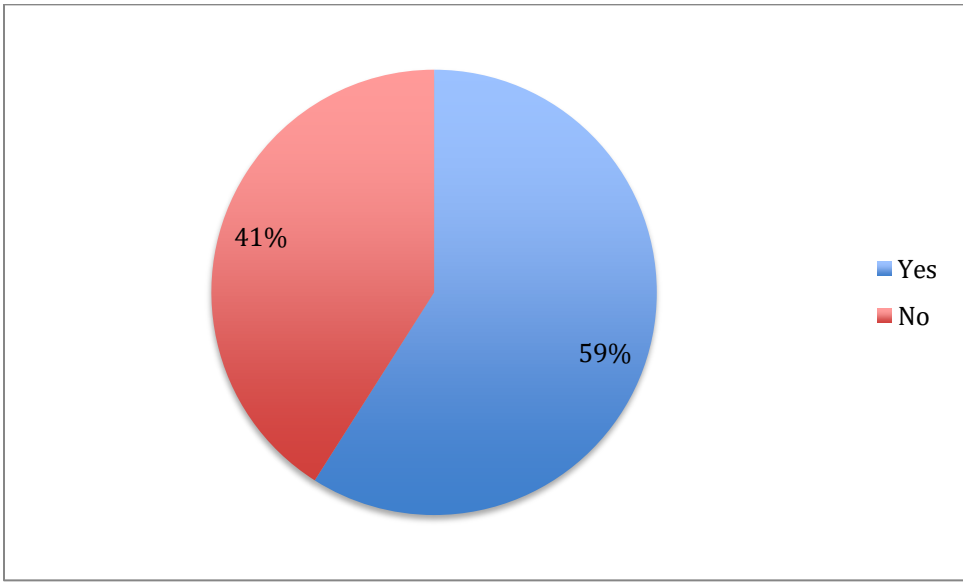


**Figure 10: Percentage of Educators Receiving WiCyS Scholarships**

Likewise, 51% of all attendees received other external funding to attend, while 49% did not receive other external funding to attend. Again we can further breakdown this funding for students and educators. Of the student attendees, 59% of them received other external funding, while 41% did not receive any other external funding. About 39% of the educators received some other form of external funding and 61% did not.

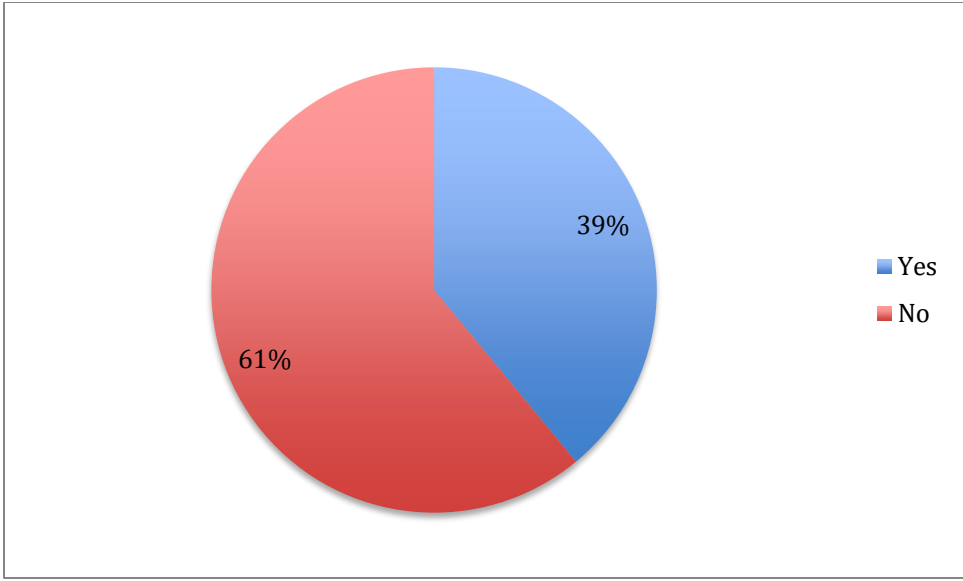


**Figure 11: Percentage of Attendees Receiving Other External Funding**



**Figure 12: Percentage of Students Receiving Other External Funding**

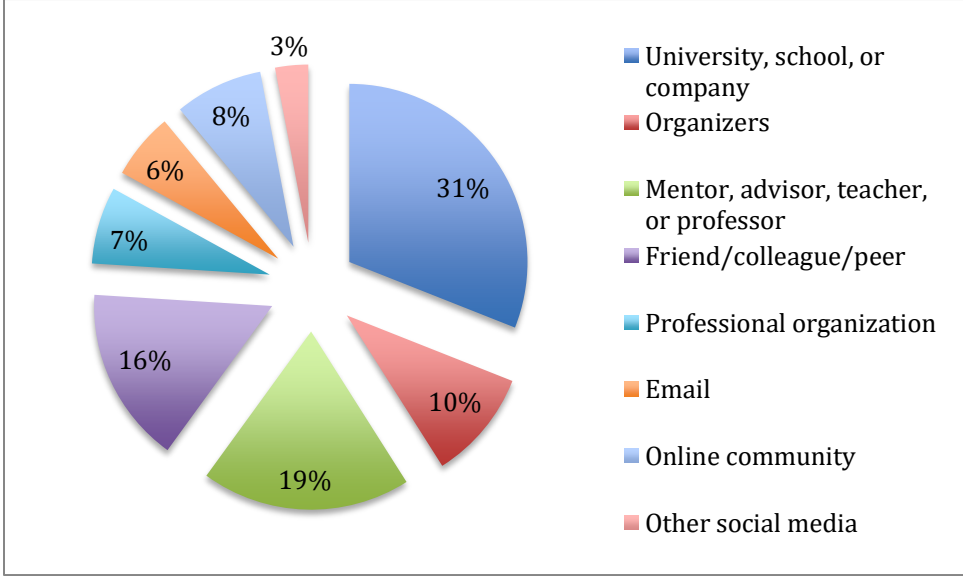




**Figure 13: Percentage of Educators Receiving Other External Funding**

**Dissemination Prior to WiCyS**

Part of the success of WiCyS can be attributed to the dissemination prior to the event. The three most common responses to how people found out about the event were university, school, or company (31%), mentor, advisor, teacher, or professor (19%) and friend, colleague or peer (16%). Organizers accounted for 10%, professional organizations 7%, online community 8%, email 6% and other social media 3%. This indicates the prevalence of people hearing about WiCyS from others. This implies that WiCyS has a positive reputation. Other people indicated that they heard about the conference from searching on the Internet, other conferences, or previous attendee.



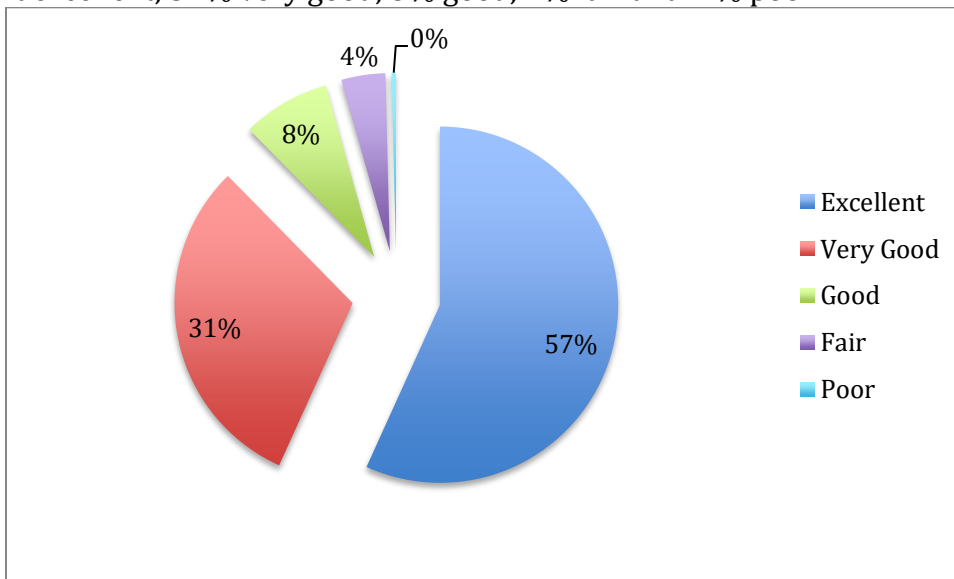
**Figure 14: How Attendees Heard about the Conference**

## Overall Impact of the Event

The response to WiCyS 2016 was overwhelmingly positive. The first indication of the success of the conference was the growth in the number of attendees. A total of 845 individuals registered for the conference. The conference surpassed the number of contracted rooms at the conference hotel and attendees had to be put up at additional hotels.

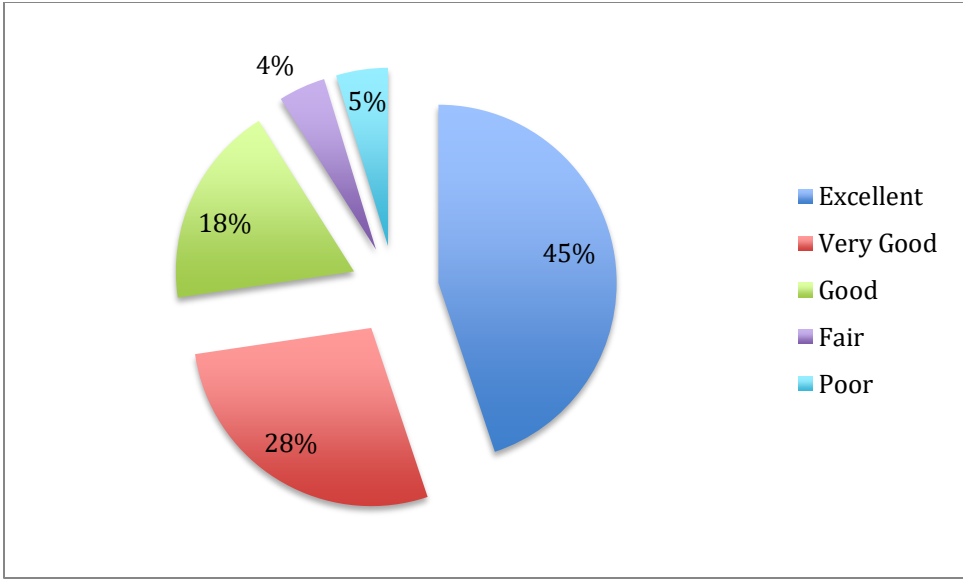
The next indication of the success of the conference was from observations at the conference. It was clear that there was a diverse group of attendees based on gender, race/ethnicity, education level, and type of attendee at the conference. Despite the crowds at the conference, all attendees seemed excited and engaged in conference activities as well as networking. Sessions were well attended. People were actively engaging in all interactive activities. Lots of questions were asked at all events from individual sessions to keynotes. Networking was occurring at all possible opportunities from mealtime to the hallways to both formal and informal networking events.

Another indication of the success of the conference is from the surveys completed by attendees. Of the attendees completing the survey, 96% rated the overall conference as good to excellent while only 4% rated it fair and one attendee (.4%) rated it poor. The most common modal response was excellent with 57% rating it excellent, 31% very good, 8% good, 4% fair and .4% poor.



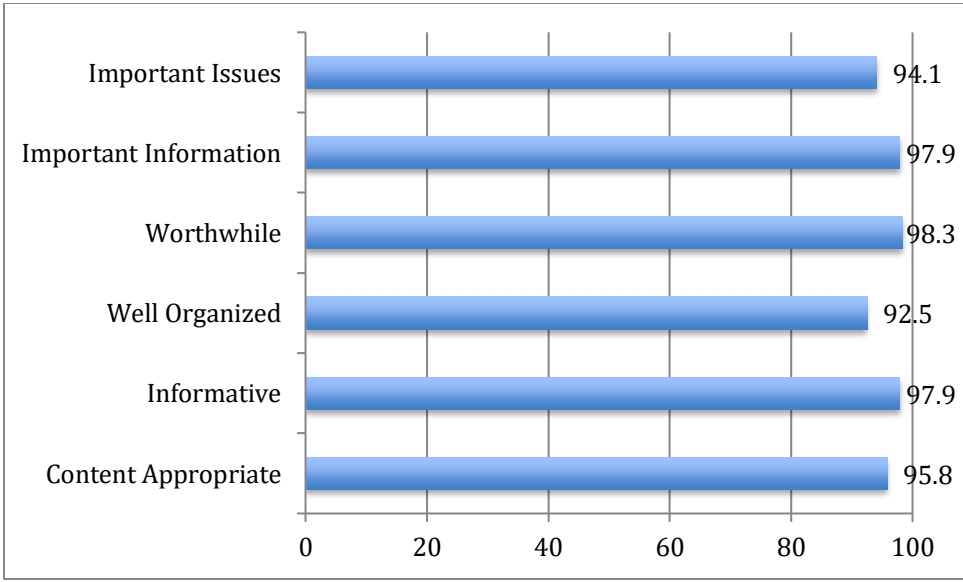
**Figure 15: Ratings of Conference Overall**

The registration for the conference was quick, friendly, and efficient. This was based on personal observation of the evaluator and confirmed by the surveys. The registration was much improved over the previous year when almost all of the attendees showed up at registration as soon as it opened or before. Fortunately, this year the conference staff opened registration earlier and rearranged the registration process to reduce wait times. A total of 91% of the attendees felt that the registration process was excellent, very good, or good. The most common response was that the registration process was excellent with 45% of the attendees reporting that it was excellent.



**Figure 16: Conference Registration**

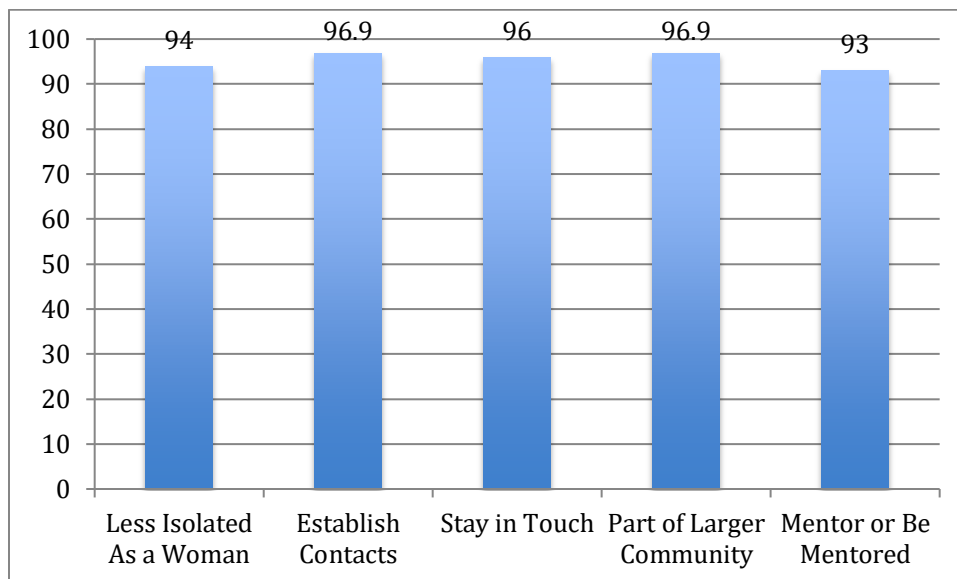
Overwhelmingly, the attendees felt this was a quality conference. This was reflected in both the surveys and interviews. Of the attendees, 95.8% found the content to be appropriate. A total of 97.9% felt that it was informative. Similarly, 92.5% felt that it was well organized. Likewise 98.3% felt that it was worthwhile and 97.9% felt that they gained important information. In addition, 94.1% of attendees said that the conference addressed important issues in the field.



**Figure 17: Percentage of Attendees who Found WiCyS Valuable**

WiCyS plays an important role in networking and mentoring. Evidence for this can be found from the surveys, observations at the conference, and follow up interviews. From onsite interviews with women at the conference and from surveys women completed, they indicated that they wanted even more time to network

informally. 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 94.0% of the female attendees responding that they felt less isolated as a woman in the field because of WiCyS. Similarly, 96.9% of the relevant attendees said that they felt a part of the women in cybersecurity community as a result of attending WiCyS. These women found WiCyS to be an excellent networking opportunity with 96.9% of attendees saying it helped them establish personal and professional contacts. Even more promising is that 96.0% of female attendees planned to keep in touch with people that they met at the conference. The women appreciated both the opportunity to mentor others and to be the recipient of mentorship that WiCyS provides with 93% of attendees saying that attending the conference has increased their intention to either be a mentor or to find a mentor. Many indicated that they intended to be both a mentor and to find a mentor as a result of attending WiCyS.

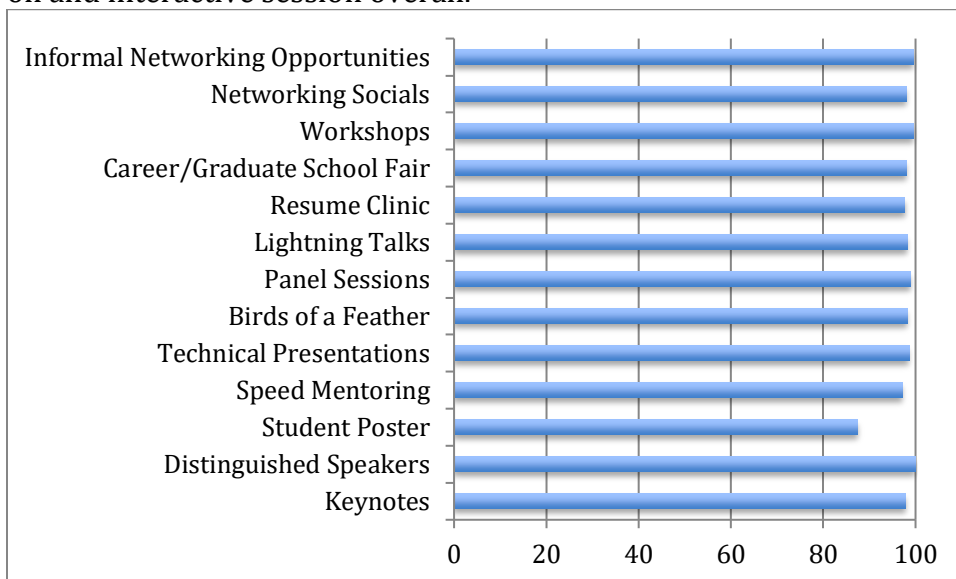


**Figure 18: Networking, Mentoring, and Community for Women Attendees**

Of the attendees responding, 97.9% found the keynote sessions valuable while 100% found the distinguished speaker sessions valuable. Of those attending the student poster session, 87.5% found it valuable. This was down somewhat from the previous year. This may have been due to the student poster sessions being more crowded this year and thus more difficult to navigate between the posters. Those attending the technical presentations and Birds of a Feather Sessions found them valuable at the rates of 98.6% and 98.2% respectively. The panels were rated valuable by 99.0%, while 98.2% rated the Lightning Talks as valuable. The workshops were found valuable by 99.5% of the attendees. This was an improvement over the previous year with this year all attendees but one rating the workshops as valuable. The lower evaluation the previous year may have been by some of the attendees who were disappointed that there was not room for them in the workshops. This year, based upon recommendations from the previous year, more workshop

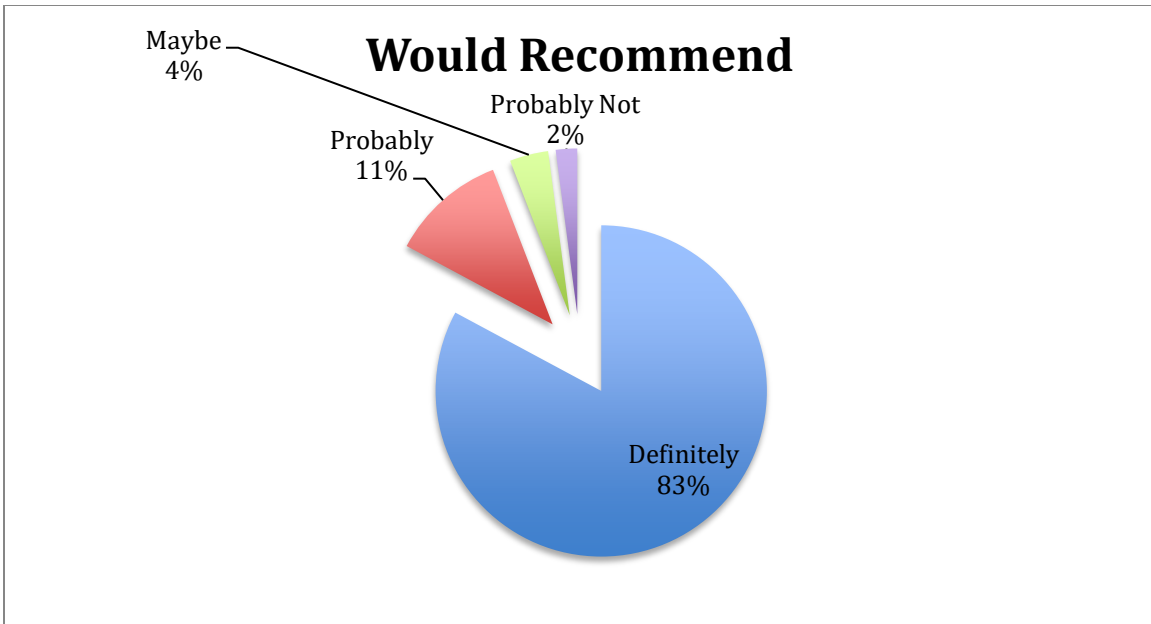
were held, and they were held in larger rooms. The Career/Graduate School Fair was rated valuable by 98.0%, the Speed Networking/Mentoring by 97.1%, and the Resume Clinic by 97.7% of attendees. Finally, 98.1% of attendees found the networking socials as valuable and 99.6% of attendees found the informal networking opportunities as valuable.

Even though the attendees felt each of these components were valuable. They did provide feedback to help improve the event next year, both from interviews at the conference and in the survey. The most common suggestions concerned the issue of the Keynotes being at the meals. The most common recommendation for improvement was to use the meals (all or in part) as informal networking opportunities. This would make it both easier to hear the Keynote speakers and provide more time informal networking. Thus, either to have the Keynotes at a different time or to start the speaker at dessert was recommended. Another area of feedback from attendees both at the conference and in the survey was that they preferred the workshops with actual labs the most. Attendees wanted more hands on and interactive session overall.

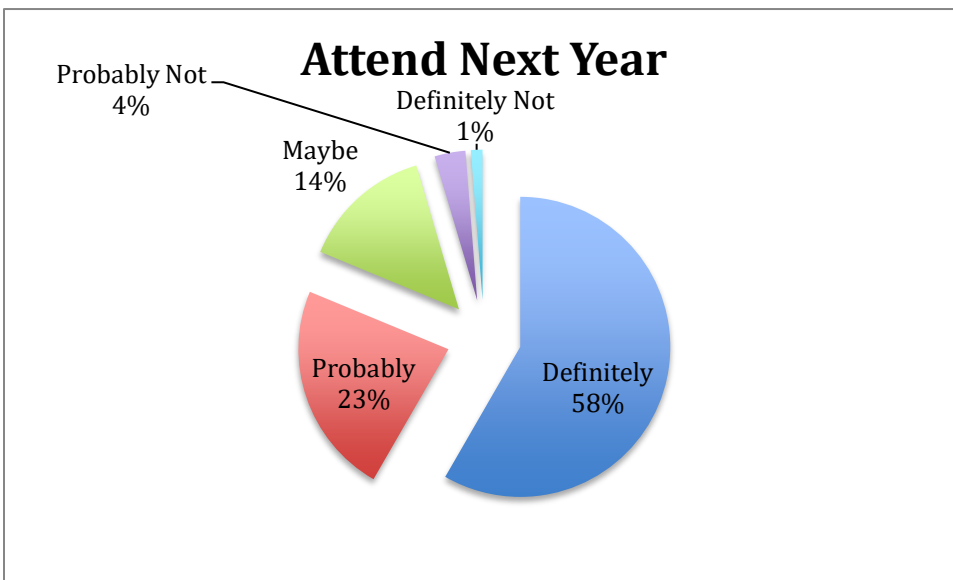


**Figure 19: Percentage of Attendees Ratings of Each of the WiCyS Components as Valuable**

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 83% would definitely recommend and another 11% would probably recommend the conference while only 2% would probably not recommend the conference. **No one said that they definitely would not recommend the conference.** Again note that 58% of the attendees definitely plan on definitely attending in 2017 with 23% probably attending. Fourteen percent said they maybe attending. Only 3% of the respondents said probably not and only 1% said they definitely were not attending. Comments included, “depend if I can go for free again,” “hopefully it will be possible,” “depends on support from work,” and “as long as I have approval and funding through my job”.

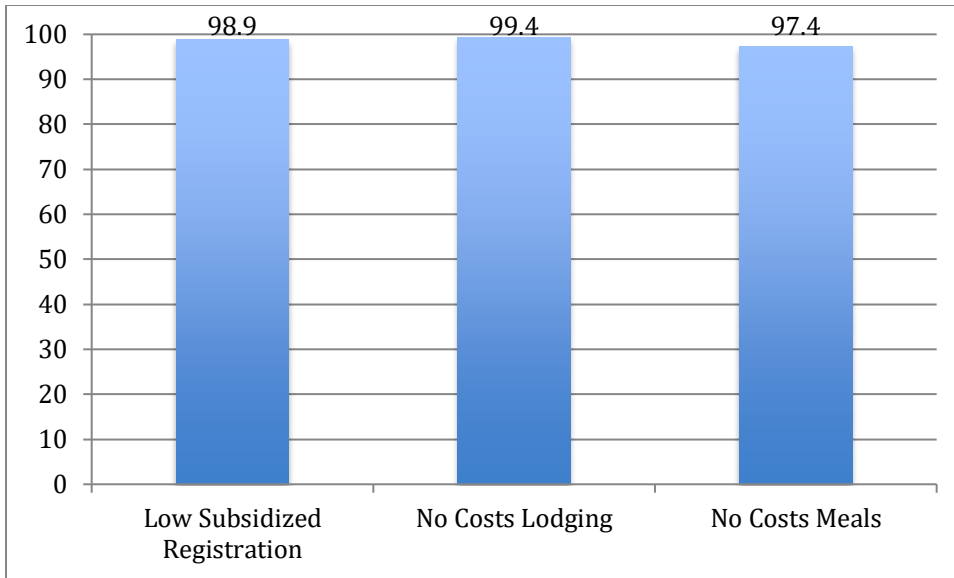


**Figure 20: Percentage of Attendees Who Would Recommend the Conference**



**Figure 21: Percentage of Attendees Who Plan on Attending Next 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, 98.9% said that the low cost of the subsidized registration enabled them to attend this conference. Similarly, 99.4% of respondents said that the no cost for housing allowed them to attend the conference. Likewise, 97.4% said that no cost for meals allowed them to attend the conference. Therefore, each of these components, which limited the cost of the conference for attendees, was essential to the ultimate success of the conference.



**Figure 22: Funding Impact on Attendance**

Overall, attendees reported a powerful, pervasive impact of the conference. This was true for all types of attendees: students, educators, and other professionals. In addition to quantitative data, qualitative data was collected from the conference attendees. Their open-ended comments demonstrated that the conference was having a deep impact on individuals and organizations and was impacting them in various ways.

**Table A**

| Representative Comments  |
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| This conference allows women to network, find a mentor, or become a mentor, for cyber security women professionals, as well as reiterate the importance of women in this professional realm. Most importantly, it's awesome  |
| It provided attendees an opportunity to be inspired and motivated in an industry where we have been overlooked.  |
| Wonderful diversity of information from key people in the field.   |
| I will be starting my job as a Cybersecurity Advisory in August 2016. This conference provided me useful resources to better prepare me for my job ahead of time. I found a long term mentor through WiCyS, who has already started educating me with more in-depth knowledge about Linux, Networking, and Security certifications. I got another job offer as a professor in California State University through WiCyS. My current research work is on children online privacy and I wanted to ask some privacy based questions from Facebook. Through WiCyS, I got in touch with Facebook's Privacy Manager and would use this contact in further enhancing my research. I connected my future company's recruiter with some university deans, who I networked at WiCyS, to recruit students for summer internships and full time jobs. I feel more passionate about pursuing my career in cybersecurity now. Before coming to this conference, I was feeling really stressful and suffered from "imposter syndrome" because I am switching my career from Java Developer to Cybersecurity. I was doubtful about this switch but after attending WiCyS, I feel quite confident that I can learn a lot with the support of open source materials and mentors who I met through WiCyS. Above all, due to the lodging sponsorship, I was able to attend this conference, otherwise I would not have attended this conference and would have lost all the learning, and networking opportunities. It is definitely worthwhile, for funding agencies/sponsors, to support such conferences. Due to their financial support, students are able to explore and network with industry professionals and mentors, otherwise, students cannot afford to attend such conferences and it will be a loss for the industry and the students. WiCyS is a great platform to recruit students. I personally feel that only those students, who are dedicated towards their career, take out time to |

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| <p>manage their school work and attend these conferences at the same time. Such dedicated students are not only hardworking but are also good at time management skills. And every recruiter would like to have their future employees to have good time-management skills apart from high GPA.</p>  |
| <p>As a non-tradition adult student and career changer, this conference gave me a wealth of opportunities to interface with many professionals, hear different perspectives about the industry as well as gain confidence my journey moving forward.</p>   |
| <p>It helped to understand the scope of the field and promote the development of the curriculum at my own school. This field is an overlap of many areas, that's why it is everybody's business to support it.</p>   |
| <p>I don't feel as invisible as I did before. The feeling of belonging to a community is really a confidence booster. The future employees of your companies or interdependent companies are very reachable in a conference like this.</p>   |
| <p>I thought this was an excellent event for networking. I will definitely be trying to take my students here next year for the experience.</p>  |
| <p>Our Cyber Defense concentration is new and we are very involved with outreach to promote how important Cyber Security is to protect our national assets and that there are over 200k jobs that are going unfilled because they are not enough CyberSec technicians. Every workshop, every speaker had important tidbits to help programs like ours to market, recruit, retain, and graduate cyber warriors.</p>   |
| <p>Being one of the scholarship recipients was the most beneficial thing. If it wasn't for that scholarship, I wouldn't have been able to go at all. Also, just being able to talk with professional women who are leaders in the field and gaining advice from and how to be successful in the field has allowed me to remain motivated. Renee Forney had such a big impact on me while I was there. She gave me words of encouragement, talked to me about some real life experiences I've been going through and I was able to exchange information with her along with another woman from DHS. I was able to connect heavily with Cisco and IBM as far as jobs and internships and made sure they remembered who I was. It was just a great experience to put myself out there, out of my comfort zone, in order to become a more marketable person.</p> |
| <p>I was not aware of many career paths I could take as an information security student. This conference helped me view role models in various career levels.</p>  |
| <p>Aided in networking and keeping up to date with current security/tech trends.</p>   |
| <p>OMG, it was so nice to see African American females in my field. I am the only person in my rather large city that is an African American woman studying cyber security/information tech</p>  |
| <p>Staying in the field is very challenging at times, and this reinforced the need to stay in the field. It has an impact on retention for sure, unlike the other big conferences I attend that make me want to leave the field due to all of the issues we all know so well.</p>  |
| <p>I learned a lot even as a male about the needs for women in cybersecurity. It was an interesting perspective to have being a minority in an industry where as a white male I'm typically a majority. I think this experience is extremely useful for both male and female students.</p>   |
| <p>It motivated me to continue my studies and to continue to strive to become the best cybersecurity professional I can be</p>   |
| <p>Women in the STEM sciences is a major concern. This particular conference is a high quality and extremely well organized event. The day and evenings are filled with opportunities for networking as well as personal and organizational growth.</p>  |
| <p>This conference really opened me up to meeting new people and making contacts with companies I've dreamed of talking with. This is an excellent opportunity for women in the cyber security field and we need more conferences like this.</p>   |
| <p>Based on my attendance of this conference one of my students is going to receive a ASCA, CRA-W, HP Enterprise scholarship for Scholarships for Women Studying Information Security for \$7,000 this year. Also, based on the listserv, two of my students received Women in Homeland Security scholarships to attend a pre-conference session on cybersecurity and legal issues. I have also been able to encourage female students and other underrepresented populations to get engaged in cybersecurity.</p>   |
| <p>This conference was amazing and that so many women from all over the country that are making a difference in this field. It was truly inspiring and I will be back next year</p>  |
| <p>Really encouraged me as a woman who doesn't have a complete CompSci background, trying to enter a male dominated field.</p>   |
| <p>I think it allowed us to meet a lot of interesting women in the field, and sponsoring a scholarship helped us get eyes on talent.</p>   |



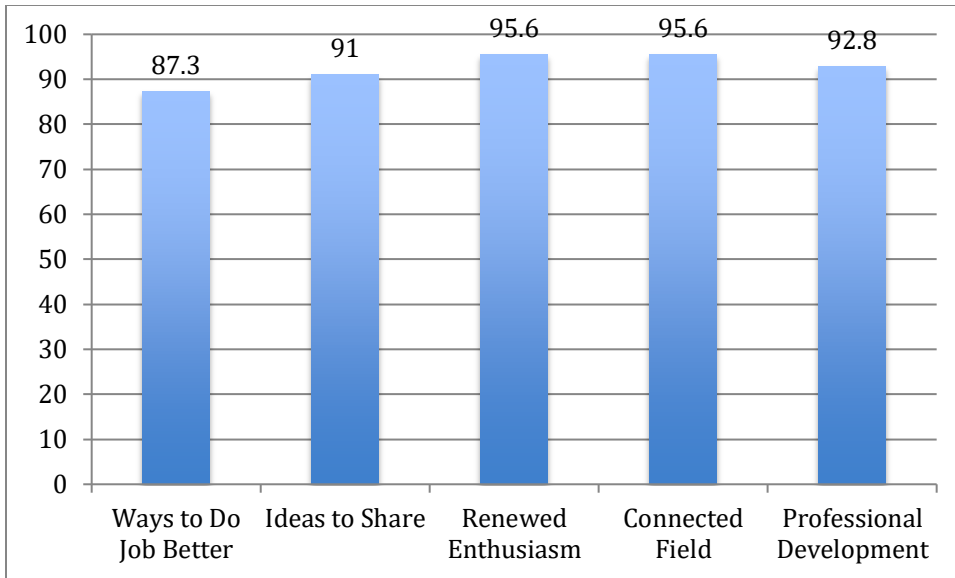
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| <p>This only had positive outcomes. Networking with professionals and listening to advice from woman that are working in the industry encourages and motivates me to keep pursuing a career in Cyber Security. Thank you!</p>  |
| <p>It helped me to understand how to create a better resume, network, go to my first career fair. I felt going was worthwhile for the experience of learning new things, meeting new people, and even stepping out of my comfort zone a little bit.</p>  |
| <p>It was beneficial to me because I got to see multiple sides of cyber security. I never knew how security itself was such a large field. This conference helped me with deciding how to narrow down what I am interested in, what I can focus on, and ways to further continue my education in this field outside of school.</p>   |
| <p>The conference is always empowering and a great opportunity for networking.</p>   |
| <p>This conference is the best one I attend all year. It is incredibly rewarding and inspiring. Networking is its most important component. To that end, I recommend not scheduling speakers until mealtime is almost over, in order to allow for new acquaintances and friendships to grow.</p>   |
| <p>I cannot say enough good things about this conference. I came back feeling so positive and empowered and inspired. Like I mentioned, my institution sent 6 female students, and we are currently filling out an application with our Student Government to start an official Women in ITS club next semester. We are so excited to take what we learned at the conference and apply it to our lives and hopefully share the inspiration and empowerment we gained. I learned a lot of life tips and I just felt supported wherever I went. I never felt stupid asking a question or trying to speak with someone. Every other conference I've been to has been so male dominated that it's intimidated and I find it hard to speak and network with people, but this conference just had such a different atmosphere. I can only hope that I am fortunate enough to be able to attend such a wonderful event again next year.</p> |
| <p>It allowed me to see successful women in the field. The technical talks give me an advantage over my peers</p>  |
| <p>We were able to meet some truly excited, passionate, and motivated women who were happy to be promoting themselves and their skills. It was an excellent opportunity to provide these women with information about what we have to offer them in continuing their education. I have connected with many of those women since the conference ended, and I foresee some great relationships being built from the conference experience.</p>   |
| <p>I had taken a break in my studies because I have a small baby, I was given other options that can enable me to do classes without affecting my child care</p>   |
| <p>Being able to participate in the Conference of Women in Cybersecurity (WiCyS) was an amazing experience. I was able to meet a lot of people that works in the cyber security field, and participating in the poster session was much better because I was able to receive feedback from cyber security professionals about my undergraduate research. Thanks to WiCyS, I had the opportunity to be interviewed with IBM for a summer internship and received more invitations for future academic and non-academic internships. I decided to accept the IBM offer for summer 2016. I'll be looking forward for an academic internship in summer 2017!</p>   |
| <p>It's empowering for a female who wants to be empowered by other females. The keynote from IBM was fantastic and it was encouraging to see someone who is succeeding AND has a family.</p>   |
| <p>I rarely see other women at work and it was really empowering and refreshing to see other women succeeding in the field. Although it's not tangible, the feeling of connectedness that I gained at the conference is helping me to feel like I belong at my work.</p>   |
| <p>This conference changed my life. Me and my husband will be moving our family to a different school with a cyber security program to pursue our dreams!</p>  |
| <p>I left inspired I really did. From the networking evening events to the conversations in the hallway it was amazing. It was great to feel like part of a community that doesn't exist in the work place or at school for most of us. There are a few places that I would consider working for just on the conversations in the hallway. The sponsors should know that funding this inspires many to go and inspire more. Investing in this is the future and if not directly then indirectly. The woman you inspired to keep going and not give up may be the person that makes a major breakthrough in quantum computing that changes the future of the world.</p>   |
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| <p>I always discounted the women struggle. However after this conference, the conversations, insights and reflections, I realize I just turned a blind eye. I loved how there were women that not only shared experiences but their solutions and evolved perspectives as well.</p>   |
| <p>From the moment I walked into the hotel, I knew I made the right choice coming. I have met some amazing people at this conference, and because of the welcoming and friendly environment designed to grow talent and inspire, I now have some new friends for life, and a larger network of individuals that are interested in Cyber security in my resource pool. I have a personality type that makes it difficult to ask for help, couple that with a desire to always look strong, I usually just struggle through instead of reach out; not at WiCyS 2016! I have learned how to open up not just on a personal level, but also professionally to share information and best practice tips. It is such an amazing feeling to know that I am not a lone tree in a field with no one to look up to, and that there are so many others around the country (and world) passionate about Cyber security, and in so many variations. Any company that wants to take part in shaping the future of tomorrow - invest in this conference. WiCyS is a collaboration of ideas, leadership, and motivation on levels I feel blessed to have participated in.</p> |
| <p>There are very few females in the cybersecurity/digital forensics field at my school. Attending this has encouraged us to become more of a team and create a club, and generally come together to help each other out. We all felt so motivated and inspired, and that makes a lot of difference.</p>  |
| <p>The Resume Database initiative helped me land my dream job in the CyberSecurity space. It would not have been possible without WiCyS. The best part of attending this conference is that I didn't feel I was in the minority trying to explain why security is important. Everyone I met had similar interests and it was very easy walking up to people and striking a conversation.</p>  |
| <p>It allowed me to see even though in the real world I don't have many women in my department and company doing or attempting the things I am in CyberSecurity, I am not alone. It also showed me the struggles I have a woman trying to be in the industry are valid and some are shared. Probably most importantly, it encouraged me to never give up. It ignited a fire that was dimming inside of me.</p>  |
| <p>I was able to share my experience both at college and working with some of the ladies I met and that helped us to connect. I was able to start a mentoring relationship as a mentor to one of the ladies. This is my second time attending WiCys, I was able to encourage someone on my team at work to come this year and I am working on seeing how I can get more participant from EY next year.</p>  |
| <p>Needed to know about coding camps</p>  |
| <p>At this conference, for the first time, I felt completely supported by those around me in my interest in the security field, and I felt connected to other women who share the same interests.</p>   |
| <p>I got to strengthen relationships with the local infosec ladies who I knew from home, and make new friendships with folks from Facebook, Google, Cisco, and many other great companies. As a grad student, I was able to find mentors in the industry, and also provide mentorship to undergrad students.</p>  |
| <p>I enjoyed getting to learn about the different companies that were there, and I think conferences like this are a great place for companies to recruit new talent.</p>   |
| <p>I do not know of any American women in my school or in my field and I certainly don't get any encouragement from any of my male colleagues. They are constantly criticizes why I don't know the basic material. I come from a liberal arts background and sometimes it feels like no matter how hard and how long I study I will never get this material, but I love the interdisciplinary aspect of cyber. I love computers (they are my toys) and now I feel like I just need to "NOT GIVE UP!"</p>  |
| <p>This conference is a great opportunity to exchange knowledge and expertise among women since men's experiences and challenges differ from women's. There is no easy way to bring this small percentage of women in one place to discuss difficulties and opportunities in this particular field. This small percentage of women who want to keep up with their interest in security and privacy would not be able to evolve and increase their community without this conference. I have decided to peruse a job in security after I attended WiCyS. That is because I was not aware of this great opportunities out there, and I did not know that women can be leaders in security until I saw them in the conference.</p>   |
| <p>This conference re - inspired me in my studies, I'm motivated me to remember why I'm working so hard in school. Also I am next year will be bringing more members of the women in stem club with me to inspire them too. The first thing I did when I got back to my university was go to each of the Departments associated with cyber security and stem education and tell them what an amazing conference this was and how important it is for the women of our University to attend who are interested in cyber security. This conference re - inspired me in my studies, I'm motivated me to remember why I'm working so hard in school. Also I am next year will be bringing more members</p>  |

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| of the women in stem club with me to inspire them too. The first thing I did when I got back to my university was go to each of the Departments associated with cyber security and stem education and tell them what an amazing conference this was and how important it is for the women of our University to attend who are interested in cyber security.  |
| I was able to connect with many people, had a fun time learning in the workshops and panels, and I found the career fair to be very valuable. Each person from my group of 4 had an interview! Coming together with a large group of women was really empowering.  |
| This was such a well organized event to be so jammed packed with great speakers and workshops. I cannot pinpoint just one important thing I gained from this awesome conference, but out of the several 'big' outcomes was the workshops/speakers who were willing to share additional information about their topic or activity. And the early start 'GenCyber' event was really cool. It gave us a lot of additional information for offering a GenCyber event at our college.   |
| There are women in this field who came from liberal arts backgrounds. As someone who majored in philosophy and comparative literature, I often feel like an impostor in this field. My interest in this field came from my realization that the cyber security field is just as interdisciplinary as the liberal arts background I came from. They are also mentors outside of my home university (I don't have any in my home university, getting people to even talk to me is a challenge). I can't tell you how much that meant to me having people talk to me and say, "You should be here and you can do this!" |
| Information on how better to recruit this wonderful population of talent.  |
| Contacts at potential graduate schools   |
| I am not alone and I have male allies.   |
| How to reach middle school aged girls- love the Facebook Coding Camp   |
| Inspiration, empowerment, and reassurance.   |
| I was glad to learn that large companies such as Cisco and IBM have facilities outside of Silicon Valley.  |
| I brought my high school sister to this conference, and she was really inspired. That's probably something I couldn't do without this conference   |

### **Educators and Professionals**

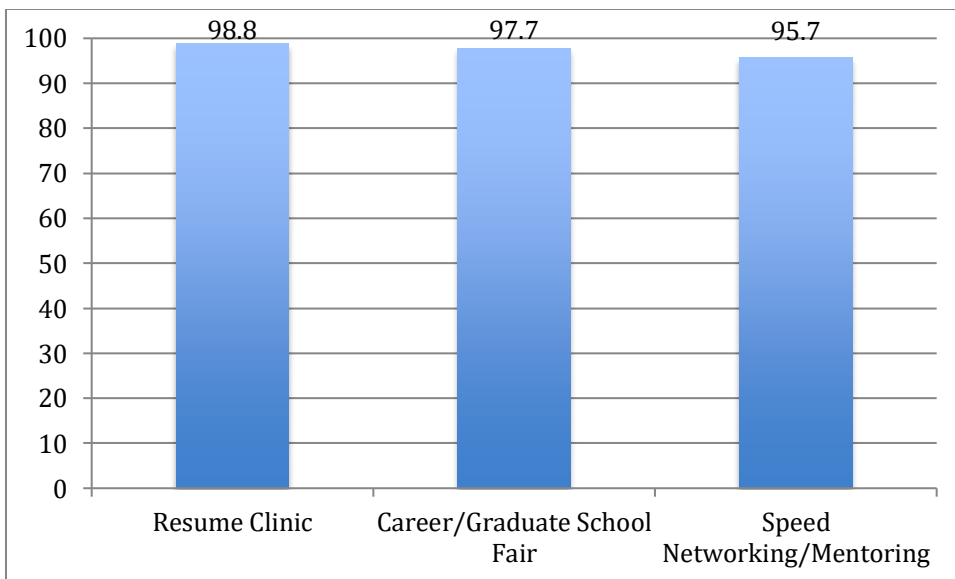
Some of the questions on the survey were aimed specifically at the educators and professionals. It was important to evaluate what these educators and professionals were taking away from the conference to help them succeed in field. Of the responding educators and professionals, 87.3% reported that the conference gave them ideas to do their job better. In addition, 91.0% reported that the conference gave them ideas to share with their colleagues back home while 95.6% helped them face work with renewed enthusiasm. Likewise, 95.6% agreed that the conference helped them feel more connected to others in the field. Correspondingly, 92.8% reported that the conference had a positive impact on their professional development.



**Figure 23: Impact of the Conference on Educators and Professionals**

### Students

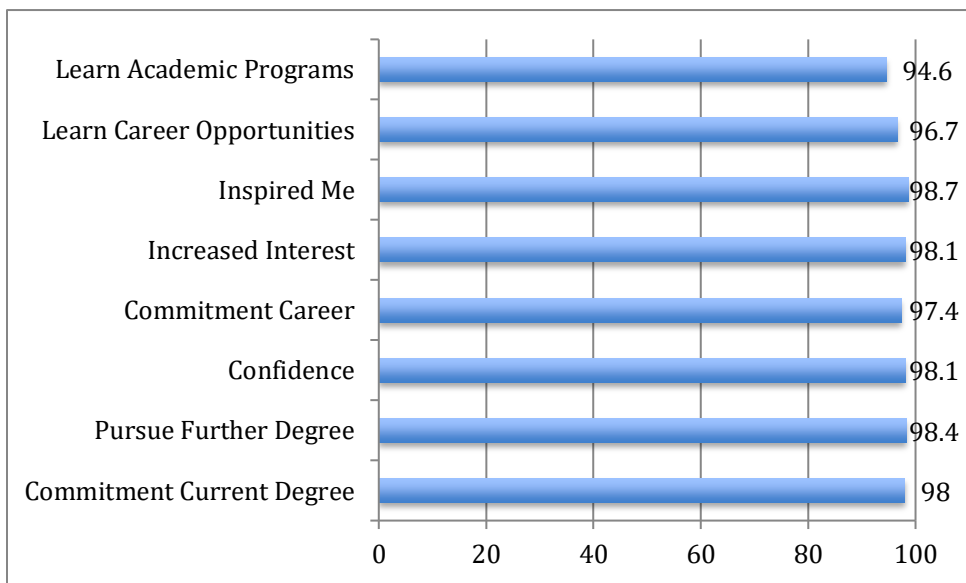
Some of the activities at the conference were specifically aimed at a student audience such as the resume clinic, the career fair, and the graduate school fair. Students were very pleased with these activities, 98.8% found the resume clinic to be valuable, 97.7% found the career/graduate school fair to be valuable, and 95.7% found the speed networking/mentoring to be valuable.



**Figure 24: Students Finding Components of Conference Valuable**

Since the impact on students was a crucial component of the workshop, a separate part of the survey was answered only by students. A total of 175 students completed the survey the survey. This section of the survey deals with issues related to the conference's impact on students' commitment to current degree and commitment to career in computer security. Of the responding students, 98.0% said

that the conference increased their commitment to complete their current degree program and 97.4% reported the conference increased their commitment to pursue a career related to information/computer/cybersecurity.



**Figure 25: Impact on Students**

The conference also helped 94.6% of students learn about academic programs in information/computer/cybersecurity. An amazing 98.4% of students reported that the conference increased their intention to pursue an undergraduate or graduate degree in a related field.

The conference provided opportunities for students to increase their knowledge of career opportunities, confidence in their abilities, and interest in pursuing a career in the field. An increase awareness of job opportunities in security was reported by 96.7% 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 98.1% of students reporting an increase in confidence in their ability to succeed in a job in information/computer/cybersecurity. Importantly, 98.1% of the students reported an increased interest in information/computer/cybersecurity.

**Strengths of the Conference**

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 four most frequent responses were inspired, motivated, excited, and empowered. Interestingly, the top three words this year were the same as last year’s top three words. Empowered moved from tied for fifth place to fourth place this year. One of the most valuable parts of the conference from the perspective of the interviewees was inspirational and motivational spirit of the conference. This is important for both getting underrepresented minorities into the cyber and field and then keeping them in the field.

**Table B: Feelings about the Conference**

| Feelings about the Conference |
|-------------------------------|
| 1. Inspired (24.08%)          |
| 2. Motivated (8.16%)          |
| 3. Excited (5.71%)            |
| 4. Empowered (4.49%)          |

**Feedback from Last Year Incorporated Into WiCyS 2016**

Several items from last year’s feedback were used to improve this year’s conference: (1) Two nights lodging instead of one were provided for those with scholarships; (2) The length of the conference was increased; (3) More workshops were provided; (4) More space was provided in each workshop; (5) The resume clinic was moved to before the job fair in order to fix resumes before the job fair; (6) More men were included on panels; (7) Almost 100% of the students attending received some form of scholarship and (8) More travel scholarships were provided. Additional changes were made beyond those recommended in the feedback: (1) Those who received scholarships were refunded registration fees; (2) Social networking opportunities with sponsors were established; (3) A meet up for SFS was established; and (4) Student club seed funds were established. Each of these changes made a positive contribution to the conference. The social networking opportunity with sponsors was one of the highlights of the conference for many of the attendees, for example.

**Useful Recommendations from Surveys**

Many participants shared useful recommendations for next year’s conference in the form of interviews and from the surveys.

**Table C**

| Useful Recommendations for Next Year’s Conference  |
|--|
| <b>Hands-on activities/workshops are the most beneficial</b>   |
| Turn the music DOWN! The music was so loud before meals that it was nearly impossible to take advantage of that valuable networking time.  |
| Make the luncheon speakers time shorter--hard to hear over eating.   |
| DO NOT HOLD IN AN airport location; was horrible not leaving the hotel for 3 days  |
| For sponsors, a look ahead calendar upfront would be helpful. The calendar could include dates things will be due as well as dates key information will be shared.   |
| More networking sessions for attendees and recruiters  |
| It would be nice to have a 5 minute period between sessions to get from one session to another, in order to be on time. Especially when rooms may be located in different parts of the facility.   |
| Stack work shops so they have an activity for students, professionals and educators.   |
| Session about mass surveillance.   |
| Perhaps, specify which workshops would require a laptop and be able to install necessary software ahead of time.   |
| Have a panel discussion about the student 'pathway' for CyberSec as a degree. At VolState, we promote the Cyber Corps, Scholarship for Service and tell our students about transferring from VolState to Tenn Tech who are now a participating institution for the Cyber Corp scholarship. |

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| More intimate and interactive sessions. Also, it would be great to have a lot MORE African-American speakers. Targeting other young women of different ethnicities such as Hispanic and more African-Americans to get interested in Security. HANDS ON activities   |
| As a professional, I did not enjoy having the conference over the weekend.  |
| I would suggest an interactive app that allows you to see the upcoming presentations, register for them and then fill out the survey after. That same link could then be used to upload any power point slides or other material.   |
| The snacks could have been healthier, with some fresh fruit or vegetables instead of just very sugary granola bars.   |
| A session geared towards cyber security in healthcare would have been immensely beneficial.   |
| Continue to show more of the technical panels and use those for inspiration. This was the differentiator from other similar events that tend to harp on the challenges and fail to highlight the opportunities. Also focus on retention as much as the pipeline issue.  |
| More technical presentations that have hands-on activities like the exploit dev workshop.   |
| For workshops with technical material indicate all that is needed ahead of time as well as make sure materials available for download a week before. Also, use larger font - multiple screens or follow-along guides.   |
| Northeast location  |
| A lot of the workshops required computer use, however, there were no charging stations or plugs in the conference. Some students would be in a workshop working on the challenge on their phone because they had no power. While changing out the men's restroom to be a women's restroom is a good idea, a sign pointing to the nearest men's restroom would be helpful so men aren't wandering around trying to find the nearest restroom. The mentor sessions are probably the most valuable thing at this conference, but one on one time was the most valuable time I got with a mentor. It would be nice to maybe spread out the mentoring sessions so more people could participate and maybe get one on one time with a mentor. The resume clinic works well, but the industry, government, and education should be separated. Also, people should be split more into non-technology and technology. As a lot of the people I talked to said they would end up handing my resume to an engineer to look over. It would be nice to have an engineer in the clinic so they can give advice as well. |
| Less lunch time speakers so people can network and engage with others   |
| The resume clinic was at the same time as the poster presentations. All poster presenters were students. Presumably they would have liked to attend the resume clinic.  |
| More on helping to engage K through 12 children in the field of cyber security  |
| Organize the interview rooms and maybe suggest mock interviewing workshops?   |
| Maybe can add another day, it's an amazing experience!  |
| I liked the schedule of this year. One thing that I can add is some short talks for graduate students to present their research ...   |
| Conference Paper Proceedings. Give attendees, students in particular an opportunity to publish technical and pedagogical research papers  |
| More technical presentations by women! It's great to hear everyone's stories, but it would be a treat to hear about stellar research that the women have done. It shows that we can do more than just chat about our lives!   |
| We were asked to thank conference sponsors by applauding and standing up but I would like to propose a more concrete manner of showing our appreciation like a board where we can sign sort of like a "Wall of Fame" that can later be framed so that when these individuals go back to their offices there is a physical item that shows our appreciation for their support.   |
| I would keep the career fair to one day. There wasn't a lot of traffic on the second day.   |
| Allow time in between sessions for traveling to a new room, taking a bio break, chatting, etc. If a session ends at 1pm and the next one starts at 1pm, you have to miss either the last few minutes of one or the first few minutes of the other.  |

The most common suggestions were the following: (1) Do not have keynote addresses for the entire meal time; (2) Have the conference at a non-airport location; (3) Have more technical talks; (4) Have more hands-on workshops; (5) Allow more time between session.

## **Summary**

Overall this was an immensely successful conference by any standard. The conference was evaluated by personal observations of the evaluator, interviews, and a survey of participants. All indications are that participants found the conference well organized, meaningful, engaging, and a great networking opportunity. Participants' individual needs were accommodated.

### *Intellectual Merit*

The conference was well organized, well conceived and addressed an important need. Cybersecurity is a growing field in which women are drastically underrepresented. This conference is the first national women in cybersecurity conference. The conference provided an opportunity for students, educators, and professionals in this field to both network and to develop new skills.

### *Broader Impact*

The conference meets several criterion 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 helped 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 between 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 provides benefits to society by enhancing national security through strengthening cybersecurity.