



BRAID

**Building Recruiting And
Inclusion for Diversity**

A partnership between
AnitaB.org & Harvey Mudd College

2018 BRAID Annual Report

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2018 BRAID Annual Report

Background

BRAID (Building, Recruiting and Inclusion for Diversity), an initiative co-led by the AnitaB.org and Harvey Mudd College, helps computer science departments increase their percentages of women and underrepresented minority students. Launched in 2014, it includes a mixed-methods, longitudinal research study conducted by the UCLA BRAID Research Team that is additionally supported through funding from the National Science Foundation.

Under the leadership of their department chairs, 15 Computer Science (CS) departments (BRAID Schools) have committed to implementing practices such as those initiated at Harvey Mudd College and the University of Washington (Beacon Schools) which increased the representation of women and underrepresented minorities in computing on their campuses.

Each BRAID School implements a combination of commitments, successful on Beacon School campuses, in order to increase the number of women and underrepresented minorities in their undergraduate CS departments. The four BRAID commitments are:

1. Modify introductory CS courses to appeal to students with less prior background in computing.
2. Lead outreach programs for high school teachers and students to build a pipeline of diverse students interested in computing.
3. Build confidence and community among underrepresented students through programming on and off campus.
4. Develop joint majors and interdisciplinary courses in areas like CS and biology that are attractive to underrepresented students.

In addition to the 15 annual BRAID Schools participating in the longitudinal research study, BRAID accepts several schools each year to gain access to the learning of the BRAID initiative for one year (Affiliate Schools). Department chairs from accredited, degree-granting institutions can apply to become an Affiliate School, and spend the year learning about best practices from the Beacon and BRAID Schools and convene in person with corporate BRAID Funders, the UCLA BRAID Research team, the AnitaB.org team, and all the BRAID School department chairs at our annual summit.

Participating BRAID Institutions

Beacon Schools

Beacon Schools are the schools after which the participating BRAID Schools model their commitments. Each of the Beacon Schools had high participation of undergraduate women in their CS departments at the time of BRAID's launch and provided guidance to the participating BRAID Schools. Harvey Mudd is the lead model and has implemented four strategies to increase its numbers: modify the intro to

computing course; build community among computing students; perform outreach to local high schools; and pursue development of interdisciplinary courses and majors. These Beacon schools are used as guides and advisors to the BRAID Schools and the BRAID Affiliates. The Beacon Schools include: California Polytechnic State University, Harvey Mudd College, University of Washington, and University of British Columbia.

BRAID Schools

BRAID Schools are the 15 institutions that receive funding to implement the four BRAID commitments and participate in the UCLA BRAID Research Team's longitudinal study. They include: Arizona State University, Missouri University of Science & Technology, New Jersey Institute of Technology, University of Illinois at Chicago, University of Maryland Baltimore County, University of Maryland College Park, University of Nebraska Lincoln, University of North Texas, University of Rochester, University of South Carolina, University of Texas El Paso, University of Vermont, University of Wisconsin Milwaukee, and Villanova University.

2018 Affiliate Schools

Affiliate Schools are institutions that spend one year implementing BRAID commitments to increase diversity in their CS departments. They do not participate in the longitudinal research study, nor do they receive funding. Currently, they participate with BRAID on a one-year rotation that includes attending the annual BRAID Summit. 2018 Affiliate schools included: Brown University, Lehigh University, Michigan Tech, Tennessee Tech, Tufts, University of the Pacific, and the University of Waterloo.

UCLA BRAID Research Team

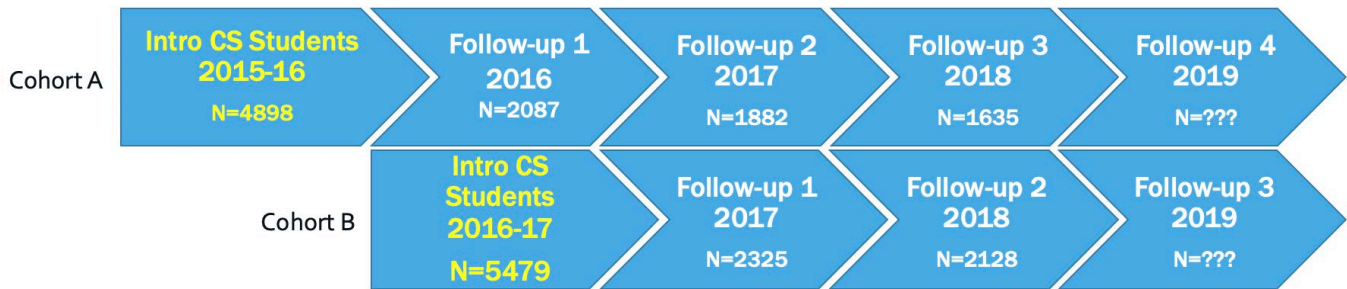
The UCLA BRAID Research team is led by Dr. Linda J. Sax, Principal Investigator for BRAID Research and Professor of Higher Education in the Graduate School of Education & Information Studies at UCLA. The project is managed by Dr. Kate Lehman, Associate Director for BRAID Research, and is supported by a team of 10 graduate student researchers.

Over the past five years, the BRAID Research team has established robust, longitudinal qualitative and quantitative databases. These databases allow the team to explore several key questions relevant to broadening participation in undergraduate computing. In terms of *qualitative data*, the research team has focused their efforts on annual interviews with the 15 department chairs at BRAID Schools. In these interviews, chairs provide updates on their broadening participation initiatives and discuss successes and challenges in their efforts to diversify computing majors. *The department chair interviews provide important data about how the departmental change process occurs.*

With regard to *quantitative data*, the team collects survey data and enrollment and degree attainment data. The longitudinal survey data follows students who enrolled in an introductory computing course through college and into their early post-college years. Specifically, during the 2015-16 and 2016-17 academic years, the UCLA BRAID Research team administered pre- and post-test surveys to all students

enrolled in an introductory computing courses at the 15 BRAID Schools, yielding a baseline sample of approximately 10,000 students. The research team has continued to survey those students with an annual follow-up survey. The next annual follow-up is planned for Fall 2019. *These longitudinal data on students allows the team to examine the relationships between experiences students have in their introductory courses and computing majors and various desirable outcomes, including earning a computing major or minor and pursuing a computing career.*

Figure 1. BRAID Research Longitudinal Survey Samples Across Time



Trends in Enrollment and Retention

The research team also requests data on student enrollment and degree attainment in computing majors from BRAID institutions each year. The research team has enrollment and degree attainment data disaggregated by gender and race/ethnicity dating back to 2014 at each BRAID institution, and the team continues to collect these data annually, allowing them to track BRAID institutions' progress toward diversifying undergraduate computing majors.

According to reports from the Computing Research Association, computer science departments are facing a boom in undergraduate computing enrollment that is not only greater than any boom that computing has faced before, but it is greater than any enrollment boom that *any field* has faced before. Drs. Sax and Lehman's previous work on [gender gaps in computing](#) demonstrates that during past periods of increased enrollment in computing fields, gender gaps have tended to widen. Therefore, the research team closely tracks how the BRAID Schools' enrollment of women and underrepresented minority (URM) students compares to their overall enrollment. *Between 2014 and 2018, women's enrollment increased by 108%. As shown in Figure 2, women's enrollment is outpacing the overall enrollment growth at all 15 BRAID Schools. Over the same period, URM enrollment has increased by 77.4%. Figure 3 demonstrates that URM enrollment is outpacing overall enrollment growth at over half of BRAID institutions.*

Fig. 2. Overall Enrollment Growth vs. Women’s Enrollment Growth in All Computing Majors at BRAID Schools (2014-2018)

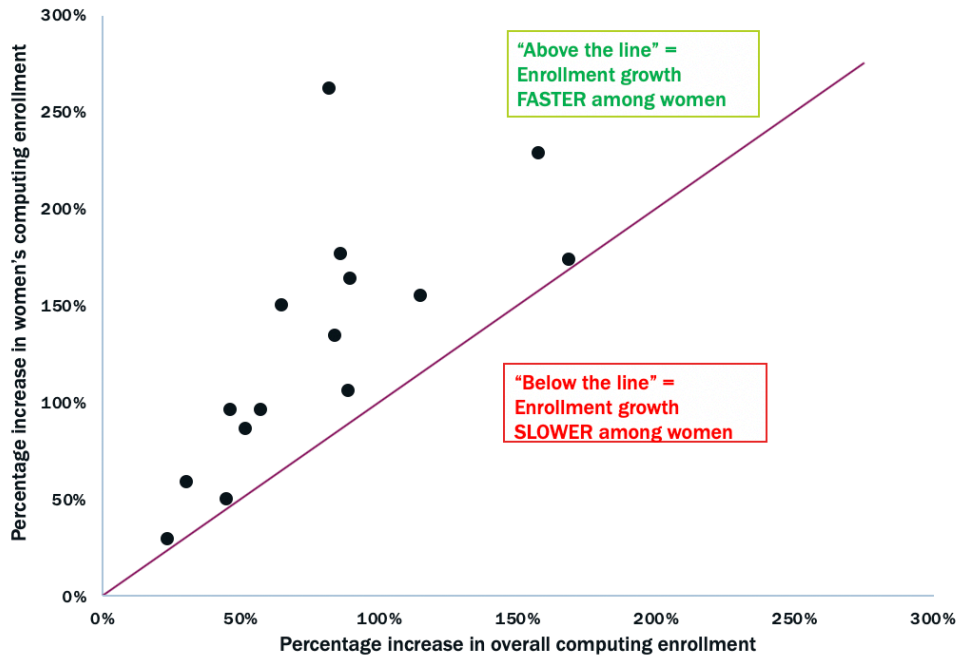
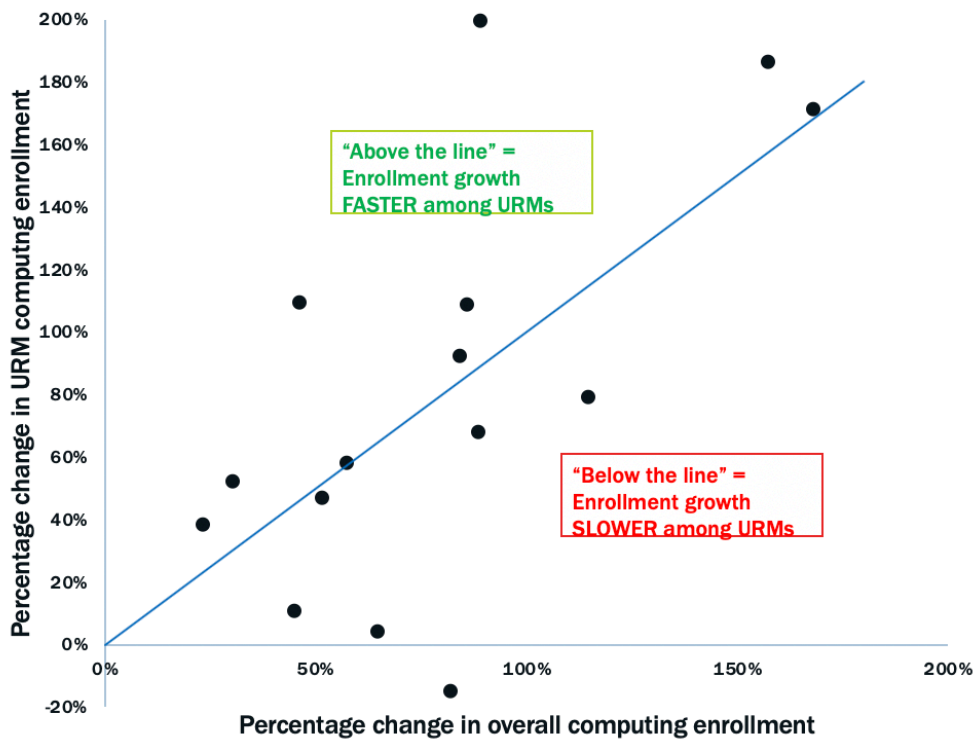


Fig. 3. Overall Enrollment Growth vs. URM Enrollment Growth in All Computing Majors at BRAID Schools (2014-2018)



BRAID Departmental Report

Each year, BRAID department chairs complete a departmental report administered by AnitaB.org. The departmental report consists of open-ended and short answer questions that help gather information related to each institution’s pursuit of the four BRAID commitments, how BRAID funds are used, and more. Results from the departmental report are then aggregated and shared in the BRAID Annual Report and disseminated across institutions. Receipt of BRAID funding is partially dependent upon completion of each year’s departmental report.

Results from the 2018 Departmental Report

For the 2018 Departmental Report, 14 of the 15 BRAID Schools submitted responses. Aggregated metrics on activities pursued by BRAID Schools that align to the four BRAID commitments can be found in Table 1. Detailed actions are itemized in Appendix A.

Table 1. Summary of Reporting BRAID Schools’ Activities Aligned to the Four BRAID Commitments

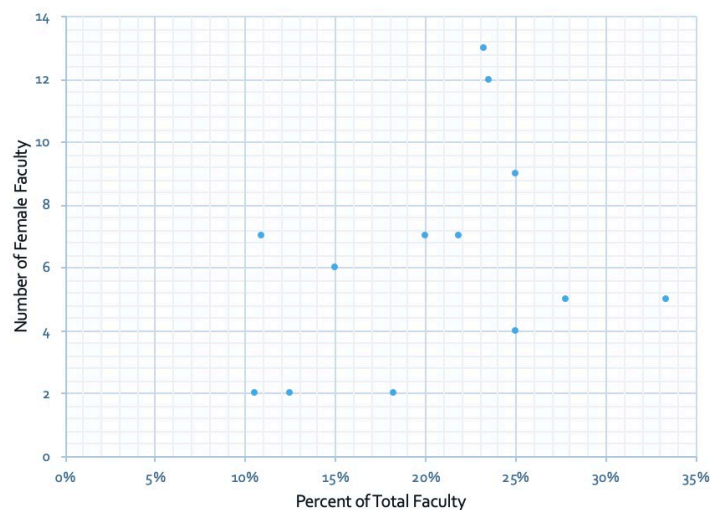
BRAID Commitment	Metrics
Modify Introductory CS Courses	<ul style="list-style-type: none"> 86% (n=12) of BRAID Schools modified their introductory CS course to make it more appealing to underrepresented students.
Conducting Outreach to K-12	<ul style="list-style-type: none"> 100% of the BRAID Schools (n=14) are doing some kind of outreach to increase diversity in their computing major. 71% of BRAID Schools sponsored summer or afterschool programs for women and/or underrepresented minority students. BRAID Schools reached an estimated total of 5,052 high school and 3,181 K-8 students through various outreach efforts. BRAID Schools provided CS professional development to 506 high school and 209 K-8 teachers. An estimated 411 undergraduate students participated in K-12 outreach efforts. 21% of BRAID Schools partnered with high school guidance counselors to promote computing as a career pathway. 14% of BRAID Schools used funds to do outreach to middle and high schools.
Building Confidence and Community	<ul style="list-style-type: none"> 100% (n=14) of BRAID Schools offer student groups for women and/or underrepresented minority students. 93% (n=13) of BRAID Schools offer opportunities for undergraduate students to participate in research. 50% (n=7) of BRAID Schools offer mentoring programs to undergraduate students. 36% (n=5) of BRAID Schools collaborate with industry to offer programs designed for students. 43% (n=6) of BRAID Schools used BRAID funds to support computing student organizations or community building on campus.

	<ul style="list-style-type: none"> 100% (n=14) of BRAID Schools build community by sending undergraduate students to computing conferences. <ul style="list-style-type: none"> 100% of BRAID Schools (n=14) sent students (331 undergraduate and 57 graduate) to Grace Hopper Celebration (GHC). 79% of BRAID Schools (n=11) sent students to non-GHC conferences including Richard Tapia Celebration of Diversity in Computing, NSBE, and others.
Develop and/or Promote Interdisciplinary Courses & Majors	<ul style="list-style-type: none"> 86% of BRAID Schools (n=12) offer interdisciplinary courses combining CS with other subjects. 93% of BRAID Schools (n=13) offer or plan to offer an interdisciplinary major that combines computing with another field.
Additional Efforts	<ul style="list-style-type: none"> 79% of BRAID department chairs (n=11) plan to implement new and/or different efforts in the upcoming year. 21% (n=3) of BRAID Schools performed outreach to undeclared majors at their institution. 29% (n=4) of BRAID Schools maintain partnerships with community colleges.

Faculty Diversification

In addition to the four BRAID Commitments, BRAID Schools are taking action to enhance the diversity of their staff by implementing several strategies aimed at increasing the number of women and underrepresented minorities applying to and being hired into tenure-track and lecturer positions. All BRAID Schools reported on the diversification of their faculty in the 2018 Departmental Report, with some sharing demographic data for only tenure-track faculty and others sharing it for all faculty members*. On average, 20% of faculty at BRAID Schools identify as female with a range of 12% to 33% across all schools. Figure 4 shows the number of female faculty members reported in relation to the percent of total faculty at BRAID schools in 2018.

Figure 4. Number of Female Faculty vs. Percent of Total Faculty* at BRAID Schools in 2018



Two BRAID Schools attribute increases in the number of female staff members directly to their participation in BRAID, while others acknowledged the influence of BRAID on decisions to develop diversity committees that work to eliminate implicit bias in their hiring practices. One BRAID school lamented the loss of three female faculty members but celebrated the fact they were taking leadership positions at CS departments elsewhere.

Reflections from Students Impacted by BRAID in 2018

In addition to providing updates on efforts related to fulfilling the BRAID Commitments, department chairs work with their faculty and student body to obtain reflections from students that speak to how BRAID-supported efforts are impacting individuals and their larger communities. Featured below are a selection of quotes from those reflections:

“ACM-W partners with other organizations on campus to participate in a Girl Scout Campus Tour event every semester. These tours give a group of Girl Scouts the chance to experience different STEM fields. ACM-W represents the computer science department for this event. Last semester ACM-W did a workshop using robots that could be easily programmed to move, make sound, and more by scanning instructions on blocks. This helps the girls understand the process of designing an algorithm and troubleshooting in a physical environment, which makes understanding the process simpler and fun! After teaching them the basics of how to use the robots and how to design an algorithm, we let them explore on their own. The girls always love the event and I enjoy volunteering because we get to talk to the girls about their goals and interests. One of the most rewarding conversations is when girls explain that after this workshop, they want to learn more about computer science.”

- Senior, Computer Science, Missouri University of Science & Technology

“Going to Tapia exposed me to a whole diverse group of professionals and students studying computer science, which made me reflect on the underrepresented group experience in computer science. While UIC has always been a diverse community, we realized a hole existed for people in CS who were less prepared/less fortunate than others. A culture barrier existed that we could address in better integrating all people in computer science to collaborate and grow together. In turn, we decided to form a student group focused on Latinx students in computing.”

- Junior, Computer Science, University of Illinois Chicago

“Being a part of an organization that provides many opportunities for college students and K-12 students, I loved seeing how much the younger kids enjoyed learning coding and how much of an impact the CSConnect program had on them. I also really loved Grace Hopper Celebration and the opportunity to meet so many accomplished women in tech! It is great that MCWIC is able to sponsor so many students each year and give them the opportunity to attend.”

- Senior, Computer Science, University of Maryland College Park

“My experience with the [K-8 outreach program] has been amazing and humbling. During some weekend mornings, students have the opportunity to teach basic computer science and STEM concepts to underprivileged children from a local elementary school. These kids are incredibly bright and intuitive, and truly show a passion for

learning about computer science. It's so wonderful to be able to pass on my love of technology to the next generation.”

- Senior, Computer Science, Villanova University

Interaction with BRAID Funders

In the 2018 Departmental Report, BRAID department chairs were asked a series of questions related to engaging with funders of the BRAID Initiative. In the report, 100% of BRAID chairs (n=14) expressed their desire to interact more with BRAID funders. Table 2 provides an overview of how department chairs prefer to engage with BRAID funders.

Table 2. Department Chair Preferences for How to Engage with BRAID Funders

Mechanisms for Engagement	% Preferred	Count
Webinar between students and Funders to share internship, mentorship, and other student focused opportunities	86%	12
Webinar between students and Funders to share tips for improving technical resumes and interviews	71%	10
Funder-Department Chair meetup at GHC 19	57%	8
Webinar conversation between Department Chairs and Funders about corporate opportunities	36%	5
Webinar between faculty and Funders to share tips for improving technical resumes and interviews	21%	3
Other (Please specify in text box)	21%	3
We are not interested in engaging with BRAID's corporate Funders	0%	0

2018 BRAID Initiative Highlights

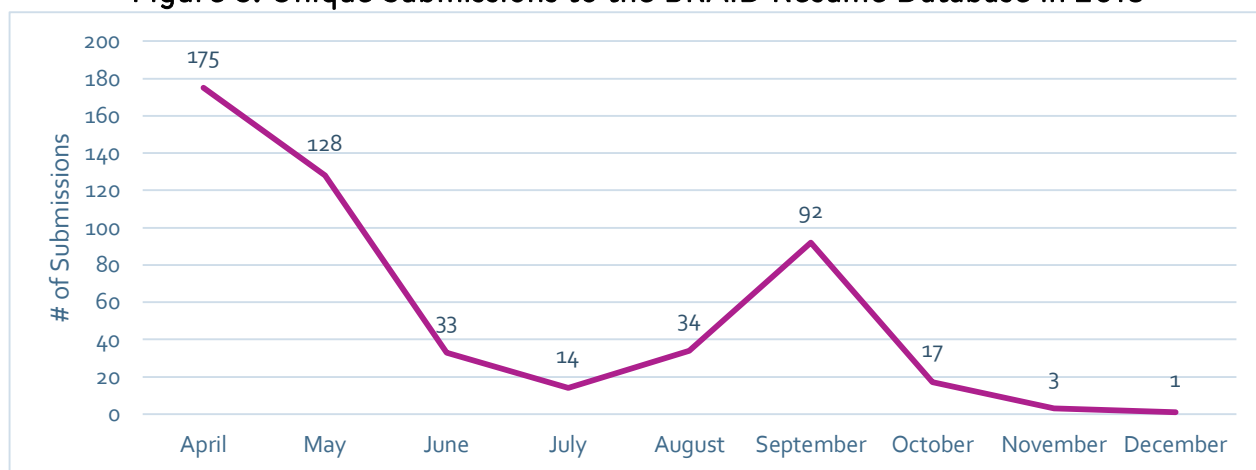
Quarterly Reporting

As a new benefit to the BRAID Funders and larger CS education community in 2018, AnitaB.org launched a quarterly BRAID Report. These updates are broadly distributed each quarter via our Academic Digest. This year the quarterly report shined a light on various BRAID efforts, including: thank you to our 2018 Funders; spotlight on BRAID School commitment efforts; highlight of BRAID Research Team's academic presentations; Affiliate School information; and overviews of BRAID at Grace Hopper Celebration. Be sure to check your spam folder, or [sign up here](#) to receive the Academic Digest, including quarterly BRAID updates. Quarterly BRAID updates from 2018 can be found here: [Q1](#), [Q2](#), [Q3](#), and [Q4](#).

Resume Database

The BRAID Resume Database launched in April 2018, with instructions and participation reminders sent to Department Chairs of all BRAID Schools in April, June, and September. The number of unique submissions to the BRAID Resume Database in 2018 can be viewed in Figure 5. In 2019, increased effort will be placed on improving participation in and access to the BRAID Resume Database, including implementation of a new host platform.

Figure 5. Unique Submissions to the BRAID Resume Database in 2018



Annual BRAID Summit

The annual BRAID Summit took place July 12-14, 2018 at Harvey Mudd College. We welcomed roughly 50 participants from different BRAID Schools, 2018 Affiliate Schools, Beacon Schools, funding bodies, and nonprofit partners. Participants engaged in a variety of discussions on topics including how to recruit more diverse faculty and focus on diversity and inclusion efforts when all CS departments are facing unprecedented booming enrollment. The UCLA BRAID Research Team provided an in-depth update on their research following the progress of students and CS departments as a whole over the past four years of the project. Updates can be found in the [fourth quarterly update](#) for BRAID in 2018.

Participant feedback included:

“The most important thing is reestablishing connections and getting reinvigorated. We are all so busy that it is easy for important things to get neglected.”

- Department Chair, BRAID School

“This was by far the best Summit ever. There was a strong sense of community and trust built among the participants.”

- Department Chair, BRAID School

BRAID at Grace Hopper Celebration

Grace Hopper Celebration serves as a unique, inspiring, and transformative opportunity for community building among BRAID stakeholders, especially students. The learnings and community of BRAID are celebrated each year on site. In 2018, 388 students and 44 staff members from BRAID Schools attended GHC 18.

Welcome Reception at GHC 18

The BRAID Welcome Reception at GHC 18 was sponsored by Northrop Grumman and New York Life. Nearly 250 attendees enjoyed the great food and company as we celebrated the success of four years of the BRAID initiative. 13 out of 15 BRAID Schools had representatives at the Welcome Reception, as did two Affiliate institutions. Students and faculty alike had the chance to network with the BRAID initiative's annual corporate funders, the Welcome Reception sponsors, allies in the work of broadening participation in computing, and one another.

For more details on the representation of BRAID schools at GHC 18, attendance at the GHC 18 BRAID Research presentation, or participation at the BRAID Welcome Reception, check out these [quick stats](#).

UCLA BRAID Research Team Presentation

The UCLA BRAID Research team, led by Drs. Linda Sax and Kate Lehman, hosted an attentive audience of nearly 100 attendees at their GHC 18 update. The research team shared the progress of the longitudinal research study, looking at successful practices for recruiting and retaining underrepresented students in computing departments on the 15 BRAID campuses. In the presentation, the research team shared that while total computing enrollment had increased by 31% between 2014 and 2017, women's enrollment growth outpaced the total growth in enrollment at all 15 BRAID Schools.

Check out the [UCLA BRAID Research Team update](#) or their [research website](#) for more details on the results of this longitudinal study.

Student Reflections

“GHC was a very eye-opening experience for me. What I got out of it can be summed up in three major points: Job Interviews, Perspective, and Motivation. There were companies in Grace Hopper Celebration that never come to our school or may filter us out in the process. I gained perspective on different diversities in the tech industry and I learned how I can help promote that diversity. And lastly, I gained motivation to keep doing what I want to do to the fullest extent and never to be discouraged. Using both a new perspective and motivation, I was able to bring the ideals back to Missouri S&T to promote diversity in a campus that doesn't seem very diverse at first. I found that being a leader with this new perspective has allowed me to change the attitude of some at Missouri S&T, specifically the students.”

- Junior, Computer Science, Missouri University of Science & Technology

“Grace Hopper Celebration for me was filled with so many emotions. I have never attended such a large gathering before, and so sitting in an auditorium meant for the overflow from the first keynote address was amazing and overwhelming at the same time. I was very nervous that I would be lost in an ocean of other women, all their own versions of awesome. How on earth would I impress anybody with my potential when they are likely to meet hundreds of other women just like me, I wondered. However, it only felt like that in the first few moments. As I spent more time listening to all the inspiring speakers, talking to new people, attending talks, and handing out my resume to recruiters, I felt so energized by the people around me. It was like being part of a movement, and the flow of people around me was at once invigorating and inspiring— like no matter how small, my voice was going to be heard.”

- Senior, Computer Science, University of Rochester

“Grace Hopper Celebration is an amazing experience where you have the opportunity to meet wonderful people and learn about their experiences in the field of computer science. The magic of this Celebration is about meeting wonderful people who are hardworking students and professionals with the same ideas and dreams. The best part for me were the keynotes in which female role models share their experience. These incredible professionals motivated me to work harder and help me discover that I want to be part of the change, to inspire the next generation of girls. In my opinion, this event makes a huge impact on your life where you learn that as a female we have inspirational role models to follow and imitate their willingness and hard work to reach our goals. This event is simply unique, an exceptional experience for any woman in the tech field.”

- Senior, Computer Science, University of Texas – El Paso

Broader Impact

In 2018, AnitaB.org began identifying ways to disseminate the learnings and opportunities related to BRAID among the larger computing ecosystem.

NSF Broadening Participation in Computer Science with AnitaB.org

The Computer and Information Science and Engineering (CISE) Directorate at the National Science Foundation is launching an initiative to require a broadening participation plan for all core research primary investigators. To support this pilot, they are reaching out to the broadening participation in the computer science community to curate a repository of examples, best practices, and partnership opportunities to support the increased researcher focus on increasing representation in the field. AnitaB.org is contributing several strategies to this repository, including opportunities through the BRAID initiative. [Check this flier](#) to learn more about how to broaden participation in computer science with AnitaB.org.

HBCU Caucus Partnership Challenge

In 2018, AnitaB.org made a commitment to Historically Black College and University (HBCU) Caucus’ “HBCU Partnership Challenge.” One of the strategies includes intentional recruitment of HBCUs (and other minority serving institution) as participants of the Affiliate program. Learn more about our [HBCU Partnership Challenge commitment here](#).

BRAID in the News

Throughout the course of 2018 and into early 2019, BRAID department chairs shared a number of articles that highlighted their participation in BRAID and the program's influence on their efforts to broaden participation. Some of those highlights were featured through a variety of campus media outlets, including:

- ASU | [Breaking barriers to diversity in computer science](#)
- UIC | [BRAID helps CS diversity efforts](#)
- UNT | [Computer Science and Engineering ranks 16th in nation for enrolling, graduating women](#)
- UVM | [Students Travel to Grace Hopper Celebration](#)
- UVM | [World's Largest Gathering of Women Technologists Inspires UVM Students to "Dream Big"](#)
- UWM | [14 UWM Students Attend World's Largest Computing Conference for Women](#)

Appendix A. Strategies for Fulfilling the Four BRAID Commitments

Table 3 displays a subset of the strategies each BRAID School implemented to fulfill the four BRAID commitments in 2018. Please note that the table reflects information provided in the 2018 Departmental Report and that reporting is not exhaustive of all activities. To view strategies used in 2017, access the [2017 BRAID Annual Report](#).

Table 3. Strategies implemented by BRAID Schools to Fulfill the Four BRAID Commitments

Modifying Introductory CS Courses	Lead K-12 Outreach Programs for Students and Teachers	Build Confidence and Community Among Underrepresented Students	Develop Joint Majors and Interdisciplinary Courses
Arizona State University			
<ul style="list-style-type: none"> Introduced active learning during the introductory course Undergraduate and graduate teaching assistants work with students during weekly lab sessions 	<ul style="list-style-type: none"> Offer middle school and high school summer camps in the areas of robotics, application development, and gaming Offer scholarships for a set of underrepresented students to attend 	<ul style="list-style-type: none"> Regularly offering new programs and mixers to engage underrepresented populations 	<ul style="list-style-type: none"> Do not offer interdisciplinary programs
Missouri University of Science & Technology			
<ul style="list-style-type: none"> Emphasize problem solving skills using a computer rather than the focus on language syntax 	<ul style="list-style-type: none"> Outreach to K-8 teachers through their GenCyber camp ACM-W chapter performs outreach and recruitment activities 	<ul style="list-style-type: none"> Undergraduate Research ACM-W chapter organizes activities for women and URM students 	<ul style="list-style-type: none"> Implemented a Bioinformatics major
New Jersey Institute of Technology			
<ul style="list-style-type: none"> Combined introductory CS course with a freshmen seminar Asked students to maintain journals about the hours that they are studying and report activities in the seminar 	<ul style="list-style-type: none"> Recruiting students to participate in an NJIT-developed program called Newark Kids Code, focused on introducing K-8 students and their teachers to computer science Attended NJ School Board Association Workshop with CS materials 	<ul style="list-style-type: none"> Provide ongoing support to three women in computing clubs on campus [ACM-W student chapter, graduate Women in Computing Society (WiCS), and undergraduate WiCs] Supported all women team at the ACM Intercollegiate Programming Competition 	<ul style="list-style-type: none"> Held exploratory conversations with internal departments and external institutions
University of Illinois at Chicago			
<ul style="list-style-type: none"> Using data to identify whether students taking the modified introductory CS course are advancing into additional courses Continue support of prior changes made to introductory CS course 	<ul style="list-style-type: none"> Provide CS education professional development to high school teachers. Host Girls Who Code camps on campus for K-12 students 	<ul style="list-style-type: none"> Continue supporting student attendance at conferences such as GHC and Tapia Continue support of student organizations, including Women in CS and Latinx Students in CS 	<ul style="list-style-type: none"> Nothing reported

Modifying Introductory CS Courses	Lead K-12 Outreach Programs for Students and Teachers	Build Confidence and Community Among Underrepresented Students	Develop Joint Majors and Interdisciplinary Courses
University of Maryland Baltimore County			
<ul style="list-style-type: none"> Continue support of previously modified introductory CS course and efforts to create separate sections for people without prior experience 	<ul style="list-style-type: none"> Host a Coding+Yoga camp targeted at middle school students Perform extensive outreach to high school women through the Center for Women and IT, hosting overnight events called Cyber101 and Bits and Bytes. This outreach has resulted in increased applications to the major or women who participate. 	<ul style="list-style-type: none"> Continue supporting student attendance at conferences such as GHC and Tapia 	<ul style="list-style-type: none"> Recently started offering sections of introductory CS to non-majors Won an NSF award that will support the development and implementation of X+Computing courses
University of Maryland College Park			
<ul style="list-style-type: none"> Develop a tutoring program that supports all students in the introductory CS course Currently utilizing student feedback to enhance the introductory CS course 	<ul style="list-style-type: none"> Expand reach of K012 summer camp and school outreach programs Host 1-day workshops in support of the NCWIT Aspirations program 	<ul style="list-style-type: none"> Continue supporting student attendance at conferences such as GHC, Tapia, AfroTech, and more Increase number of staff supporting students through the Maryland Center for Women in Computing Host Hackathons and create other opportunities for students by supporting student clubs, as well as Honors Cohorts and Study Abroad Opportunities in the department 	<ul style="list-style-type: none"> Developing a new immersive media design major
University of Nebraska Lincoln			
<ul style="list-style-type: none"> Reevaluating the current modification of the introductory CS courses with intent to revise over the next two years Have implemented mentoring and team-based learning strategies that have led to encouraging recruitment and retention rates among women and underrepresented minority students 	<ul style="list-style-type: none"> Support summer camp programs with the Girl Scouts and Nebraska College Preparatory Academy Host the NCWIT Aspirations in Computing award ceremony Collaborate with local school districts to provide professional development to high school teachers 	<ul style="list-style-type: none"> Continue supporting student attendance at GHC Host a faculty diversity committee that works on improving retention rates and implementing inclusive practices 	<ul style="list-style-type: none"> Sustaining existing interdisciplinary course and major efforts
University of North Texas			
<ul style="list-style-type: none"> Continued implementation of course modifications from 2017 Fund peer tutors who are women and underrepresented minorities 	<ul style="list-style-type: none"> Host summer camps for high school girls Send women and underrepresented minorities to local high schools to share information on the CS program 	<ul style="list-style-type: none"> Continue supporting student attendance at GHC, CRA-W, and Tapia. Continue support of student organizations such as ACM, Cybersecurity Club, Women in Computing, and IEEE Computer Society 	<ul style="list-style-type: none"> Currently implementing interdisciplinary courses Have started discussions with other departments about starting CS+X programs

Modifying Introductory CS Courses	Lead K-12 Outreach Programs for Students and Teachers	Build Confidence and Community Among Underrepresented Students	Develop Joint Majors and Interdisciplinary Courses
University of Rochester			
<ul style="list-style-type: none"> Offer CS tutoring services and peer advising Have not modified the introductory course but have instead modified the introductory pathway. Students with less exposure to CS start with the Intro to Programming course, while those with experience start with the Intro to CS course. 	<ul style="list-style-type: none"> Have high school girls visit campus and do computer science/coding workshops with them via a Girls Who Code chapter Collaborate with the local Girl Scouts Chapter to host coding workshops for K-8 students. 	<ul style="list-style-type: none"> Implemented a diversity committee with departmental faculty that focuses on inclusion and the elimination of implicit bias Support student participation in organizations such as NSBE, SHPE, and SWE Supported student attendance at conferences such as GHC, Lesbians Who Tech + Allies, NSBE, SHPE, SWE, and more. 	<ul style="list-style-type: none"> Recently added Digital Media Studies and Data Science programs
University of South Carolina			
<ul style="list-style-type: none"> Exploring implementation of a mentoring program Proposing a redesigned introductory CS course in 2019-20 	<ul style="list-style-type: none"> Pursuing stronger relationships with K-12 teachers and students through outreach programs that emphasize robotics, physical elements of computing, and coding Served on Advisory Board for CS, Math, and HBCU at Clafflin College. 	<ul style="list-style-type: none"> Offer summer bridge programs Support events hosted by student clubs, such as Women in Computing, Minorities in Computing, ACM, Cybersecurity Club, and Gamer's Club Support student attendance at conferences such as GHC, NSBE, and Tapia 	<ul style="list-style-type: none"> Planning a revised version of the introductory CS course for non-majors
University of Texas El Paso			
<ul style="list-style-type: none"> Revised introductory CS course curriculum Increased use of peer leaders and female undergraduate instructional assistants Provide dedicated teaching assistant training 	<ul style="list-style-type: none"> Collaborate with local middle school teachers to develop and implement interdisciplinary CS curriculum at the middle school level 	<ul style="list-style-type: none"> Computing Alliance of Hispanic-Serving Institutions (CAHSI) Scholars and CAHSI Advocates Students revitalized the ACM-W chapter after attending the GHC conference Continue supporting student attendance at GHC and other conferences Developing a new initiative that sponsors undergraduate females to identify ways to connect incoming female students to the CS major 	<ul style="list-style-type: none"> Piloting a sequence of courses to develop computing competence in non-majors Continue implementation of bioinformatics and computational science programs

Modifying Introductory CS Courses	Lead K-12 Outreach Programs for Students and Teachers	Build Confidence and Community Among Underrepresented Students	Develop Joint Majors and Interdisciplinary Courses
University of Vermont			
<ul style="list-style-type: none"> Maintained separate introductory CS course experiences for students with experiences and those with no prior experience. Offering a one-credit seminar to first year students in their first semester, exposing them to work across the CS department 	<ul style="list-style-type: none"> Maintain outreach efforts through Girls Who Code Send students to local high schools to talk about their CS program 	<ul style="list-style-type: none"> CS Crew and Women in Computer Science (Undergraduate CS Club) Continued student participation in GHC Enhanced efforts to hire more diverse faculty. Have added 1 lecturer and 1 TT. Create opportunities for students to share CS projects and research through an annual CS fair. 	<ul style="list-style-type: none"> Supporting existing work with Data Science undergraduate degree and Complex Systems graduate degree
University of Wisconsin Milwaukee			
<ul style="list-style-type: none"> No changes made in intro course 	<ul style="list-style-type: none"> Maintain outreach efforts through Girls Who Code Provide CS education professional development to K-12 teachers 	<ul style="list-style-type: none"> Build community among undergraduates that lead K-12 outreach efforts via Girls Who Code Continued student participation in GHC and BITCon 	<ul style="list-style-type: none"> Implementing a Bachelor of Arts program in CS that requires a second major or two additional minors
Villanova University			
<ul style="list-style-type: none"> Maintaining previously implemented changes to the introductory course Implement faculty-based interventions aimed at creating more inclusive environments for students through the Villanova VISIBLE project 	<ul style="list-style-type: none"> Conduct workshops for high school women wanting to apply to Aspirations in Computing Continue K-8 outreach via the Julia de Burgos Program 	<ul style="list-style-type: none"> Focused computing presentations outside of scheduled classes Increase participation at the VU Women in Tech conference Sending students to conferences aimed at underrepresented groups in computing (i.e., GHC, NSBE, and Tapia) 	<ul style="list-style-type: none"> Support existing interdisciplinary CS efforts