

University of Chicago Departmental Broadening Participation in Computing (BPC) Plan

Context: Chicago is a minority majority city and home to the third largest public-school system in the nation (>360k students, 83% Black or Latinx, and 77% lower socioeconomic status). This context provides a tremendous opportunity for expanding engagement with local communities and increasing diversity in computer science and beyond. Given the state of diversity in CS, small absolute changes will make big impacts; e.g., only 202 black students took an AP CS exam last year in all of Illinois. Currently at UChicago there are 11 black undergraduate CS majors, and 2 black PhD students (one of who will graduate in June 2020).

BPC Mission: *The University of Chicago Computer Science BPC mission is to foster an inclusive environment where students from all backgrounds can achieve their highest potential.*

We will realize this mission through three data- and evidence-based focus areas:

- I. Reaching out to underrepresented (UR) high schoolers to increase access and interest
- II. Creating research and mentoring experiences for UR undergraduate students
- III. Improving recruitment & retention of UR graduate students with faculty-focused efforts

Throughout this plan we leverage existing, strategic collaborations for each focus area:

- I. Work with existing college readiness programs (see section I) who have already identified students, registered them with UChicago and involved their parents;
- II. Expand existing collaborations with Fisk-Vanderbilt and the Leadership alliance, taking advantage of support networks and existing expertise in outreach;
- III. Leverage student-based recruitment to create peer-support networks, which research shows is highly impactful in student retention.

For each focus area, our goal is not to start new programs from the ground up, but to expand existing UChicago programs and strategic collaborations to include CS specific curriculum and the appropriate training for CS faculty to be active participants in each effort. For each area, we describe the goal, specific activities, and metrics for measuring success.

I. Broadening the Pipeline via Sustained Engagement (High School)

Goal: Increase CS engagement of over 100 UR high school students via over 40 hours of enrichment programming that actively involves 50 department members every year.

Activities: The CS department will leverage two established, on-campus, college readiness programs for local high school students: the [Collegiate Scholars Program](#) (CSP) and the [Office of Special Programs](#) (OSP). These programs reach over 250 underserved students, over three-quarters of whom are low income, first generation, and Black or Latinx; two-thirds of whom are female. Students in these holistic multi-year programs regularly come to campus throughout high school. The programs are highly successful (e.g. >95% of participants enroll at a university) and will provide long term student tracking to gauge impact. In collaboration with OSP and CSP we will develop sustained, multi-year, engagement opportunities including:

- College-readiness seminars (e.g. creating a strong digital identity)
- CS career awareness workshops (e.g. via annual OSP [career conference](#))
- Special topical, age-appropriate courses (e.g. introduction to machine learning)
- Research internships (5-10/yr see section II.).

Metrics:

- Number of department members, students, and parents participating, & contact hours
- Attitudinal indicators: self-efficacy, towards CS & CS careers; and of department members towards the high school students
- Longitudinal student tracking: CS classes & AP exams taken, college majors & degrees

II. Introduction to the Culture of Research (HS/Undergrads +)

Goal: Increase the long-term persistence of UR groups in computing via immersive internships.

Activities:

- Academic year research internships: We will lower barriers for undergraduates via training sessions (e.g. introduction to the research process) and by broadly advertising part-time research opportunities (e.g. to lessen the need to knock on a faculty door).
- Summer internships: We will expand, enrich, and leverage our existing cohort-based [summer data science](#) research program. Recruitment will be broadened through collaborations with the above-mentioned college-readiness programs, as well as, the [Leadership Alliance](#), [DREU](#), and the innovative [Fisk-Vanderbilt Master's-to-PhD Bridge Program](#). While, a new, week-long “on-ramp” session focused on core research skills and community building will provide additional scaffolding.

Metrics:

- Number of UR students placed in internships & mentors that underwent training
- Attitudinal indicators: self-efficacy, satisfaction with the experience and mentoring, plans
- Differential numbers on CS persistence and graduate school matriculation

III. Outreach, Recruitment, and Retention (Graduate)

Goal: Increase the number of graduate students from UR groups and ensure their success.

Activities:

- Faculty visits to minority-serving institutions, midwestern and liberal arts colleges.
- CS student visits at those institutions, and at diversity-focused conferences, leveraging near-peer recruiting through the [Graduate Recruitment Initiative Team \(G.R.I.T.\)](#), a UChicago student group focused on diversifying STEM.
- Support these near-peer networks from recruitment through graduation
- Expanded collaboration with [Discover UChicago](#), which provides individuals from traditionally underrepresented populations an expenses-paid opportunity to explore graduate education at UChicago. We will recruit students to participate in the annual weekend visit and host events in the department for visiting students.
- Faculty mentorship training: We will provide training to prepare faculty to work with students from diverse backgrounds.
- Coordination with the PSD (dean-level) equity, diversity, and inclusion office to create CS-specific retention plans

Metrics:

- Increase in UR applications & number of application fee waivers handed out and applied
- Number of CS interested students who attend Discover UChicago
- Changes in the student population using departmental numbers and CRA Data Buddies
- Number of faculty who complete mentorship training
- Division-wide climate surveys to measure sense of inclusivity and belonging

Summary:

Research shows that sustained engagement plus a support network is the real way to create change. The proposed high school and research internships follow this model and it is implicit in the graduate student recruiting and retention. The proposed mentor training will reinforce these principles and make the long term relationships more powerful. By including this plan in their proposals faculty are agreeing to participate in the outreach efforts and training.

The BPC plan will be iteratively improved via: evaluation, community engagement, stakeholder input, and BPC leadership, which includes: the Chair, senior faculty, the BPC Director, and the Equity, Diversity and Inclusion Director for the Physical Sciences Division.