NCWIT End of the Year External Evaluation Report
Calendar Year 2016

Prepared by University of Washington
Center for Evaluation & Research for STEM Equity (CERSE)
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Authors:
Elizabeth Litzler, PhD
Brian Serafini, M.A.
Table of Contents

Introduction to the 2016 External Evaluation Report ................................................................. 3
2016 NCWIT External Evaluation Report Executive Summary .......................................................... 8
NCWIT Builds a Strong Community of Diverse Organizations and Members ................................. 11
   NCWIT Continues to Build a Strong Community that is Generally Useful to Its Members ............ 11
   NCWIT Continues to Build a Diverse Community ...................................................................... 14
NCWIT Spreads Awareness and Knowledge to Change Leaders, Targeted Non-Member Audiences, and the Public .............................................................................................................. 21
   NCWIT Creates Resources to Spread Awareness and Knowledge .............................................. 21
   NCWIT’s Resources and Services Increase Knowledge Among Its Community ........................ 23
   NCWIT’s message reaches a Broad Audience of Change Leaders, Targeted Non-Member Audiences, and the Public ............................................................................................................ 25
NCWIT Convenes Change Leaders and Motivates Them to Engage with One Another and Their Own Organizations ............................................................................................................. 41
   NCWIT Convenes Change Leaders via the Annual Summit .......................................................... 41
   Exposure to NCWIT and its Community Motivates Change Leaders to Collaborate and Engage .... 43
NCWIT Equips Change Leaders with Strategies to Enact Individual and Organizational Change ... 52
   NCWIT Membership Promotes Individual Change .................................................................... 52
   NCWIT’s Resources Promote Organizational Change ................................................................. 56
   NCWIT Membership Promotes Organizational Change .............................................................. 57
NCWIT Increases the Meaningful Participation of Women in Technology ........................................ 60
NSF Commitments for Year Six ......................................................................................................... 67
Introduction to the 2016 External Evaluation Report

NCWIT in 2016

In the coming years, we should build on that progress, by … offering every student the hands-on computer science and math classes that make them job-ready on day one.

~ President Obama, 2016 State of the Union Address

We are not there yet.
It will take an ecosystem.
It will take a sustained effort.

~ Jan Cuny, NSF, CSforALL panel

The year 2016 began with a call for action. In his final State of the Union address, President Obama included among the nation’s top priorities expanding access to computer science education and improving the technical proficiency of the labor force. His reasoning was straightforward: The U.S. education system – from K-12 schools to college campuses – still produces too few students to meet the growing demand for workers with computing skills. Following the address, the White House launched its CSforALL campaign – an initiative devoted to providing resources to a broad set of organizations and leaders in an effort to equip all K-12 students with basic computing skills, including students from traditionally underrepresented groups.

In the spirit of “CSforALL,” 2016 witnessed a number of notable accomplishments. Several higher education institutions saw impressive gains in the percentages of female graduates with technical degrees, such as Harvey Mudd College where more women than men graduated with computer science degrees or Carnegie Mellon University where females made up half of new enrollees in the computer science and engineering departments. Last year also saw sustained progress in the K-12 sphere. Nine additional states passed legislation to count, fund, or require computing courses in K-12 classrooms, and 27 Governors wrote an open letter to congress in support of federal education funding for computer science.1 And, at the grassroots level, 43,700 teachers participated in Code.org’s professional learning programs. Additional examples of progress in the K-12 sector abound.

Action also occurred outside educational institutions: In response to the U.S. State Department’s 2016 Global Entrepreneurship Summit (GES), 30 companies pledged to increase diversity among their workforces. It comes as no surprise that NCWIT was implicated in these efforts. NCWIT (along with CODE2040) pledged to launch a website with free research-based implementation resources to assist with the process.

Despite this progress, underrepresented groups continue to face barriers in access to computer science education. For example, a 2016 study sponsored by Google and Gallup found that in K-12 settings female students were less likely than male students to say that they had learned or are interested in

1 See Ruthe Farmer’s June 22nd presentation: “Computer Science for All: #CSforAll.”
learning computer science, while male students were more likely to be told by a teacher or parent that they would make good computer scientists. And black students, regardless of gender, were less likely than white students to have computer science courses offered at their school. Meanwhile, in the academic and private sectors, STEM-related hiring, degrees granted, and general interest in computing increased only slightly relative to demand. Moreover, much of the increase was imported rather than home grown; students and workers on temporary visas comprised a large share of new enrollments and new hires in STEM fields. While this is a fantastic opportunity for students and workers from abroad, it points to continued deficiencies in the U.S. K-12 and college systems.

Clearly there remains much work to be done, and, in 2016, NCWIT rose to the occasion. NCWIT created additional resources for male advocates as well as a critical listening guide, launched a *Hidden Figures* campaign in response to the success of the eponymous book and film, expanded its mission in response to calls for a more intersectional approach, and piloted an innovative tool for quantifying women’s meaningful participation in computing within organizations. And, as this report demonstrates, NCWIT continues to “move the needle” by sparking organizational change among its members.

As the following testimonials attest, we are not the only ones to take notice of NCWIT’s actions:

“NCWIT is by a wide margin the most successful organization with the goal of broadening participation in the computing disciplines in the United States, and it is also a leader among organizations working toward these broadening goals across all of the STEM disciplines in the United States.” ~ Dr. William Aspray, Bill and Lewis Suit Professor of Information Technologies in the School of Information at the University of Texas at Austin

“[Lucy Sanders] is one of the prime leaders in the drive to gather and disseminate diversity statistics about the academic and industrial computing community.” ~ Sharon Bertsch McGrayne, author

“We at ATLAS credit the gender diversity (60% women) in our academic programs at least in part to NCWIT, fostering an environment that encourages, invites and supports students from all majors, disciplines and perspectives to contribute to actively shaping their futures and expressing their ideas with and through computing, design and creativity.” ~ Mark Gross, director of the University of Colorado, Boulder’s Alliance for Technology, Learning and Society (ATLAS) Institute

“NCWIT is a very valuable source of information about supporting women in technology. Reflecting on my responses to this survey, they may not adequately convey the value of NCWIT. Having an organization that researches and promotes women in technology is vital to supporting our computing degree programs.” ~ Academic Alliance member

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Logic of the Report
Below we present NCWIT’s Theory of Change and the Annual Report Evaluation Framework – the product of collaboration between the external and internal evaluators.
In this process, NCWIT’s Three-Pronged Strategy – the primary focus of our previous evaluation reports – is viewed as providing the necessary conditions for change. By building capacity (convening), creating and distributing resources (equipping), and conducting outreach (uniting), NCWIT intends to raise awareness, spread knowledge, and motivate members to act. The majority of evaluation metrics in past reports were designed to measure these outcomes.

We have less thoroughly evaluated the latter stages of the change model: action and impact. In theory, increased awareness, knowledge, and motivation among NCWIT’s membership base should result in individual and organizational actions, which, in turn, should precipitate the meaningful participation of women in technology. In this report, we include metrics used in past reports as well as newer (as of 2015) measures of individual and organizational actions in order to examine the extent that members forge alliances in their organizations and create change in both minor and major ways. This improves our understanding of how action – the mechanism that links NCWIT’s Three-Pronged Strategy to sustainable impact – plays out in NCWIT’s member organizations.

Evaluating NCWIT’s impact has proven to be more difficult, given methodological and logistical constraints. Yet, we believe that some metrics reported in earlier reports provide a glimpse into NCWIT’s potential impact. The growth of the Aspirations in Computing program and the positive association between NCWIT membership and female graduation rates are two examples. But, much like NCWIT, we continue to pursue new ways of evaluating impact. Over the next few years, we intend to collaborate with NCWIT to consider additional possibilities for measuring and evaluating impact.

<table>
<thead>
<tr>
<th>Goal #1</th>
<th>Build a strong community of diverse organizations</th>
<th>Member tracking; Leadership diversity survey; Members survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal #2</td>
<td>Spread awareness and knowledge</td>
<td>Resource distribution &amp; User surveys; Summit survey &amp; Observations; Members survey; Interviews; Website analytics; Social media; Outreach tracking</td>
</tr>
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<td>Goal #3</td>
<td>Convene, motivate to engage with one another and their own organizations</td>
<td>Summit survey &amp; Observations; Members survey</td>
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<tr>
<td>Goal #4</td>
<td>Equip change leaders with strategies to enact change</td>
<td>Case studies; Members survey; Member Interviews; Pacesetters observations &amp; Interviews; Extension services SEM survey; Tracking tool</td>
</tr>
<tr>
<td>Goal #5</td>
<td>Increase the meaningful participation of women in technology</td>
<td>Tracking tool; IPEDS; Aspirations talent pool research; WA/EA data transparency; National indicators</td>
</tr>
</tbody>
</table>

MULTIPLE EVALUATION ACTIVITIES OCCUR AT EACH STAGE OF CHANGE
The 2016 annual report is organized as follows: We first provide a traditional executive summary of our results. Then, following the Theory of Change model, we offer more detailed presentations of our findings as well as related recommendations. Finally, we include a section that briefly summarizes NCWIT’s progress on its NSF promises so that NCWIT can easily reference these figures while drafting its annual RPPR report.

- In this report, this icon indicates a suggestion or recommendation for NCWIT to consider.

- Conclusions for each section are indicated by an arrow.

- Member feedback and anecdotes from NCWIT communications are indicated by a dialogue box.

Note: Success Metric data is not available for all years (2006-2016). Some metrics have been added in different years.
NCWIT Builds a Strong Community of Diverse Organizations and Members

**NCWIT continues to grow the community.** Membership at the end of 2016 was at a high of 891 organizations. The Academic Alliance grew to 478 organizations and the K-12 Alliance nearly tripled in size with the continued influx of associate member types. NCWIT’s alliances also continue to be comprised by a diversity of organization types and two alliances – the EA and K-12 Alliance – have undergone significant reorganizations in recent years.

NCWIT Spreads Awareness and Knowledge to Change Leaders, Targeted Non-Member Audiences, and the Public

**NCWIT creates research-based resources to spread awareness and increase motivation.** In 2016, NCWIT created 29 new resources (18 paper/web, 11 multimedia). NCWIT’s huge library of resources were heavily distributed in hard-copy (214,468 resources handed out), and resource downloads were very high—for example, the Programs-in-a-Box alone was downloaded 4,838 times in 2016.

**People are learning from NCWIT (from resources and the Summit).** A total of 75 percent of Summit attendees said they learned new information from the 2016 Summit, and 75 percent of members reported learning something new from an NCWIT resource in 2016.

**NCWIT drives broad awareness through outreach.** NCWIT staff or designates attended 413 non-government/non-policy meetings in 2016. Sixty-five and 93 of these events, respectively, were conferences and meetings with VIPs. NCWIT also interacted with policy makers at least 32 times during the last year. Scholars around the world are sharing NCWIT’s resources by citing them in their scholarly work. In 2016, NCWIT set a new record with 90 different scholarly publications citing NCWIT resources. NCWIT also sent 21 e-newsletters in 2016 covering a wide range of material.

**NCWIT uses social media and traditional media to increase engagement with non-members.** Facebook fans grew 35 percent in one year (to 27,846 at the end of 2016), and Twitter Followers grew 19 percent (to 21,405). NCWIT was mentioned in 135 different news/press articles in 2016, and a total of 300 blog posts. Generally, these numbers are lower than what was observed in prior years, perhaps reflecting the decline in tech sector media coverage. Of those 135 press mentions, 38 of them mentioned NCWIT data, stats, website, or resources (28%).

**NCWIT’s website continues to see high numbers of unique visitors.** In 2016, over 191,000 unique visitors came to the NCWIT website, and nearly 75,000 users visited the NCWIT Resources pages. In addition, in 2016, 656 different sites referred users who downloaded a resource from the NCWIT website.
Members take responsibility for outreach as well. Of the 92 percent of Members Survey respondents who reported involvement with NCWIT in 2016, 75 percent indicated that they distributed NCWIT materials or resources. And at least 29 members have presented on behalf of NCWIT using NCWIT’s support materials as part of NCWIT2GO.

NCWIT Convenes Change Leaders and Motivates Them to Engage with one Another and Their Own Organizations

The Summit serves as a key mechanism to engage new people. In 2016, 697 people attended the Summit in Las Vegas, almost all of them say they would attend another NCWIT event, and 79 percent said that they found the meetings very or extremely valuable. The Summit brings people together who have never met before; 78 percent of 2016 Summit attendees said that attending the Summit introduced them to people that they have collaborated with on current or past projects.

Members are active in engaging with other members to forward the cause. In 2016, 62 percent of members said that they helped or collaborated with another NCWIT member on a project related to women in computing. The top three collaboration outcomes included 179 presentations (to audiences inside or outside of members’ organizations), 146 program or practice implementations, and 86 instances of working together on Aspirations Awards. Even if they aren’t collaborating, 84 percent of members indicated that they presented or published on women in computing in 2016.

NCWIT Equips Change Leaders with Strategies to Enact Individual and Organizational Change

NCWIT provides support for members making their own changes. In 2016, NCWIT wrote letters of support for 3 projects/grant proposals working to improve women’s representation in technology, and helped members be recognized for their work related to women in technology by writing 4 recommendation letters for awards.

Members are active making their own individual behavior changes. We collect data on this metric every other year, but we did observe examples of individual change in the Members Survey. We also found that, in 2016, nearly all (92%) of Members Survey respondents learned something new because of NCWIT and three-quarters of respondents learned something new based on an NCWIT resource – both examples of individual change.

NCWIT resources and membership help promote organizational change. In 2016, 61 percent of members indicated that they had used new strategies based on information in NCWIT resources – an 11 percentage point increase since 2015 (50%). In addition, nearly 89 percent of members agreed that they took action because of something they learned through NCWIT.
Members are active making organizational change. We collect data on this metric every other year; however, members did share some impressive examples of organizational change in 2016 in the Members Survey and through direct communication with NCWIT.

NCWIT Increases the Meaningful Participation of Women in Technology

NCWIT has had an impact on women’s representation among computer science departments’ graduates. Among institutions with majors in “computer and information sciences and support services” NCWIT membership is associated with higher percentages of female graduates. In 2015, compared to newer NCWIT members (less than two years with NCWIT), longer-term NCWIT membership (membership for at least two years) was associated with a 2.72 percentage point increase in the number of female completions. Among NCWIT members, a one-year increase in NCWIT membership was associated with a .22 percentage point increase in the number of female completions within institutions between 2004 and 2015. Extension Services membership duration was associated with a .45 percentage point increase in the number of female completions within institutions over time.

Many of NCWIT’s Academic Alliance members saw an increase in female enrollment between the 2014-2015 and 2015-2016 academic years. Of the 63 departments that provided enrollment data (for both men and women) in the academic years 2014-2015 and 2015-2016, 76 percent saw an increase in the percentage of female enrollees. NCWIT therefore surpassed its goal of 75 percent. Caution should be exercised in interpreting this result. This is a highly selective sample, given that the vast majority of AA members did not provide data on total enrollments for women/men in the same major for both academic years.

NCWIT Extension Services has had an impact on undergraduate women’s participation, especially in Computer Science departments. In 2016, nearly all consultants and clients were satisfied with the Extension Services workshops offered at the Las Vegas Summit. All of Cohort 2’s Proposals for Recruitment and Retention aligned with NCWIT Extension Services’ Strategic plan for Recruiting and Retention, however, some aligned more than others. Schools were more focused on the 1) Recruiting Strategic Plan, 2) Curriculum and Pedagogy, and 3) Student Support, than they were on 4) Institutional Policies and Support, and 5) Evaluation and Tracking System. The 2015 NEXT Awardee Winner Interviews revealed that the award increased teams’ motivation to advocate for women in computing. The Awards increased their institutional credibility, as more faculty members demonstrated interest in their projects.

NCWIT has expanded the pipeline to a flowing river through the Aspirations Program. In total, 30,610 high school girls have registered and initiated applications at the high school Aspirations Award portal, and 5,338 just during the last award period. During the 2016 and 2017 award cycle, 2,654 girls were recognized as winners or runners-ups.
NCWIT Builds a Strong Community of Diverse Organizations and Members

Building a strong community of diverse organizations and members is crucial to NCWIT’s continued success, as NCWIT is only as strong as its member community. The strength and diversity of NCWIT’s community – its member organizations and individual leaders – provide the backbone for NCWIT’s change efforts.

NCWIT Continues to Build a Strong Community that is Generally Useful to Its Members

1) Objective: NCWIT increases its membership base each year.

Between 2015 and 2016, NCWIT’s community grew from 702 to 891 members, roughly a 27 percent increase in total membership. As the figure below suggests, this was the sharpest one-year membership increase since the period between 2011 and 2012. Growth, however, did not occur evenly across alliances. Most of the increase resulted from the K-12 Alliance’s decision to admit associate-level members, which alone accounted for the admittance of 132 new organizations.

![Member Organization Growth: 891 Orgs at end of 2016](image-url)
The Academic Alliance (AA) increased membership by 18 percent (74 new members).

The Affinity Alliance (AGA) increased its membership by 13 percent (8 new members). The Affinity Alliance we re-named and re-conceptualized in 2016.

In 2015, the Entrepreneurial Alliance (EA) underwent significant reorganization, separating members into three categories: Channel Partners, EA Associates, and EA Members. *Channel partners* consist of small “accelerator,” “incubator,” and “co-sharing” organizations. These members receive access to NCWIT research, resources, and expertise in exchange for helping NCWIT reach 10,000 founders by 2020. *EA Associates* are small organizations in the “seed stage” that lack the resources to purchase full NCWIT membership. These organizations, however, do receive access to NCWIT resources and their company names appear on NCWIT’s website. Finally, *EA Members* consist of smaller companies in the “growth phase” that pay $2,000 for full membership benefits including access to resources, research, and hands on attention from project managers. After reorganization, the size of the EA decreased by 43 percent. The loss of membership did not reflect an exodus of members; instead, NCWIT decided to expel many inactive members - members who rarely, if ever, communicated with NCWIT or contributed to its mission. In 2016, the EA consisted of 56 members: 18 Full members, 9 Channel members, and 29 associate members.4

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4 In the 2015 External Evaluation Report, we reported membership counts for the EA *after* the 2015 restructuring. Technically, many of the inactive members who were expelled at this time would be considered members *in the year 2015*. Thus, the sharp decline in EA membership reported in 2015 took place in 2016, as reported above.
The Workforce Alliance (WA) increased their membership by 13 percent (8 new members).

As mentioned above, the K12 Alliance introduced associate members in 2015, though the vast majority of this new category of members joined the alliance in 2016 (132 new associate members). These members include formal educational organizations such as secondary schools, informal educational organizations, such as on-campus after school groups, and local housing authorities that participate in the tripartite partnership between Google.org, the K-12 Alliance, and the United States Department of Housing and Urban Development (HUD). The K12 Alliance also increased its core membership base by 19 percent (10 new members). Combining associate and core members, K12 Alliance membership increased by 192 percent (142 new members).

NCWIT should clarify the role of K-12 Associate members on their website and possibly on the K-12 membership application form (the “EA” info sheet may be a useful template). If most K-12 associate members have little to no annual interaction with NCWIT, it may be appropriate to distinguish between regular and associate members in official membership counts.
NCWIT Continues to Build a Diverse Community

1) Objective: Diversity of member organizations increases annually

Among the AA, the number of doctoral-granting institutions increased by 10 percent (N=179), the number of Master’s-granting institutions increased by 22 percent (N=146), the number of Bachelor’s-granting institutions increased by 20 percent (N=73), and the number of Associate’s-granting institutions increased by 41 percent (N=62). In addition, the AA includes three institutions accredited by the Council on Occupational Education and 15 non-academic partner organizations. Some academic degree-granting institutions have formal missions to serve underrepresented groups, two Native American tribal colleges, 17 Hispanic-serving institutions, 17 historically black colleges and universities, and 12 female-only institutions. In total, the AA boasts 60 minority-serving institutions (some are also classified as historically black colleges and universities or Hispanic-Service institutions, so they appear in multiple counts).

In 2016, the WA remained near evenly split between Fortune 500 companies (N=35) and non-Fortune 500 companies (N=33). The WA also includes one non-profit organization, four government agencies, and one branch of the U.S. Department of Commerce.
As in 2015, we disaggregated our observations of K12 diversity by membership (full versus associate members). Among full members, the number of corporations and formal education organizations remained the same between 2015 and 2016 – a total of three and seven organizations, respectively. The remaining categories – informal education organizations, non-profits, professional associations, and organizations that serve underrepresented communities – all grew by about 30% in the last year.

For associate members, comparing relative increases in organization type between 2015 and 2016 is misleading because the vast majority of these members joined in 2016. The number of K-12 Alliance members is not likely to increase by such a sharp magnitude across future years. In 2016, associated members consisted of five corporations, 67 formal education organizations (almost exclusively secondary schools), 58 informal education organizations, 62 non-profit organizations, one professional association, 55 organizations that serve underrepresented communities, and 12 housing authorities.

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5 Some members are cross-listed as WA and K-12 Alliance members. While we include three industry members in our count of K-12 Alliance corporate members we do not include them in our K-12 Alliance member counts.
2) Objective: Leadership & SSAB is diverse in race, sex, experience, background

Each year we send a brief survey to new NCWIT leadership and staff members to evaluate the extent that NCWIT itself exhibits diversity. We were unable to collect responses from every member of NCWIT’s leadership and staff who was active in 2016. Nonetheless, 93 percent of board of director (BOD) members, 88 percent of Leadership Team (LT) members, 93 percent of the staff/consultants group, and all SSAB members responded to the survey. However, some respondents occasionally skipped individual questions, especially questions pertaining to race-ethnicity.

Race and Ethnicity

The SSAB continues to be the most diverse leadership group in terms of racial/ethnic diversity. Just under half of SSAB members identified as nonwhite or mixed race. Between 2015 and 2016, racial diversity decreased somewhat among the BOD and LT. In both groups, the percent of members who

<table>
<thead>
<tr>
<th>Year</th>
<th>LT</th>
<th>BOD</th>
<th>SSAB</th>
<th>Staff &amp; Consultants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>9%</td>
<td>6%</td>
<td>25%</td>
<td>4%</td>
</tr>
<tr>
<td>2010</td>
<td>10%</td>
<td>10%</td>
<td>22%</td>
<td>8%</td>
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<tr>
<td>2011</td>
<td>6%</td>
<td>5%</td>
<td>21%</td>
<td>4%</td>
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<td>2012</td>
<td>11%</td>
<td>6%</td>
<td>21%</td>
<td>4%</td>
</tr>
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<td>2013</td>
<td>3%</td>
<td>13%</td>
<td>19%</td>
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<td>2014</td>
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<td>14%</td>
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<td>2015</td>
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<td>14%</td>
<td>21%</td>
<td>4%</td>
</tr>
<tr>
<td>2016</td>
<td>8%</td>
<td>6%</td>
<td>16%</td>
<td>4%</td>
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</tbody>
</table>

Racial/Ethnic Diversity

<table>
<thead>
<tr>
<th>% Chinese</th>
<th>% Korean</th>
<th>% Hispanic</th>
<th>% American Indian</th>
<th>% Mixed race (Unl.)</th>
<th>% Black, Aft, Amere</th>
<th>% Asian Indian</th>
<th>% White</th>
</tr>
</thead>
</table>

6 This year, Lucy Sanders resent the survey to board of director members who did not respond in prior years.
7 Response rates do not include members who opted out of the survey.
identified as Non-Hispanic white grew by 10 percentage points, so that 85 percent of the BOD and 80 percent of the LT identify as non-Hispanic white. The percentage of the staff/consultants group that identified as non-Hispanic white resembled the BOD and LT, though the racial composition of the staff/consultants changed less over the last year.

**Educational Attainment**

As should be expected, all members of the SSAB – a group comprised of academic experts – have earned a doctorate or professional equivalent. The Leadership Team also appears highly educated; just over half of the Leadership Team earned a PhD and about a quarter earned a MA. The high percentage of PhD holders among the Leadership Team owed to the inclusion of AA faculty members. Members of the Board of Directors, however, were more likely to have only earned a Bachelor's degree (54%) than a graduate level degree. Members of the Board of Directors tended to be industry representatives where advanced degrees are less likely to be necessary for employment. Finally, the staff and consultants group was the most educationally diverse. About equal percentages of this group have earned a Bachelor’s degree, Master’s degree, and PhD (or professional degree). The small percentage of staff/consultants members whose highest degree is a high school diploma reflects two college students who are pursuing four-year degrees.
First Generation College Student

First generation college student status is a strong indicator of the types of barriers one faced while advancing their career. Not quite half of the Board of Directors (42%) were first generation college students. Fewer members of the Leadership Team (37%), SSAB (36%), and Staff and Consultants group (29%) claimed first generation college student status. We observed similar figures for each group in 2015.

<table>
<thead>
<tr>
<th>Percent First Generation College Student</th>
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<tbody>
<tr>
<td>LT</td>
</tr>
<tr>
<td>2009 27% 2010 29% 2011 22% 2012 30% 2013 39% 2014 42% 2015 37%</td>
</tr>
<tr>
<td>BOD</td>
</tr>
<tr>
<td>2009 50% 2010 45% 2011 37% 2012 33% 2013 25% 2014 33% 2015 41%</td>
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<tr>
<td>SSAB</td>
</tr>
<tr>
<td>2009 44% 2010 44% 2011 42% 2012 38% 2013 36% 2014 41% 2015 36%</td>
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<tr>
<td>Staff &amp; Consultants</td>
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<tr>
<td>2009 35% 2010 38% 2011 39% 2012 33% 2013 27% 2014 27% 2015 29%</td>
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</tbody>
</table>

Gender

NCWIT's senior leadership groups are the most gender diverse; a total of 62 percent of the Board of Directors group and 71 percent of the Leadership Team identified as women. The SSAB and Staff and Consultants groups, on the other hand, are predominantly female; about 85 to 86 percent of these groups identified as female.

<table>
<thead>
<tr>
<th>Percent Female</th>
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<tbody>
<tr>
<td>LT</td>
</tr>
<tr>
<td>2009 73% 2010 81% 2011 83% 2012 78% 2013 74% 2014 67% 2015 7%</td>
</tr>
<tr>
<td>BOD</td>
</tr>
<tr>
<td>SSAB</td>
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<tr>
<td>2009 89% 2010 90% 2011 91% 2012 52% 2013 51% 2014 56% 2015 86%</td>
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<tr>
<td>Staff &amp; Consultants</td>
</tr>
<tr>
<td>2009 100% 2010 94% 2011 94% 2012 95% 2013 92% 2014 92% 2015 89%</td>
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</tbody>
</table>
Disability

Very few members of NCWIT’s leadership teams reported a disability.

<table>
<thead>
<tr>
<th>Percent with a Disability</th>
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<tbody>
<tr>
<td>LT</td>
</tr>
<tr>
<td>0%</td>
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<tr>
<td>6%</td>
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<tr>
<td>8%</td>
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<td>10%</td>
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<td>8%</td>
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<td>5%</td>
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SSAB Expertise

A slight majority (55%) of SSAB members earned their doctorate in social sciences, such as sociology and economics. A sizable 27 percent of SSAB members specialized in education. The remaining 20 percent of SSAB members reported urban planning, science and technology, communications, and public administration as their highest degree. These figures have not changed since 2014 because no one joined or left the SSAB over that period.
In 2016, NCWIT continued to grow its membership base. NCWIT’s alliances also continue to be comprised by a diversity of organization types. Racial/ethnic diversity has remained low among NCWIT’s leadership and staff (excluding the SSAB), as has gender diversity among the SSAB and staff/consultants group.

As NCWIT pursues a more intersectional and inclusive definition of diversity, it should set a goal to increase racial and ethnic diversity among its Leadership Team and Board of Directors.
NCWIT Spreads Awareness and Knowledge to Change Leaders, Targeted Non-Member Audiences, and the Public

NCWIT seeks to achieve its impact (Increased Meaningful Participation of Women in Technology and Increased Innovation) through developing and distributing research- and evidence-based resources for recruiting, retaining and advancing girls and women in tech, helping people to learn new ideas, pushing for broad awareness through outreach, social and traditional media, maintaining a strong website, and helping members take responsibility for the awareness and knowledge of others.

NCWIT Creates Resources to Spread Awareness and Knowledge

1) Objective: NCWIT creates 10-15 resources annually

In 2016, NCWIT created 18 new paper resources and 11 new multimedia resources.

New paper resources included six NCWIT Tips, five reports or articles, four Tool Kits, two Top 10 Ways, and one poster.

New multimedia resources included eight Vimeo streaming videos, an interactive tool, a webinar, and a TECHNOLOChicas video.

In total, NCWIT created 191 paper resources and 204 multimedia resources since 2006.
2) Objective: NCWIT distributes 30-50K resources annually. NCWIT increases the number of resource downloads.

In 2016, NCWIT distributed 214,468 hardcopy resources in 2016 and website users downloaded an additional 26,364 resources.

The massive increase in hardcopy resource distribution between 2015 and 2016 largely reflects a change in how NCWIT measures distribution (see 2016 internal evaluation report). Thus, we refrain from drawing conclusions about annual change.

In 2016, the most frequently distributed resources were “Why Should Young Women Consider a Career in Information Technology” (21,890), Community College Pathway card (21,295), University Pathway card (21,220), and Military Pathway card (20,690).

Between 2015 and 2016, the number of resource downloads increased by seven percent (from 24,750 in 2015 to 26,364 in 2016). This appears to reflect a diminishing rate of increase, as the number of resource downloads between 2014 and 2015 increased by a much larger 53 percent (from 16,136 to 24,750).

Unlike, resource downloads more generally, the number of downloaded “Programs-in-a-Box” decreased by 17 percent (from 5,843 in 2015 to 4,838 in 2016).

NCWIT continues to expand its hardcopy and media resource base. Compared to 2015, the number of resource downloads increased only slightly and the number of Programs-in-a-box downloads decreased. While it appears that hard copy resource distribution increased dramatically over the last year, we will need future data to determine whether this increase is part of a trend or instead reflects a change in how hard copy distribution is measured.
NCWIT’s Resources and Services Increase Knowledge Among Its Community

NCWIT’s resources are designed to stimulate individuals and organizations to make change. For this to happen, the content in the resources must be relevant to the audience’s particular situation, be readily usable, provide some piece of information they were missing prior so that they can achieve an outcome meaningful to them. In all these ways, the resources support individuals to move into action.

1) **Objective: Each year, more than 75% of meeting attendees report learning new information/ideas from the Summit**

In 2016, 75 percent of Summit attendees reported learning new ideas/information from a speaker or presentation. This figure is eight percentage points less than what we observed in 2014 and 2015 (83%). For this metric, it appears that the 2012 Summit bears the closest resemblance to what we observed in 2016. Still, NCWIT met its 75 percent target.

“I had opportunities to learn from and engage with other academic partners. I also plan to incorporate what I’ve learned at my home institution.” (Summit attendee)

“[The Summit] gave me the opportunity to learn new approaches to engaging and enlisting girls into computing and technology. I am particularly interested in AspireIT and Aspirations and the Alliance meeting was extremely valuable. The opportunity to network was invaluable--learning what others are doing, their successes and areas that need work.” (Summit attendee)

“I always learn from both presenters and other attendees. Either a new perspective on something I’m struggling with or a new idea about how to tackle different challenges. You challenge me to think differently and act differently.” (Summit attendee)
2) Objective: Each year, more than 75% of members report learning something new because of an NCWIT resource.

As was the case in 2015, NCWIT just missed this objective by a percentage point in 2016. Exactly 75 percent (instead of more than 75 percent) of Members Survey respondents reported that they learned something new because of an NCWIT resource.

Some alliances, however, performed better than others on this metric. Over 80 percent of member representatives in the AGA, SSAB, EA, and WA reported learning new ideas from an NCWIT resource. The corresponding figures for the AA and K-12 Alliance were 73 percent and 63 percent, respectively.

The percentage of respondents who learned something from an NCWIT resource remains high across alliances

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<table>
<thead>
<tr>
<th>Alliance</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>71%</td>
<td>73%</td>
</tr>
<tr>
<td>AGA</td>
<td>67%</td>
<td>89%</td>
</tr>
<tr>
<td>EA</td>
<td>86%</td>
<td>83%</td>
</tr>
<tr>
<td>K-12</td>
<td>80%</td>
<td>63%</td>
</tr>
<tr>
<td>SSAB</td>
<td>69%</td>
<td>88%</td>
</tr>
<tr>
<td>WA</td>
<td>84%</td>
<td>82%</td>
</tr>
<tr>
<td>Total</td>
<td>75%</td>
<td>75%</td>
</tr>
</tbody>
</table>
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“NCWIT created some great toolkits which we've used to inform our D&I trainings and advice internally, including the Male Allies Toolkit and the Supervisor-in-a-box toolkit series.”
(Members Survey respondent)

“We've leveraged [NCWIT’s] resources to help our teachers understand how they can best recruit young women into their CS courses AND help build community after they have enrolled in a course.” (Members Survey respondent)

As was the case in 2015, high percentages of NCWIT members continue to learn new ideas by participating at the Summit and by using NCWIT resources.
NCWIT’s message reaches a Broad Audience of Change Leaders, Targeted Non-Member Audiences, and the Public

Another one of the key strategies NCWIT uses to reach its goal of increased meaningful participation of women in technology is to improve awareness by uniting and engaging members and non-members in national action platforms.

Policy and VIP Outreach

1) Objective: NCWIT has a regular presence in DC

NCWIT does not have a specific numeric goal for its presence in Washington DC, but seeks to maintain a regular presence. In 2016, NCWIT staff or delegates attended at least 32 meetings with notable policy makers and government officials – two more than we observed in 2014 (30). As we noted in the last report, this figure is much lower than our counts in previous years; but reflects a more common frequency.

Key examples of NCWIT’s presence in DC in 2016 include:

- Sara Solow emailed Lucy Sanders to ask if NCWIT was willing to participate in or support a "women in tech" event that involved Hillary Clinton. Sanders indicated that NCWIT sounds like an ideal participant/supporter for the event. (January)
- Andrea Chavez, a member of TECHNOLOchicas, was recognized as a White House “Champion of Change.” (February 12th)
- In honor of Women’s History Month (WHM), TECHNOLOchicas, hosted its first live Twitter Chat in order to discuss the importance of Latinas in tech. Attendees included representatives from the White House Initiative on Educational Excellence for Hispanics; Congressional Hispanic Caucus Reps. Linda T. Sanchez, Joaquin Castro, Juan Vargas and Ruben Gallego.
- Lucy met with members of the Center for American Entrepreneurship where she is now a trustee (April 13th)
- Lucy Sanders meets in DC to discuss the CSforALL call for action (March 14th)
- Lucy Sanders and Paula Stern meet with Kelly Mack of the Association of American Colleges and Universities (AAC&U) and Stacie Gregory of the American Association of University Women (AAUW). Goals of the meeting included 1) discussing computer science majors and aligning research projects and best practices as a means to spread these practices throughout the University system and 2) bringing Stacie Gregory on board with Catherine Ashcraft’s research. (April 14th)
• Lucy Sanders and Paula Stern meet with Cheryl Oldham of the U.S. Chamber of Commerce (April 14th)
• Lucy Sanders and Paula Stern attended the CED Luncheon: Business and Higher Education Partnerships: Skilling the Workforce (April 14th)
• Lucy Sanders participates in call with White House regarding the tech inclusion pledge (see below; June 16th)
• Kathy Zettl-Schaffer attended the “White House Champions of Change” event to witness John Niebergall, a former Aspirations in Computing Educator awardee, receive a Champion of Change award (June 17th).
• In response to the U.S. State Department's Global Entrepreneurship Summit (GES), 30 companies pledged to increase diversity among their workforces. It was announced that NCWIT (along with CODE2040) would launch a website with free research-based implementation resources (June 22-24th).
• Leslie Aaronson attended the CSforALL meeting in DC. NCWIT was mentioned twice in Jan Cuny’s (NSF) presentation. Aaronson presented on behalf of NCWIT, highlighting Aspirations, C4C, and NCWIT’s mission. At the meeting, NCWIT was tasked with recruiting federal partners and sharing a curated inclusion/diversity resource list with the group (December 6th).

"We are glad to have these opportunities to continue to share the news of the incredible work NCWIT is doing to inspire and pave the way for girls to pursue technical careers." (Danielle Carnival, White House Office of Science and Technology Policy)

2) Objective: NCWIT meets with at least 200 VIP’s at companies annually

When NCWIT conducts outreach to members and non-members, they seek to connect with at least 200 VIPs at companies per year. In 2016, NCWIT met with 93 VIPs or high level administrators, a 28 percent decrease since 2015 (130 VIP meetings). NCWIT thus fell short of the objective by 107 meetings. NCWIT has witnessed a rather dramatic decline in VIP meetings since 2013 when we recorded 198 meetings. That said, 200 may be too high of a goal.

NCWIT’s presence in DC and the number of VIP meetings appears to have declined in recent years. NCWIT should take measures to ensure that this does not become a continuing pattern, as all signs suggest that the current White House administration is unlikely to champion diversity in tech to the extent that the Obama administration did.
Scholarly Outreach

1) Objective: NCWIT resources are cited in 40 academic publications, annually

In 2016, NCWIT’s resources were cited in 90 academic publications, far surpassing the goal of 40 publications. Indeed, 2016 broke the record for resource citations in academic publications, representing nearly a doubling of citations since 2015 (46).

Of these publications, 29 were articles published in peer reviewed journals such as the Journal of Education and Music, Journal of Applied Communication Research, and Business and Information Systems Engineering. NCWIT resources were also cited in 34 conference proceedings, 11 student dissertations and theses, and 16 other academic publications such as books, reports, and magazine articles. It is noteworthy that a high percentage of NCWIT resource citations continue to occur in academic journals – publications that tend to be more rigorously reviewed.

Over time, “other” resources (e.g. Top 10 Ways, Extension Services mentions, etc.), By the Numbers, and Women (or Girls) in IT: The Facts have been the three most frequently cited resources.

<table>
<thead>
<tr>
<th>Resource Cited</th>
<th># Citations from 2005 to 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fact Sheet</td>
<td>12</td>
</tr>
<tr>
<td>Who Invents IT</td>
<td>23</td>
</tr>
<tr>
<td>Programs-in-a-Box</td>
<td>25</td>
</tr>
<tr>
<td>Promising Practice</td>
<td>26</td>
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<td>Scorecard 2007</td>
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<td>Scorecard 2010</td>
<td>29</td>
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<tr>
<td>ncwit.org</td>
<td>47</td>
</tr>
<tr>
<td>Women (or Girls) in IT: The Facts</td>
<td>59</td>
</tr>
<tr>
<td>By the Numbers</td>
<td>64</td>
</tr>
<tr>
<td>Other</td>
<td>73</td>
</tr>
</tbody>
</table>

“NCWIT’s resources have been SUPREMELY helpful. In particular, I cite the "By the Numbers" and other reports and white papers frequently - they are a wonderful resource that makes my life researching and promoting women in IT SOOOO much easier!” (Members Survey respondent)
**Media Outreach**

1) **Objective:** Increase in the combined number of NCWIT press and blog mentions each year (At least 50 press mentions are at a national or international level)

In 2016, NCWIT was cited in 135 press articles – a 49 percent decrease since 2015. This marks a return to levels observed between 2011 and 2013. Why the decrease? One possibility is that the amount of “bad news” related to the tech industry decreased in 2016. As we noted in last year’s report, 2013 and 2014 were unusual years for press mentions, as major tech companies and conferences were drawing attention to the dearth of women in tech-related jobs, and high profile incidents of sexual harassment and misogynistic public statements drew outrage.

While a few scandals made headlines in 2016 (e.g., Microsoft’s decision to host an after party featuring women in “sexy” school girls’ uniforms), reports of such incidents were few and far between. Further, most large companies had already released information on their diversity numbers to the public. We also suspect that the 2016 election may have drawn attention away from tech news.

In addition, NCWIT was also mentioned in 300 blog posts, a modest 19 percent increase since 2015. This decrease may be part of an overall decrease in the use of traditional blogs.

Press on the topic of diversity in tech has waned in the last year or so. NCWIT might consider aggressively pushing news releases or commentary in response to tech-related stories that do get coverage, whether they are positive or negative. For instance, NCWIT could target popular stories such as the recent Uber scandals and offer official responses that connect the issue to research and facts around women in computing. The more NCWIT is considered the go-to organization for contextualizing current events, the more reporters will turn to NCWIT for comments and facts.
NCWIT just slightly missed its goal of at least 50 press mentions at the national or international level. Specifically, NCWIT was mentioned in 40 national outlets and two international outlets. Relatively speaking, 69 percent of press mentions were in local outlets, while the remaining 31 percent were featured in national or international outlets. Interestingly, the percentage of NCWIT press mentions in national or international outlets was actually larger in 2016 compared to 2015 (24%) despite a reduction in the raw count of press mentions.

NCWIT’s resources (including its website) were cited in 38 press mentions, which amounts to 28 percent of all press mentions. Given the decrease in press and blog mentions between 2015 and 2016, it is not surprising that we see a decrease in the number of press mentions that included NCWIT resources (see figure above). In addition, the Aspirations in Computing campaign and Extension Services program, respectively, were cited in 59 (44%) and four (3%) press mentions.
2) Objective: Have at least 20% growth in social media communities in 2015 and 2016

Between January 2016 and December 2016 the number of NCWIT Facebook fans (“likes”) increased by about 35 percent (from 20,606 to 27,846), surpassing its 20 percent increase goal. The number of Twitter followers increased by 19 percent over the course of the year, just missing the 20 percent increase mark. It appears that, compared to 2015, the rate of yearly increase in fans/followers for both social media mediums slowed down in 2016. In other words, the trend line representing the yearly increase was less steep in 2016 relative to the previous year.

Also, in 2016, the number of Instagram followers increased from 590 to 1,024, a 74 percent increase (almost the same as what we observed in 2015). The number of LinkedIn followers increased from 1,380 to 1,821, a 32 percent increase. Finally, NCWIT only gained six new Pinterest followers in 2016 (from 315 to 321). This is a significant departure from last year’s report where we reported a 66 percent increase in Pinterest followers between 2014 and 2015 (from 202 to 310).

In sum, between 2015 and the end of 2016, NCWIT’s social media communities continued to expand, though the rates of increase tended to be lower than what we observed in 2015. It could be that NCWIT is beginning to “max out” the number of persuadable followers. It may be useful to consider social media campaigns that target audiences less familiar with NCWIT’s mission.
Additional selected social media efforts:

- According to correspondence with NCWIT, Electronic Arts (EA) Action announced their E3 event, “EA Play,” in which participants/players will be able to play interactive games. As part of this, EA is inviting players to participate in five in-game challenges and is contributing $1 million to benefit five causes that support a more diverse and inclusive world. NCWIT is one of the recipient organizations. NCWIT shared the announcement over social media and received numerous views/shares.

- In honor of Women’s History Month (WHM), TECHNOLOChicas hosted its first live Twitter Chat in order to discuss the importance of Latinas in tech. Guests included representatives from the White House Initiative on Educational Excellence for Hispanics; Congressional Hispanic Caucus Reps. Linda T. Sanchez, Joaquin Castro, Juan Vargas and Ruben Gallego; NGCP, Girl Scouts, Twitter Alas, Girls Inc; SciGirls, Globaloria and others.

"I just wanted to reiterate how thankful I am for this group! Through another NCWITer I was able to go to an amazing conference this past weekend and the company offered me an amazing internship. It is such an incredible feeling to be a freshman in college and take part in such an awesome group. Love you guys and if anyone ever needs someone to just talk to, cry with, celebrate with, and support them, please reach out. This group means the world to me!”

(Aspirations Award recipient on the importance of the Aspirations Facebook community)

NCWIT’s Website

1) Objective: The number of unique visitors to the NCWIT website increases by 10% annually

In 2016, the website attracted 191,407 unique visitors. This represents a seven percent increase from 2015—just missing NCWIT’s objective of a 10 percent increase. However, this still represents a record high in the number of unique NCWIT website visitors.
2) Objective: The number of unique visitors to NCWIT’s resource pages increases (10k in 2015 and 11K in 2016)

NCWIT easily surpassed its goal of 10,000 unique visitors to its resources pages. In 2016, a total of 74,943 users visited NCWIT’s combined resources pages. This represents an 18 percent increase above the total we observed in 2015.  

Just under a third of users were “returning” users – that is, users who viewed NCWIT’s resource pages more than once in 2016. The remaining users were “new” users.

The figure below compares the number of unique users that visit NCWIT’s combined resource pages between 2015 and 2016 over the year. User patterns appear quite similar across years. However, much of the growth in web traffic during 2016 seems to have occurred in the late Summer and Autumn. While the total number of users rarely exceeded 1,500 during this period in 2015, the total number or users rarely dropped below 1,500 users in 2016.

“I leverage the tools & tips from the website a LOT in sharing with our organization (this year, focusing on engaging allies).” (Members Survey respondent)

“The information and guides available on the website are very helpful. I've used many of them multiple times. I also regularly direct people to the website for resources.” (Members Survey respondent)

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8 To calculate the number of website page users in a given time frame, Google Analytics generates an estimate based on about 90 percent of website sessions. As such, reports of past totals differ slightly than what appeared in corresponding Annual Reports. The estimates, however, are quite close.
3) Objective: The number of websites that refer downloads of NCWIT resources increases each year

We estimate that in 2016, approximately 656 websites referred visitors who ultimately downloaded an NCWIT resource (this includes NCWIT domains but not direct links). This is a slight decrease from 684 referral websites in 2015, so the objective was not met. The top ten referring websites were: Google (18,626), bing (853), yahoo (819), edutopia.org (684), facebook.com (678), aspirations.org (669), yahoo (610), csunplugged.org (531), surveymonkey.com (523), t.co (399), m.facebook.com (366). Interestingly BLS was no longer in the top ten, although it was in the top 15. ngcproject.org has also dropped from the top ten to 30th place. A list of all referring websites is available upon request.

<table>
<thead>
<tr>
<th>Number of Sites Referring NCWIT Resource Downloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sites referring any downloads of any NCWIT resources</td>
</tr>
<tr>
<td>2012</td>
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<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>

4) Objective: The number of resource downloads based on website referrals increases each year

In total, approximately 30,194 downloads were a result of referrals from the 656 referring websites – a slight decrease from the total reported last year (34,338). This includes NCWIT domains but not direct links. There were approximately 1,296 downloads that were referred from NCWIT domains.

<table>
<thead>
<tr>
<th>Number of Downloads from Sites Referring Downloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of resources downloaded through referred sources</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
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<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>
5) **Objective:** A strong majority of website users agree that NCWIT’s website is useful (80% in 2015 and 90% in 2016.)

In 2016, 37 percent of member representatives who visited the NCWIT website in the last year reported that they were “extremely satisfied” with the website’s overall usefulness; however, nearly 100 percent of Members Survey respondents indicated that they were “extremely satisfied” or “satisfied” with the overall usefulness of the website. The wording of this question changed in 2016, which is reflected in the figure below.

The following 2016 Members Survey comments are indicative of the types of website feedback we have documented over the years:

> “The website is good, but I often get confused where to find info - sometimes not yet available, but I don’t know if that is the case or it is just me (usually info about upcoming meetings, and sometimes looking for materials from previous meetings).” (Members Survey respondent)

> “Please help make the resources on the website easier to find. As a 'non-regular' member, I find burying the resources underneath a structure where it’s necessary to know how NCWIT is organized in order to find something too confusing. Provide a search mechanism, or a series of questions/approaches to help me find the relevant information.” (Members Survey respondent)
6) Objective: The number of unique visitors to the Summit website increases by 20% annually

In 2016, NCWIT witnessed a moderate increase (15%) in the number of unique Summit webpage viewers compared to 2015. Specifically, 10,343 users visited Summit webpages in 2015 compared to 11,931 users in 2016. A total of 56 percent of users were “returning” users and 44 percent were “new” users (this is essentially the same breakdown of “returning” and “new” that we observed in 2015).

As the figure below demonstrates, patterns in website traffic to Summit webpages were quite similar between 2015 and 2016. In both years, Summit webpage visits increased gradually between January and April, that is, Summit registration season. Of course, there was a sharp spike in viewers around the actual Summit dates. While the figure suggests very few Summit webpage views occurred during the second half of the year, the magnitude of monthly viewership is distorted due to the scale of the figure. Between July and December, for example, about 2,607 unique viewers visit the Summit pages.

7) Objective: The number of virtual Summit attendees increases each year (500 in 2015 and 1,000 in 2016)

NCWIT measures virtual attendance to the Summit by counting the number of unique page views of the Summit livestream webpages during the Summit days. In 2016, the event drew 2,700 unique page views. Impressively, the 2016 figure is more than double the figure reported in 2015 (1,265 unique webpage views).

“I publicized the live streams to the folks at my home institution during the Summit. If I wasn't able to attend in the future, it's nice to know I can "attend" some of the live-streamed sessions.”
(Summit Survey respondent)

“I had my office in Chicago live stream the talks when it coincided with normal business hours. I would provide the link to a few of our student groups to use it as the start of a round table discussion for their meetings…I would love to share that with our female run student group.”
(Summit Survey respondent)

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9 Again, Google Analytics generates an estimate based on sample of about 90 percent of website sessions. As such, the figures will not match exactly across reports. The estimates, however, are quite close.
Newsletter Outreach

1) Objective: Each year, the number of people who receive the newsletters increases (sent-bounces)

Newsletters typically include general e-newsletters and campaign-specific emails. NCWIT set a goal to produce at least six newsletters per year, a goal they once again surpassed in 2016 with a total of 21 newsletters, slightly less than what we observed in 2015 (24 newsletters). Newsletters in 2016 covered the following topics: NCWIT “In the News” (10), Aspirations Awards (2), NCWIT resources and research (2), the annual Summit (2), NCWIT Participation in Tech Workshops and Conferences (2), and NCWIT at CSED week (1). Two additional newsletters were distributed solely to the AA. In addition, NCWIT produced 18 TECHNOLOchicas-related newsletters (9 in English and 9 in Spanish). We do not include these in our official count because they are sent to a relatively limited audience.

While the exact number of recipients of the newsletter varies by each newsletter, the average number of newsletter recipients in 2016 was 2,316, about four percent less than the figure observed in 2015 (2,416).

2) Objective: Each year, the percentage of opened newsletter emails and click-thru's is above non-profit industry average

NCWIT began sending out their newsletter communications with Mail Chimp in September of 2011. In 2016, the non-profit industry average for opened newsletters was roughly 23 percent. On average, 25 percent of NCWIT’s recipients opened newsletters in 2016, suggesting that NCWIT performed generally better than the typical nonprofit organization. However, half of all NCWIT newsletters sent out in 2016 (11) resulted in open rates below industry average. NCWIT’s “In the News” and AA-specific newsletters accounted for all newsletters with below average open rates. These types of newsletters also accounted for most of the below industry average opens in 2015. A handful of newsletters, however, exhibited open-rates that greatly exceeded the industry average. The newsletter, “NCWIT at #SIGCSE2016? Yes, we'll be there,” exhibited the highest open rate (37%), while the newsletters, “Keep #IWD2016 Going 365” and “NCWIT's Research and Resources Tune in: #CSforAll Takes All of Us,” yielded open rates of 33 percent and 31 percent, respectively.

The “In the News” Newsletters have the lowest open rates. NCWIT may want to consider re-vamping or replacing a subset of these newsletters to better reach audiences and their interests.

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10 In calculating the average number of newsletter recipients in 2016, we excluded one AA-specific newsletter that was received by only 25 members.
11 Because of the switch from Constant Contact to MailChimp in 2011, statistics before and after the service change are only somewhat comparable
The "percentage of click-throughs" represents the "number of click-throughs" divided by the number of people who opened the email ("number of opens"). The non-profit industry average of click-throughs was roughly 3 percent in 2016 according to MailChimp. In 2016, NCWIT performed slightly worse than the typical non-profit. Specifically, an average of about two percent of recipients who opened NCWIT’s newsletters clicked through the content. About 86 percent of the newsletters opened in 2016 resulted in click-through rates below industry average. Looking over time, these results appear consistent with an over-time decrease in the percentage of click-throughs. For instance, between 2014 and 2015 the percent of recipients who opened letters and then clicked through the content declined by one percentage point (from 4.5% to 3.5%).

The only newsletters that yielded click-through rates above industry average were “Spread the Word: It's AiC Award Application Time!” “Tune in to the 2016 NCWIT Summit,” and “NCWIT Academic Alliance (AA) Newsletter: September 2016.”
NCWIT also sends out periodic, alliance-specific “Did You Know?” newsletters. The audience for these informational newsletters is much smaller, ranging from a few dozen recipients in smaller alliances to a few hundred recipients in the AA. In 2016, the average open rate for Did You Know (DYK) newsletters was 33 percent – about 10 percentage points above industry average. As for click-throughs, the average rate for DYK newsletters was just slightly over industry average (3.21%). These results are similar to what we observed in 2015.

This table breaks down the average open rates and click-through rates of Did You Know announcements by alliance. The SSAB had the highest average open rate (42%), while the AGA and WA exhibit the lowest average open rates (26% and 24%, respectively). No alliance showed an average open rate below industry average. The AGA, SSAB and K-12 Alliance exhibited click-through rates above industry average (4.3%, 3.4% and 3.3%, respectively), while the AA, WA, and EA had click-through rates that were near or below industry average (2.9%, 2.9%, and 2.6%, respectively).

This table breaks down the average open rates and click-through rates of Did You Know announcements by alliance. The SSAB had the highest average open rate (42%), while the AGA and WA exhibit the lowest average open rates (26% and 24%, respectively). No alliance showed an average open rate below industry average. The AGA, SSAB and K-12 Alliance exhibited click-through rates above industry average (4.3%, 3.4% and 3.3%, respectively), while the AA, WA, and EA had click-through rates that were near or below industry average (2.9%, 2.9%, and 2.6%, respectively).

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Average open rate</th>
<th>Average click-through rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSAB</td>
<td>42%</td>
<td>3.4%</td>
</tr>
<tr>
<td>K-12 Alliance</td>
<td>39%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Entrepreneurial Alliance</td>
<td>35%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Academic Alliance</td>
<td>30%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Affinity Group Alliance</td>
<td>30%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Workforce Alliance</td>
<td>24%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Industry Average</td>
<td>23%</td>
<td>3%</td>
</tr>
</tbody>
</table>

“The research published on the NCWIT web site and the emails sent out by NCWIT are very helpful.” (Members Survey respondent)

“One of my students actually read the email that was sent about ASPIRE and attended several functions at GHC last year. She recommended that all students pay attention to these emails and participate when the opportunity arises!” (Members Survey respondent)
### Conference/Meeting Outreach

**3) Objective: NCWIT staff and leadership continue to have strong attendance/presence at conferences and meetings (8 to 10 events in 2015 and 2016)**

In 2016, NCWIT demonstrated considerable improvement in meeting attendance compared to 2015. In 2016, NCWIT’s staff or executive team attended 413 non-government/non-policy meetings or events. Therefore, NCWIT’s presence at non-government, non-policy meetings increased by 38 percent between 2015 and 2016, bringing it back up to 2012-2014 levels.

![Graph showing NCWIT's outreach numbers were significantly higher than in 2015](image)

NCWIT’s staff and leadership continue to have strong attendance at conferences and meetings. NCWIT handily surpassed the goal of at least eight to ten conferences in 2016. In total, NCWIT staff or leadership had a presence in 65 conferences – just two short of what we observed in 2015 (67 meetings). Over time, we have consistently observed large values for meeting attendance, though these numbers have decreased incrementally since 2013.

![Graph showing Number of Conferences Attended by NCWIT Staff or Designates](image)

**4) Objective: NCWIT leadership gives at least 3 keynotes in 2015; 4 in 2016**

NCWIT’s leadership presented at least nine keynotes in 2016. NCWIT therefore surpassed its 2016 goal by five keynote addresses.
17) Objective: At least 65% of member representatives distribute resources in 2015 and 70% in 2016

Distributing NCWIT resources and materials is one of the most common ways in which member representatives remain actively involved with NCWIT. Indeed, of the 92 percent of Members Survey respondents who indicated that they were involved with NCWIT in 2016, three-quarters indicated that their involvement included “distributing NCWIT materials and resources.”

“Our organization joined the K-12 Alliance…I shared all of the resources with all of our partner teachers and networks and we continue to educate our staff with the resources that I learned about at NCWIT.” (Summit Survey respondent)

18) Objective: NCWIT’s member ambassadors continue to represent NCWIT at conferences and other outreach events (24 ambassador events in 2015; 36 in 2016)

In 2016, NCWIT recorded 29 NCWIT2GO events. NCWIT continues to devise new ways to improve tracking NCWIT2GO outreach.

Evaluation results for NCWIT’s outreach efforts in 2016 were mixed. On one hand, NCWIT set a new record for scholarly citations, confirming its reputation as a research authority on women and computing; a high percentage of members distribute resources; NCWIT staff and executives attended many important meetings and conferences; and NCWIT’s presence on social media continued to grow, albeit at a slower pace than prior years. On the other hand, NCWIT received fewer press and blog mentions and levels of website-referred resource downloads and newsletter engagement remained low. We suspect two forces are responsible for these slowdowns. First, as was the case in 2015, there was less negative news coverage about the tech sector in 2016, and tech-related news had to compete with the frenzy around the 2016 presidential election. Second, NCWIT might have “tapped out” its target audiences, at least in terms of the members who are easiest to reach or convince.
NCWIT Convenes Change Leaders and Motivates Them to Engage with One Another and Their Own Organizations

Another way NCWIT moves toward its goal (Increased Meaningful Participation of Women in Technology) is through convening member organizations and building their capacity to make change. According to the Theory of Change, this convening and capacity-building is part of what brings stakeholders from awareness and knowledge into a state of being informed and motivated to make change.

NCWIT Convenes Change Leaders via the Annual Summit

1) **Objective:** Over 500 people attend the NCWIT annual Summit.

Summit attendance increased between 2015 (Hilton Head) and 2016 (Las Vegas). A record high of 697 **NCWIT members and allies attended the 2016 Summit**, compared to 575 attendees present at the 2015 Summit. This represents a 21 percent increase in Summit attendance. The Las Vegas Summit was arguably more affordable and accessible to interested members compared to the Hilton Head Island Summit, which likely explains the increase between the two years. Looking over time, attendance at the 2014, 2015, and 2016 Summits has been notably higher than prior years. As NCWIT continues to grow in size and diversity, we expect levels of attendance at the Summit to remain high.
2) Objective: Each year, more than 80% of meeting attendees indicate that they will likely attend another NCWIT event

After the 2016 Summit, an impressive 96 percent of Summit Survey respondents indicated they were “somewhat likely” or “highly likely” to attend another NCWIT event. Of these respondents, 72 percent reported that future attendance was “highly likely.” This figure is largely consistent with what we observed in 2015 and prior years. Some respondents who indicated that they were unlikely to attend another NCWIT event explained that funding or scheduling conflicts were responsible for preventing future their attendance.

“I always learn from both presenters and other attendees. Either a new perspective on something I’m struggling with or a new idea about how to tackle different challenges. You challenge me to think differently and act differently. It’s also a very engaging conference - we don’t just sit back and listen - we work. That is really important to me, and why I’ll keep prioritizing the Summit every year.” (Summit Survey respondent, emphasis added)

NCWIT continues to excel at convening change leaders. The 2016 Las Vegas Summit broke the record for meeting attendance (though Newport Beach ranks as a close second). And, almost all Summit Survey respondents indicated that they would likely attend another NCWIT event.
Exposure to NCWIT and its Community Motivates Change Leaders to Collaborate and Engage

We also believe that the member capacity-building that NCWIT focuses on both at the Summit and throughout the year provides learning that moves individuals and organizations to action (i.e., creates behavioral change). We believe (and data have reinforced) that these capacity-building activities increase enthusiasm and that NCWIT’s member representatives’ engagement at NCWIT convenings along with the increases in social science and activist capacity-building, create momentum in the “change leader network,” all of which brings NCWIT closer to its goal.

Motivation and Engagement via Summit

1) Objective: Each year, more than 85% of meeting attendees find the meetings very/extremely valuable

The percentage of attendees who reported that the Summit overall was either “very” or “extremely valuable” decreased by three percentage points from 2015 to 2016 (from 82% to 79%). The Las Vegas Summit marked the second year that NCWIT was unable to meet the 85 percent objective. It is possible that recent decreases in perceptions of value reflect the growing diversity of NCWIT’s membership base. As NCWIT’s alliances become larger and more differentiated, it becomes increasingly difficult to set an agenda that appeals to all members.

*Note: Prior to May 2010 the wording of the question was: “Overall, how valuable was the Practices Workshop to you?”
Conference attendees’ perceptions of Summit value appear to vary by their alliance membership as well as by ES consultant or visitor status. More than 80 percent of ES consultants and members of the AGA, SSAB, and AA indicated that the Summit was “very” or “extremely” valuable. Only 78 percent of K-12 Alliance members and 70 percent of WA/EA members found the Summit to be at least “very” valuable. Visitors were the least likely to perceive high levels of Summit value (67%). Visitors, however, are a small and heterogeneous group including some individuals whose reasons for attending the Summit may not be representative.

Most attendees found the 2016 Summit "very" or "extremely" valuable

- AGA: 89%
- SSAB: 89%
- ESC: 86%
- AA: 83%
- K12: 78%
- WA/EA: 70%
- Visitors: 67%
- Total: 79%

“It was very valuable and wonderful to meet so many who are so passionate about the same cause. It was great to share ideas, learn about opportunities and other colleagues’ achievements, and it reaffirms why this is important to my institution, CS program, and to myself.” (Summit Survey respondent)

The summit is a great way to make connections outside of my own company. We use NCWIT resources all the time but the summit validates all of the value we can get by hearing new ways to use them and learning from what others have done!” (Summit Survey respondent)

NCWIT should revisit Summit Survey respondents’ open-ended feedback for additional clues as to why as non-trivial percentage of attendees do not perceive the Summit to be at least “very valuable.” In the 2017 Summit Report, UW CERSE will include a short write up summarizing the more common criticisms.
2) Objective: Each year, more than 85% of members indicate that they benefit from NCWIT networking

In 2016, NCWIT surpassed its objective with 90 percent of Members Survey respondents indicating that they benefited from networking. This represents a 25 percentage point increase since 2015. However, we suspect that much of the increase is an artifact of measurement changes we made in 2015 and 2016. Overall, in each year, nearly all Members Survey respondents who have the opportunity to interact with other NCWIT members benefit from their networking interactions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Benefit Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>92%</td>
</tr>
<tr>
<td>2007</td>
<td>94%</td>
</tr>
<tr>
<td>2008</td>
<td>94%</td>
</tr>
<tr>
<td>2009</td>
<td>95%</td>
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<td>2012</td>
<td>92%</td>
</tr>
<tr>
<td>2013</td>
<td>93%</td>
</tr>
<tr>
<td>2014</td>
<td>92%</td>
</tr>
<tr>
<td>2015</td>
<td>65%</td>
</tr>
<tr>
<td>2016</td>
<td>Goal 90%</td>
</tr>
</tbody>
</table>

“The Summit was valuable to me for many reasons including the opportunity to connect with other Aspirations coordinators to learn ways I might achieve recruitment and sponsor goals I have set for my affiliate. It is always great to network throughout the Summit and I take advantage of learning from so many industry experts in one place at one time.” (Summit Survey respondent)

“I was glad to network with teachers and groups who have similar goals of broadening participation. It was wonderful to connect with people about how to improve CS for students of disabilities. Thank you.” (Summit Survey respondent)

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12 In order to shorten the Members Survey, we retired a question which asked respondents to indicate whether their NCWIT membership resulted in various of networking benefits by checking off boxes on an itemized list. In 2015, we used a general indicator: “Have you received any benefits as a result of networking at NCWIT events or with other NCWIT members elsewhere?” Respondents could answer “yes” or “no.” The absence of specific examples may have prevented a subset of respondents from recalling benefits. So, in 2016, we added to the prompt “Benefits could include new relationships, increased collaboration, new ideas, additional resources, or being introduced to a new person outside of NCWIT.” We also added a “not applicable” option with the text: “Not applicable: Haven’t attended events with other NCWIT members). Because the 2016 measure offers examples of networking benefits as earlier questions did, and excludes NAs, the 2016 number is a more solid measure of networking. Finally, in 2016, we also removed an open-ended question that asked respondents to provide an example of a networking benefit.
3) Objective: Each year, at least 50% of meeting attendees indicate that they have worked with or plan to work with someone they met at an NCWIT meeting

In 2016, 78 percent of Summit Survey respondents indicated that attending NCWIT meetings had introduced them to people they collaborated with on past or current projects. NCWIT thus surpassed its objective by 29 percentage points. This is largely consistent with what we observed in 2013 (77%) and 2015 (75%).

We also observed variation across alliances on this metric. All AGA members who responded to the Summit Survey strongly agreed that they were introduced to people they have collaborated with on past or current projects. Most respondents in the K-12 Alliance and AA also agreed that they met past or current collaborators. Just under two-thirds (61%) of WA/EA members agreed with the statement (we combine WA and EA members in the Summit Survey since they attend many activities together).

“I have several contacts I will be reaching out to based on specific sessions. I will also be reaching out to at least one of the speakers from the plenary sessions to inquire about speaking to our employees at an internal conference we hold.” (Summit Survey respondent)

As was the case in 2015, industry members (WA/EA) were less likely to agree that they had met past or current collaborators at NCWIT meetings. Last year we surmised that WA/EA members may be less prone to collaborate with others in their alliances, given that companies are often competitors and organizational goals are less often aligned. We suggest that NCWIT consider ways to encourage collaborations among WA/EA members that are mutually beneficial and easily streamlined across organizations.
4) Objective: Each year, over 50% of NCWIT members help/collaborate with one another

In 2016, NCWIT surpassed this objective by 13 percentage points. That is, 63 percent of Members Survey respondents helped or assisted other members on a project related to women in computing. This figure marks a seven percentage point increase since 2015, mirroring levels exhibited in 2013 and 2014.

We also found that the percentage of respondents who helped or assisted another member on a project related to women in computing varied by alliance. As the figure demonstrates, strong majorities of SSAB (86%) and EA (75%) respondents reported helping or assisting another member on a project related to women in computing during 2016. Just under two-thirds of AA, K-12 Alliance, and WA members reported helping or assisting another member during the last year. Only 38 percent of AGA members indicated that they helped or assisted another member; however, the low value may reflect the fact that the AGA has been in a transitional period since 2015.

“Collaborated with corporate communities on toolkit for organizations who want to start a women in tech group.” (Members Survey respondent)
5) Objective: Each year, diverse outcomes result from collaboration between NCWIT members (meet & discuss, grant proposals, journal articles, conference papers, presentations, program or practice implementation)

Similar to prior years, in 2016, diverse outcomes resulted from NCWIT members’ collaborations. The percentages should be interpreted as the number of respondents who indicated an outcome out of the total number of respondents who answered the question. The percentages do not sum to 100 because respondents could choose multiple outcomes.

<table>
<thead>
<tr>
<th>Collaboration outcome</th>
<th>Total number of respondents</th>
<th>Percentage of applicable respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation (in or outside of org.)</td>
<td>179</td>
<td>72%</td>
</tr>
<tr>
<td>Program or practice implementation</td>
<td>146</td>
<td>61%</td>
</tr>
<tr>
<td>Aspirations affiliate award</td>
<td>86</td>
<td>40%</td>
</tr>
<tr>
<td>Grant proposal submitted or funded</td>
<td>68</td>
<td>31%</td>
</tr>
<tr>
<td>Journal article or conference paper</td>
<td>41</td>
<td>19%</td>
</tr>
<tr>
<td>AspireIT program</td>
<td>39</td>
<td>19%</td>
</tr>
<tr>
<td>NCWIT/Alliance project</td>
<td>66</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>23</td>
<td>7%</td>
</tr>
</tbody>
</table>

The top three collaboration outcomes in 2016 – presentations, program or practice implementations, and Aspirations affiliate wards – were also ranked as the top three most common outcomes in 2015 and are typically outcomes that occur most frequently across years.
6) Objective: At least half of NCWIT members presented or published on women in computing issues annually

As has been the case since 2010, NCWIT surpassed this objective. In 2016, 84 percent of Members Survey respondents reported presenting or publishing on women in computing. This is the highest percentage on record for this metric since 2010.

| Majority of Members Present or Publish on Women in Computing Issues at Least Once a Year (only last 4 years shown) |
|---------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| All Members                                             | AA                                                       | WA                                               | AGA                                             | EA                                             | K-12                                             | SSAB                                             |
| 78%                                                    | 74%                                                      | 73%                                              | 89%                                             | 100%                                           | 91%                                              | 100%                                             |
| 84%                                                    | 78%                                                      | 81%                                              | 86%                                             | 100%                                           | 96%                                              | 100%                                             |
| 76%                                                    | 69%                                                      | 87%                                              | 60%                                             | 85%                                            | 79%                                              | 92%                                              |
| 81%                                                    | 81%                                                      | 72%                                              | 81%                                             | 95%                                            | 60%                                              | 92%                                              |
| 87%                                                    | 72%                                                      | 79%                                              | 81%                                             | 60%                                            | 96%                                              | 100%                                             |
| 100%                                                   | 100%                                                      | 100%                                             | 100%                                            | 100%                                           | 100%                                             | 100%                                             |

Here too, the percentage of respondents who reported presenting or publishing on women in computing varied somewhat by alliance. Nearly every member of the SSAB and K-12 Alliance presented or published on women in computing (this is to be expected from the SSAB, especially). At least 80 percent of respondents in the remaining alliances published or presented on women in computing.

This raises the question: How many publications or presentations did members make in 2016?

In 2016, Members Survey respondents completed at least 946 presentations or publications on women in computing. This estimate is conservative because we top code the measure as “10 or more.” We do, however, include totals that exceed 10 if the respondent writes in a specific value.

Examining across time, 2016 exhibits the second highest total of publications/presentations on women in IT. This is also a considerable improvement compared to the total number of presentations/publications reported in 2015 (643), though some of the increase probably reflects longitudinal increases in the number of Members Survey respondents.
7) Objective: Each year, at least 75% of members report active engagement with NCWIT

Continuing the pattern observed in prior years, a high percentage of Members Survey respondents reported engagement in 2016. Specifically, 92 percent of respondents indicated that they have been involved with NCWIT or its alliances in at least one way during the last year. This represents a consistent pattern over time. Indeed, the percentage of respondents who indicated that they were involved with NCWIT or its alliances in any given year has never dropped below 82 percent.

Most alliances exhibited high levels of member engagement. Indeed, over 83 percent of Members Survey respondents in each alliance reported being actively involved with NCWIT in 2016. With rare exception, this pattern has persisted uninterrupted over time.

In 2016, what types of activities were NCWIT members involved in? The figure below presents the percentages of respondents who indicated involvement in various NCWIT-related activities. In 2016, distributing resources (75%), responding to NCWIT staff requests (59%), and participating at meetings (57%), were the three most common forms of involvement. This pattern has generally persisted across time.

8) Objective: Each year 75% of members agree that their affiliation with NCWIT has helped them build allies or advocates for women in technology in their organizations
We added this objective in 2015 because our interviews with members over the years demonstrated that organizational support – especially support from high-ranking organizational authorities – was a necessary antecedent for change.

In 2016, 83 percent of Members Survey respondents “somewhat” or “strongly” agreed that NCWIT membership helped them build allies in their organizations, a figure that closely resembled what we observed in 2015 (88%). This means almost 9 out of 10 respondents believed that NCWIT helped them find organizational advocates with the potential to support them in their change efforts.

These results are especially important for members in the AA and WA, as organizational change in these alliances is necessary for broader impact. Still, high percentages of member representatives in the other alliances (except the SSAB) also agreed that NCWIT helped them establish relationships with allies in their organizations, suggesting that NCWIT membership can be leveraged to build allies and advocates in a variety of organization types.

It is important to point out that a high percentage of member representatives “strongly” agreed that NCWIT membership helped them build allies and advocates. (This also did not vary much by alliance.) Depending on the alliance, somewhere between 40 and 47 percent of respondents “strongly” agreed that NCWIT membership helped them establish allies or advocates in their organizations.

NCWIT continues to convene members, leading to motivation and engagement. The 2016 Summit resulted in high levels of perceived value and networking. The Summit also led to high levels of collaboration, though less so among the WA. Consistent with prior years, NCWIT membership led to high rates of collaboration/helping between members that often resulted in presentations, program or practice implementations, and Aspirations affiliate awards. Other common NCWIT-related involvement included resource distribution, responding to NCWIT staff requests, and participating at meetings. Importantly, strong majorities of Alliance members agreed that NCWIT membership helped them build allies in their organizations – an outcome that is an important catalyst for change in AA, EA, and WA organizations.
NCWIT Equips Change Leaders with Strategies to Enact Individual and Organizational Change

NCWIT Membership Promotes Individual Change

While NCWIT aims at social change, structural change, and systemic change, part of that change is prompting individuals to change their own behaviors – sometimes with the help of NCWIT’s written endorsements and support. NCWIT’s Theory of Changes contests that individual influencers of girls and women can make a difference in achieving its ultimate objective of increasing the meaningful participation of women in tech.

1) Objective: NCWIT writes letters of support for 5 worthwhile projects per year

In 2016, NCWIT’s staff and leadership wrote or co-signed three letters of support for worthwhile projects (typically, grant proposals). This is the lowest number of letters of support that we have recorded since 2008. The figure below tracks the number of letters of support for projects over time and the table below provides more detail about the letters written in 2016.

![Number of Letters of Support Written by NCWIT for Projects](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Letters Written</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>NCWIT Goal: 5</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
</tr>
<tr>
<td>2009</td>
<td>8</td>
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<td>2014</td>
<td>15</td>
</tr>
<tr>
<td>2015</td>
<td>16</td>
</tr>
<tr>
<td>2016</td>
<td>3</td>
</tr>
</tbody>
</table>

Letters of support for worthwhile projects

1) NCWIT wrote a letter of support to the National Science Foundation to host teacher professional development as part of the proposed 2016 ITEST SPREAD project, “Lighthouse HS: Improving CS Diversity through High School Teacher Professional Development.”

2) Terry Morreale wrote a letter of support for WGBH’s (Marisa Wolsky) grant proposal to NSF’s Innovations in Development project for Design Squad+Coding: Researching the Integration of Hands-On Engineering and Coding with Middle School Children in Out-of-School Settings.

3) Lucy Sanders wrote a letter of support for NCWIT commitment to serve as a founding partner with advisory responsibilities for the proposal submitted by Dr. Victor Tam, Physical Science, Engineering, and Mathematics Dean at Foothill College and Principal Investigator for NSF.
In 2016, NCWIT’s staff committed to advise 5 new projects. These only represent recent advisory board commitments.

**Recent Advisory Board Commitments**

1) Wendy DuBow wrote a letter of commitment to the SciSIP Grant Proposal Review Panel indicating her willingness to serve (with NCWIT) in an advisory capacity for Aaron Clauset’s proposed project, “Understanding the Network Structure and Dynamics of the Academic Scientific Workforce”.

2) Wendy DuBow serves on the advisory board for NSF IUSE grant titled: Collaborative Research: Establishing and Propagating a Model for Evaluating the Long Term Impact of Pre-College Computing Activities, PIs: Monica McGill, Adrienne Decker

3) Wendy DuBow serves on Advisory Board for CS OPEN, a project funded by Google, and run by an NSF grantee, National Girls Collaborative Project

4) Lucy Sanders wrote a letter of commitment to serve as an external advisor for Dr. Michael Lach’s NSF STEM+C proposal, “Does a Taste of Computing Give Chicago Students a Taste for Computing?” at the University of Chicago

5) Lecia Barker wrote a letter of commitment to serve as an advisory board member for NSF’s with the proposed project, “LIGHTHOUSE HS: Improving CS Diversity Through High School Teacher Professional Development.”

We also track the number of letters written by NCWIT in support of awards. This year, NCWIT’s staff and leadership wrote four letters of support for awards and just missing its goal of five letters. The next figure depicts the trend in total number of award letters across time, while the next table offers additional details about each award letter.

**Letters in support of awards**

1) Lucy Sanders wrote a letter of support for Lecia Barker for the President’s Diversity Award at CU Boulder

2) Lucy Sanders wrote a letter of support for Amy Brady for the 25 Most Powerful Women in Banking

3) Lucy Sanders wrote a letter of support for Dr. Ken Anderson for the CU Engineering Faculty Service Award.

4) Ruthe Farmer nominated Ben Shapiro for the ABI Denice Denton Emerging Leader Award
Finally, we also monitor the number of endorsement letters NCWIT writes in support of promotions and new organizational positions. In 2015, NCWIT’s staff and leadership wrote only one position/promotion endorsement letter compared to seven in 2015. We only started reporting on these letters in 2015, so we cannot currently compare the number of position and promotion endorsement letters over time.

### Position and promotion endorsement letters

1) Lucy Sanders and Terry Moreale wrote a letter of recommendation for Douglas Blank for the position of Chair of Digital and Computational Studies at Bates College.

### Additional noteworthy examples of support:

- Brighid Stone (Lexington Books) emailed Lucy Sanders to ask if she could provide a promotional quote for Enobong (Anna) Branch's (SSAB) new edited volume: "Pathways, Potholes, and the Persistence of Women in Science: Reconsidering the Pipeline."

- Lucy Sanders reviewed Intel's diversity report for the second time.

### Objective: Members report changing their behaviors related to NCWIT membership (Survey item appears every other year starting in 2015.)

In 2015, we added two new items to the Members Survey to better understand how NCWIT membership results change. These survey items are open-ended and relatively time-intensive, so we include them on every other survey. Because this is an “off year,” we do not provide a full report on individual change. However, we did observe examples from the 2016 Members Survey which we include below.

- I frequently point to the NCWIT site when interacting with industrial partners and colleagues, or whenever anyone asks for more information about women in technology (AA Member).
- I'm supporting a student leader who is developing a girls coding camp through AspireIT. Passively shared resources/non-biased teaching methods literature to faculty. Used resources from NCWIT to do several presentations in conjunction with Code: Debugging the Gender Gap. Attended a recent Diversity Summit through the Convergence Grant - Beth Quinn was there and also shared resources from NCWIT - we look forward to working with her more in our plan to recruit more diverse populations to our IT programs (AA member).
- I work mostly with Latinas and I use Tecnolochicas resources to inform parents and students (K-12 Alliance member).
- I leverage the tools & tips from the website a LOT in sharing with our organization (this year, focusing on engaging allies) (WA member).
The 2016 Members Survey also demonstrated that most members have learned new information from NCWIT and its resources – a form of individual change. For example, about nine out of 10 respondents (92%) agreed that they learned something through NCWIT in 2016, a figure that has, for the most part persisted over time and across alliances.

In addition, three out of four respondents reported that, in 2016, they learned something new based on an NCWIT resource. This figure, however, varies across alliances. AGA, EA, and WA members appeared to be more likely to learn from NCWIT resources. We should not, however, that the percentage of K-12 Alliance members who learned something new from an NCWIT resource dropped from 80 percent in 2015 to 63 percent in 2016 – a 17 percentage point decrease.

The percentage of members who learned something from NCWIT resources depends on the year and alliance.

NCWIT membership and its resources support individual-level change. NCWIT continues to leverage its authority to endorse and support individual change leaders through written letters, though we recorded fewer letters of support for member awards and projects in 2016.
NCWIT’s Resources Promote Organizational Change

Once an individual is aware of the problem and motivated to enact change, s/he can sometimes affect changes at the organizational level. NCWIT’s resources help transform individual behavior into organizational change.

1) **Objective:** Each year, a majority of alliance members, excluding K-12 Alliance members and the SSAB, report use of strategies based on NCWIT resources.\(^{13}\)

**NCWIT surpassed this objective by 10 percentage points.** Specifically, in 2016, 61 percent of Members Survey respondents reported that they used a new strategy based on one of NCWIT’s resources.

The figure below shows that NCWIT met the “majority” objective for every alliance except the AGA and SSAB. Lower percentages among the AGA and SSAB are not surprising, though, since many members in these alliances are less focused on using NCWIT resources to engage in organizational change.

Importantly, each alliance improved on this metric since 2015 (except for the AGA). This is noteworthy because it demonstrates that over the last two years more members are enacting strategies to increase gender diversity in their organizations, laying the groundwork for resource-based impact.\(^{14}\)

**Between 2015 and 2016, the percentage of members who used a new strategy based on an NCWIT resource increased across all alliances, except the AGA**

\[\begin{array}{c|cc|cc|cc|cc|cc}
& AA & AGA & EA & K12 & SSAB & WA & Total \\
2015 & 48\% & 67\% & 57\% & 40\% & 39\% & 59\% & 50\%
2016 & 62\% & 44\% & 67\% & 55\% & 50\% & 65\% & 61\%
\end{array}\]

**NCWIT’s resources are an important tool for enacting organizational change. Sixty-one percent of Members Survey respondents reported that they used a new strategy based on an NCWIT resource in 2016. This is a substantial increase (11 percentage points) since 2015.**

\(^{13}\) In the past, we also asked respondents if they “achieved something based on one of NCWIT’s resources.” In 2016, we removed this question to reduce survey length.

\(^{14}\) We only provide results for 2015 and 2016 because we changed the survey item in 2015 to create a more streamlined metric that will be comparable over each new survey year. More information on this change can be found in the 2016 Members Survey report.
NCWIT Membership Promotes Organizational Change

Apart from its resources, NCWIT membership more broadly may precipitate organizational change as individuals exposed to NCWIT staff, social scientists, and other alliance members may be informed and empowered to make organizational-level changes.

1) Objective: Each year, 80% of alliance members agree that something they learned through NCWIT helped them take action

One of NCWIT’s primary objectives is to spread knowledge in order to inform organizational change. We consider individual action as a first step toward organizational change. Just as we observed in 2015 (and almost every other survey year), nearly 9 out of 10 Members Survey respondents (89%) reported that they agree that something they learned through NCWIT helped them take action. Over time, NCWIT has performed consistently well on this objective.

When we disaggregate by alliance, we find very little variation on this outcome. Depending on the alliance, between 85 and 90 percent of respondents indicated that they took action because of something they learned through NCWIT. This is a strong indication of NCWIT’s value and capacity for impact.
2) Objective: Members report organizational changes occurring related to NCWIT membership (Survey item appears every other year, starting in 2015)

As was the case with our analysis of individual-level change, we skip years for querying organizational change on the Members Survey, and this is an off year. However, we did observe examples from the 2016 Members Survey and our qualitative archives which we include below.

- Pacesetters: Matt Blumberg, Chief Executive Officer of data solutions provider Return Path, announced that Return Path is assisting in the creation of a new nonprofit organization called Path Forward. The new organization’s mission is to increase opportunities for individuals, including parents and other caregivers, who have been out of the workplace for extended periods of time by providing midcareer internships. Path Forward has set a goal of on-ramping one million people within 10 years by bringing this program to more than 10,000 companies.

- The University of Washington, an Extension Services (ES) member, has demonstrated a strong commitment to diversity issues in its hiring advertisement. Stuart Reges, principal lecturer, included this text in the hiring ad: "We are always interested in hiring great teachers, but we are particularly interested in finding kindred spirits who want to work on diversity, innovative teaching, K-12 outreach, and educational tools, because there simply aren't enough hours in the day to say yes to all of the exciting opportunities that come our way.

- “NCWIT materials and models (templates, award-winner examples) led to us establishing a peer-mentoring program for undergraduates in CS and IT courses. NCWIT encouragement (suggestion, easy links to apply with ACM-W) led to the establishment of an ACM-W chapter. NCWIT participation and examples provided the tools needed to reach out to undergraduates to encourage women to consider CS and IT as a major or minor.” (Members Survey respondent)

- “With NCWIT we co-developed and implemented bias interruption pilot. Currently evaluating pilot. On way to developing new manager program and reviewing options for scale of official program. Developing interventions to enact in our daily work and processes, and figuring out how to measure and understand outcomes. Preparing to talk to SVP on program scale opportunities -- NCWIT helps with summarizing and creating overview content we can share for impact and momentum. NCWIT has become a key resource for our HR VP on all research/data matters on women in tech. We have such a strong partnership, and trust and respect in NCWIT, that we are able to be open and honest, drill down and create meaningful real-life, real-time initiatives that stick and make change.” (Members Survey respondent)
4) Objective: Seed fund winners continue to report using funds to implement long-term change strategies

Student Seed Fund: The Student Seed Fund is used to support student-run initiatives that demonstrate a strong alignment with NCWIT’s goal to increase the number of technical women. Since 2011, more than 157 student-run programs have been awarded a total of $316,250. Student Seed Fund awards are given bi-annually in the Fall and Spring. In 2016, NCWIT partnered with Association for Computing Machinery’s Council on Women in Computing (ACM-W), expanding the scope of the award to include ACM-W chapters. This table lists the 2016 Seed Fund awardees and the award type.

| Missouri University of Science and Technology ACM-W (Trailblazer Award) | University of Houston-Downtown ACM-W (Start-up Funding) |
| University of Oregon Women in Computer Science (WiCS; Trailblazer Award) | University of Nebraska at Omaha ACM-W (Start-up Funding) |
| University of California, Irvine (Trailblazer Award) | Valparaiso University ACM-W (Start-up funding) |
| Embry-Riddle Aeronautical University Women in Engineering (WICSE; Amplification Award) | Bucknell University (Start-up funding) |
| University of California, San Diego Graduate Women in Computing (Amplification Award) | California State Polytechnic University, Pomona (Start-up Funding) |
| University of Maryland Grad Women/Association of Women in Computing (Amplification Award) | Carleton College (Start-up Funding) |
| University of San Francisco Women in Computer Science (Amplification Award) | Loyola University Maryland (Start-up Funding) |
| Drexel University (Amplification Award) | Oberlin College (Start-up Funding) |
| Florida Atlantic University (Amplification Award) | Rowan University (Start-up Funding) |
| Tennessee Technological University (Amplification Award) | University of Maine (Start-up Funding) |
| University of Florida (Amplification Award) | Bryn Mawr College Sudo Hoot (Start-up Funding) |
| Fisk University Computer Science Club (Start-up Funding) | Texas Tech University Extraordinary Women of Computer Science (EWoCS; Start-up Funding) |
| Oregon State University ACM-W (Start-up Funding) | Stevens Institute of Technology Stevens Women in Computer Science (Start-up Funding) |

Academic Alliance Seed Fund: To date, 51 member organizations have received a total of $585,450 in funds (since 2007). In 2016, the following institutions were each awarded $10,000 from the Academic Alliance Seed Fund:

- Dordt College
- Florida A&M University
- Georgia Institute of Technology
- Northeastern University

In 2016, NCWIT changed the timeline for collecting data from Seed Fund recipients. We are thus unable to report on Seed Fund outcomes at this time.

A total of 89 percent of Members Survey respondents reported that something they learned through NCWIT helped them take action. In 2016, we received a number of unsolicited examples of major organizational changes. NCWIT continued to support student groups and educators with Seed Funds, though we must wait to report on the recent effectiveness of the awards.
NCWIT Increases the Meaningful Participation of Women in Technology

The final stage of NCWIT’s theory of change explains how individual and organizational change translates into the increased meaningful participation of women in technology. For NCWIT’s mission to be achieved, those changes need to affect more than individual women’s careers or experiences, and instead affect the organizational culture. Changes not only need to be broad enough but also in place long enough to actually affect the environment and culture of the organization.

1) Objective: Majority of AA members experience increases in % females graduating, 2-3 years after year of membership

To evaluate this metric, we compared gender diversity in graduation rates among AA member and non-member institutions using 2015 IPEDs graduation data. Our analyses were based on all instructional programs classified as “Computer and information sciences and support services” (CIP 11) and included data on first and second majors. Our analyses provide strong circumstantial evidence that members of NCWIT’s Academic Alliance (AA) tend to outperform non-member institutions in female graduation rates, and that, among AA members, membership duration is positively associated with the female graduation rate (in 2015). However, it was only in recent years that AA members begin to consistently outperform non-members in growth in total female completions, which reflects current understandings that concerted change efforts take many years to see the long-term effects. The following highlights are reproduced from a more detailed report submitted near the end of 2016. (full report available on request)

- In 2015, institutions that had been affiliated with NCWIT for at least two years, on average, exhibited slightly higher percentages of female completions than non-members.

- In 2015, a one-year increase in length of NCWIT membership was associated with a .6 percentage point increase in the number of female completions among AA members and a .71 percentage point increase in the number of female completions among ES members.

- In 2015, compared to newer NCWIT members (less than two years with NCWIT), longer-term NCWIT membership (membership for at least two years) was associated with a 2.72 percentage point increase in the number of female completions.

- Results from a fixed effects model indicate that: Among NCWIT members, a one-year increase in NCWIT membership was associated with a .22 percentage point increase in the number of female completions within institutions between 2004 and 2015. ES membership duration was associated with a .45 percentage point increase in the number of female completions within institutions over time. To date, this is the strongest (though not perfect) evidence that length of NCWIT membership causes an increase in female completions.
• Between 2005 and 2012, NCWIT members lagged behind non-members in terms of the percent of completions awarded to women. However, by 2013, NCWIT members tended to demonstrate slightly higher percentages of female completions.

• Between 2005 and 2008, the average rate of increase in total female completions from year to year was lower among NCWIT members compared to non-members. But by 2009, the average rate of increase in total female completions was higher among NCWIT members compared to non-members, especially from 2012 to 2015.

• Between 2005 and 2008, men’s completions grew at a faster rate than women’s completions in NCWIT member institutions, while the opposite was observed among non-member institutions. By 2009, however, the rate of growth in women’s completions in NCWIT institutions was greater than that of non-member institutions.

2) Objective: 70% of AA members report an increase in female enrollment in 2015 and in 2016 75% report an increase in female enrollments

To calculate the percentage of AA members who reported an increase in female enrollment, we used ACT Tool data. Our results therefore only apply to AA members who provided data on the total number of women and men in the same major for both the 2014-2015 and 2015-2016 academic years. (The data file does not yet include enrollment data for the 2016-2017 academic year.)

Our unit of analysis is the institution-department because colleges who provided ACT Tool data often provided data for multiple departments. Thus, while the objective of this metric states at least 70 or 75 percent of AA members saw an increase in the percentage of women enrollees, we reinterpreted the objective as the percentage of departments across AA colleges that saw in increase in female enrollment.

Of the 63 departments that provided enrollment data (for both men and women) in the academic years 2014-2015 and 2015-2016, 76 percent saw an increase in the percentage of female enrollees over the two years. NCWIT therefore surpassed its goal of 75 percent. Caution should be exercised in interpreting this result, however. This is a highly selective sample, given that the vast majority of AA members did not provide data on total enrollments for women/men in the same major for both academic years.

Across the 63 departments, on average, 16.30 percent of enrollees were women in 2014-2015 and 17.97 percent of enrollees were women in 2015-2016. Between the 2014-2015 and 2015-2016 academic years, departments saw, on average, a 1.67 percent increase in the percentage of women enrollees.

We want to stress that these results, while positive, are based on a small percentage of AA members who probably do not reflect the experience of all AA members. In collaboration with NCWIT, we need to improve response rates to the Tracking Tool request. In the meantime, we are in the process of allocating additional research support to further explore enrollment patterns for the 2017 Annual Report.
3) Objective: Extension Services clients show improved participation of women in participating majors

In 2016, we documented NSF Cohort 2’s progress in a more detailed evaluation report (available on request). The following is a summary for the report’s main findings:

- The most frequently mentioned impacts or outcomes in aggregate Final Reports were “New initiatives or programs were started as a result of participation in the NCWIT ES project” (35 mentions) and “ES client’s activities were described as improving or increasing the level of support available to all students in the program or college” (34 mentions).

- The most commonly reported major impacts of mini-grants were:
  - An increase in faculty support of diversity initiatives (4 schools).
  - Greater visibility for the department or committee's diversity work (4 schools).
  - Colleges or departments’ ability to create a new initiative, such as a new student group or special event, that they otherwise would not have been able to create (4 schools).

- The most frequently discussed challenge for the NSF 2 cohort was a lack of available staff/faculty time to devote to this work. This challenge was mentioned by eight schools as a major challenge in completing their work. The second most commonly cited challenge by NSF 2 schools were the complicated logistics of their events and initiatives (6).

- Across Final Reports, the following themes emerged when members were asked what they would do differently: “Getting started earlier” (4 schools) and “involving more faculty/staff” in the process in order to delegate and spread out the work (4 schools).

- When asked about their future plans around diversity work many NSF cohort 2 schools indicated that they plan to continue recruiting activities, with six mentioning an intention to continue high school outreach and five mentioning continuing undergraduate outreach. Four schools plan to modify courses to be more relevant and supportive of diverse students and four schools plan to continue special events intended to improve recruitment and retention.

- In Final Reports, cohort schools were also asked what aspects of the ES program were most helpful to them. The most common response was the availability of a content expert in the ESC (9), followed by the design and structure of the ES program that held them accountable to certain expectations (8).

- When queried about their relationship with the Extension Services program 79 percent of schools strongly agreed that the ES program is committed to their success, 64 percent strongly agreed that the program helped them implement practices to improve recruitment and retention of women, and 79 percent strongly agreed that the program prepared them from continued work on their recruitment/retention efforts.
According to the Extension Services Summit Survey, all clients who responded indicated that they were very or somewhat satisfied with the meeting. A majority of clients (93%) reported feeling like they were a part of the NCWIT Extension Services community and most left the meeting re-energized to work on recruitment and retention of undergraduate women in computing (87%). A total of 73 percent of participants agreed they were more confident in their ability to impact recruitment and retention at their school, and 93 percent of participants learned new ideas for recruiting undergraduate women in their departments.

According to the consultant version of the Extension Services Summit Survey, every ESC indicated satisfaction with the ESC meeting and the Change Agent (Client) Workshop. All consultants were also satisfied with their experience so far with Extension Services (ES) and all agreed that ES staff is committed to helping them and that staff provide appropriate support to them when they need it.

4) Objective: WA and non-WA corporate data transparency –collect and report progress over time, as more orgs put out new years of data

In 2016, NCWIT compiled a list of WA and non-WA corporations that, at some point in recent years, released estimates of their workforce diversity. This allowed NCWIT to evaluate two metrics: 1) the percentage of companies that released diversity numbers that are members of NCWIT and 2) the percentage of WA members that released diversity numbers.

NCWIT estimated that, as of October 2016, 80 companies publicly released their diversity data. Of those companies, just over half (54%) were current NCWIT members. Among current WA members, 47 percent of companies released their diversity data.

NCWIT, however, should exercise caution in interpreting these results. First, it is difficult to establish a goal for these metrics. It is not clear what NCWIT should expect from its members since the decision to release sensitive workforce data is based on a number of factors, many of which are independent of NCWIT’s influence. Second, any claim that NCWIT membership motivated its WA members to release diversity numbers rests on shaky causal assumptions. Again, a confluence of forces could lead a company to release workforce data to the public.

Another source of circumstantial evidence of an “NCWIT effect” is the number of internet users who view NCWIT’s resources that were designed to support companies’ data transparency efforts. The resource, “8 Tips for Announcing Your Workforce Diversity Numbers,” (Published on March 9, 2015) has received 650 page views, while the resource, “Recruiting, Retaining, and Advancing a Diverse Technical Workforce: Data Collection and Strategic Planning Guidelines,” (published on Jan 21, 2016) has received 1007 page views.

Once again, it is difficult to establish what constitutes success, and we have no knowledge of who is viewing these pages and whether these resources are assisting companies with data release efforts.
5) **Objective: Data shows an association between the influence of NCWIT resources and increased female representation at AA member schools**

Tracking Tool data does not include a variable for NCWIT resource use. However, because some institutions provided enrollment data for years prior to NCWIT membership, we will be able to measure whether NCWIT membership (a proxy for resource use) impacted female enrollment rates. We intend to pursue this analysis during the summer and fall of 2017.

In the meantime, several results from the Members Survey hint that NCWIT membership is having an impact among AA members. For instance, 62 percent of AA respondents reported using a new strategy because of an NCWIT resource. Also, a strong majority of AA members (82%) agreed that NCWIT membership helped them build allies or advocates for women in their organizations (see above). Finally, since 2010, strong majorities of AA respondents indicated that they took action because of something they learned through NCWIT (see figure below). Together, these results provide circumstantial evidence that NCWIT membership has likely had an impact on female representation at AA member school. In the upcoming year, we hope to have a better understanding of the magnitude of that impact by analyzing the Tracking Tool data in conjunction with the Members Survey data.

Since 2010, strong majorities of AA members have indicated that they took action because of something they learned through NCWIT

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I love NCWIT and find their resources very helpful. I actually have increased women in my program! Not a lot, but any little step is positive (AA Members Survey Respondent).
6) Objective: Aspirations Talent pool continues to grow

The National K-12 Award for Aspirations in Computing (AiC) receives funding from Apple, Bank of America, Microsoft, Motorola Solutions Foundation, and Symantec. AiC serves all 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, and all U.S. overseas military bases. Each year, NCWIT expands its recognition of girls by leveraging its member organizations to host and organize award ceremonies.

Since 2013, NCWIT has gifted more than $575,000 to 235 programs, providing an estimated 200,000 instruction hours to nearly 5,300 girls in 36 states.

During the 2016-2017 award cycle, 5,338 girls initiated applications, bringing the total number of girls in the Aspirations talent pool to 30,610 (registered since 2007).

Our yearly compilation of NCWIT communications is rife with examples of how the AiC program has impacted young women’s educational and career trajectories. We include a handful of testimonials below, but note that they represent a small fraction of the examples of how the AiC program transformed young women’s interest in computing into a long-term pursuit. Finally, although it is difficult to empirically validate, if only a fraction of AiC awardees goes on to pursue careers in computing, this almost certainly represents a significant expansion of the supply of technical women. In 2016, NCWIT reported on a more in-depth analysis of the meaning of the program and its potential impact. The results of this analysis have been published in reputable outlets.
“Just finished an interview with a local mid-sized company in Northern VA and the manager I spoke too recognized NCWIT on my resume and was really impressed about that. He loved that I was a part of it.” (Aspirations Award recipient)

“I applied to NCWIT that year and got an affiliate runner-up award. Since then, I've taken every CS course at my school, been to nearly a dozen hackathons and coding/ttech events, and was a #BUILTBYGIRLS intern at AOL, where I got to practice my coding skills in a real-world environment by helping design and code the next iteration of cambio.com…Now I'm looking into summer internships at places like Bloomberg and Google, running my very own hackathon called def hacks() that is now spreading across America (defhacks.xyz), going to college for Engineering and CS in the fall.” (Aspirations Award recipient)

“For two consecutive years, analyses of IPEDs data suggest that longer-term AA members graduate slightly more women in computer science departments than non-member institutions. At least 70 percent of NCWIT-affiliated academic departments (not colleges) that reported Tracking Tool data for academic years 2015-2016 and 2016-2017 saw an increase in female enrollment, though we are not sure that these departments are representative of all AA departments. Finally, the Aspirations in Computing program continues to grow and impact the lives of young women.”
NSF Commitments for Year Six

- **AA Quantifiable Goals:** At least 75 percent of AA member representatives report an increase percent in female enrollment.
  - NCWIT appears to be in the process of compiling Tracking Tool data submitted by its members. When the data become available, we intend to analyze the association between NCWIT membership and female enrollments.
- **AA – Pacesetters and “net new women”:** Cohort 3 adds 1K-2K “net new women”
  - Cohort 3 is reaching the end of its cycle (December 2017).
  - For the national project, Pacesetters members voted to expand the Everyday Bias Busting Toolkit.
  - Cohort 3 has not reported on net new women, though estimates may be available as Cohort 3 graduates.
- **AA Growth and Reach:** 20 percent membership growth and 30 percent total US BS “reach”
  - AA grew by 18% (54 organizations) in 2016, which is three percentage points greater than the growth rate in 2015 (15%), but two percentage points below the target (20%).
  - In 2016, of the U.S. bachelor’s degree-granting institutions that offered “Computer and information sciences and support services” majors (CIP 11) and provided valid data to IPEDS, 30 percent were AA members.
- **NCWIT Summit:**
  - 10 percent attendee growth in 2016.
    - The 2016 Summit in Las Vegas witnessed record breaking attendance. Specifically, 697 individuals attended, a 21 percent increase compared to the 2015 Summit at Hilton Head Island.
  - 85 percent of attendees see value in 2016.
    - A total of 79 percent of Summit Survey respondents rated the 2016 Summit as “very” or “extremely valuable.” This represents a three percentage point decrease compared to the previous Summit (82%). Ninety-six percent of Summit Survey respondents indicated they were likely to attend another NCWIT event.
  - 1,000 virtual attendees in 2016.
    - The 2016 Summit was live streamed, and viewed more than 2,700 times, with 300 engagements/reactions via social media.
    - NCWIT invited press to virtually tune into the livestream via three press releases.
  - The number of unique Summit website viewers increases by 20 percent in 2016.
    - In 2016, NCWIT witnessed a moderate increase (15%) in the number of unique Summit webpage viewers compared to 2015. Specifically, 10,343 users visited Summit webpages in 2016 compared to 11,931 users in 2015.
  - 75 percent of attendees make pledges in 2016.
    - During the 2016 Summit, NCWIT encouraged members to submit goals during Summit registration. Through this voluntary process, 45 percent of attendees submitted new goals (n=315).
• **Resource Creation:**
  o 10-15 new resources created
    ▪ NCWIT created 18 new paper resources and 11 new multimedia resources in 2016.
  o Resource committees advise on 5 projects in 2016.
    ▪ At least 10 resources were produced as a result of Alliance resource committees.

• **Resource Delivery Vehicles:**
  o 2 navigational guides/tools in 2015 and 2016.
    ▪ In 2016, NCWIT created three navigational guides. If resource collections are included in the count, NCWIT created 108 navigational guides.
  o 70 percent of members have distributed resources in 2016.
    ▪ Of the 92 percent of member representatives indicated some level of involvement with NCWIT in 2016, 75 percent indicated that they distributed NCWIT materials or resources.
  o Increase the number of mobile applications in 2016.
    ▪ NCWIT created an app for the 2016 Summit, which was downloaded by 487 users. App users opened and used the app more than 11,700 times. NCWIT created an improved app for the 2017 Summit in Tucson.

• **Resource Distribution:**
  o NCWIT customizes website user experience in 2015 and 2016.
    ▪ In 2016, the Explore NCWIT tool was designed to guide users to specific pages that best fit what their role and goals.
  o 90 percent of members find website “very helpful” in 2016.
    ▪ In 2015, half of Members Survey respondents who visited the NCWIT website in the last year reported that the website was “very helpful.” In 2016, 37 percent of respondents indicated that they were “extremely satisfied” with the website’s overall usefulness (survey wording changed in 2016). In both years, nearly 100 percent of respondents indicated that the NCWIT website was “somewhat helpful” (2015) or that they were “satisfied” with the website’s overall usefulness (2016).
  o Resources are targeted at 3 new audiences in 2016.
    ▪ In 2016, NCWIT created resources that targeted the following four audiences potentially unfamiliar with NCWIT’s mission: Native Americans, African Americans, Spanish language speakers, and male advocates.
  o Six social media resource campaigns in 2016.
    ▪ During this grant year, NCWIT conducted at least six resource campaigns.
  o 30-50K hard copy resources distributed in 2016.
    ▪ NCWIT distributed 214,468 hardcopy resources in 2016.
  o 11K NCWIT resource views in 2016.
    ▪ In 2016, NCWIT’s resources home page received 21,524 page views. Users downloaded 26,364 resources in 2016, a seven percent increase since 2015 (24,750 resource downloads).
3 training sessions in 2015 and 2016.
  - In 2016, NCWIT social science staff members conducted 40 resource trainings.

- **Research on Aspirations Program (publish final results):**
  - Transcribed and analyzed 63 interviews
  - Published article and presented paper on findings
  - More private and public research dissemination in works
  - During the 2016-2017 award cycle, 5,338 girls initiated applications, bringing the total number of girls in the Aspirations talent pool to 30,610 (registered since 2007).

- **Digital Outreach and PR:**
  - 4 digital newsletters
    - In 2016, NCWIT sent out 21 original digital newsletters/e-communications to members and non-members.
  - 10 percent increase in overall unique visitors/website page views
    - The number of unique visitors to NCWIT.org increased from 178,212 in 2015 to 191,407 in 2016, reflecting a seven percent increase in overall unique visitors.
  - 20% growth in social media community
    - Between January 2016 and December 2016 the number of NCWIT Facebook fans (“likes”) increased by about 35 percent (from 20,606 to 27,846), surpassing its 20 percent increase goal. The number of Twitter followers increased by 19 percent over the course of the year (from 17,927 to 21,405).
  - 5 press releases in 2016
  - 6 new pushes to targeted media in 2016
    - In 2016, contacts through media inquiries were leveraged as a key way to push NCWIT news to targeted members of the press, leading to the inclusion of commentary and NCWIT research in numerous articles that were published by national media outlets (e.g., The Denver Post, The Washington Post, and Wired). Additionally, partners’ networks were leveraged to produce co-branded press releases and blogs to target a wider audience (i.e., fringe audiences and niche, trade audiences); announcements covered the 2016 NCWIT Summit, CSforAll, several NCWIT awards, the Tech Inclusion Pledge, and more.

- **Events Outreach:**
  - Three Keynotes
    - In 2016, NCWIT keynoted at nine different meetings/conferences.
  - NCWIT attend 8-10 events
    - In 2016, NCWIT attended a total of 413 non-government events/meetings. Sixty-five of these meetings occurred at conferences and 93 involved VIPs. NCWIT officials met with DC-related policy makers at least 32 times.
  - Twenty-four NCWIT ambassador outreach events (note, “ambassadors” has been renamed NCWIT2GO),
    - NCWIT recorded 29 NCWIT2GO events in 2016. NCWIT is still working on ways to improve tracking NCWIT2GO outreach.