

SMASH 2018

Impact

Report

SMASH =



Diversify STEM to change the world.

Science, Technology, Engineering, and Math (STEM) occupations are in high demand and continue to be among the fastest growing within the 21st century workforce across the US economy (BLS, 2017). And yet, despite comprising 27% of the US Population, only 11% of science and engineering jobs are held by Black, Latinx, and Native American workers (NSF, 2018).

The needs of this quickly evolving 21st century global workforce creates both an economic and social imperative to ensure students of color are equipped to engage in the STEM sector at parity with their peers.

Eliminating the barriers facing Black, Latinx, and Native American students who have the desire to enter STEM and computing professions has the potential to meet the projected demand for STEM workers in our future workforce, while broadening the economic opportunities of underrepresented communities of color. Moreover, by investing in youth of color to enter and persist in STEM and computing occupations, they develop the skills to engage in the modern workforce while being empowered to leverage their lived experiences to solve the most pressing problems facing society (Bobb, 2016).

SMASH has shown me that people who look like me deserve to be present in STEM spaces. We are talented and creative and we can offer different perspectives.

*SMASH Berkeley Alumna,
Purdue University*

What is SMASH?

Youth have the potential to create societal change by organizing and addressing issues that impact their lives and communities (Garcia, Fernández, & Jackson, 2019). SMASH empowers our scholars to be agents of change through a three-year project-based learning program to critically analyze problems facing their communities and create STEM-based solutions utilizing a design thinking framework.

Learn more about SMASH [here](#).

Logic Model

The SMASH logic model outlines our approaches and short-term and long-term outcomes the program aims to achieve.



ACTIVITIES

- Exposure to rigorous, culturally-relevant STEM education
- Strengthen cohort-based peer community
- Create networks of STEM professionals
- Build health and wellness strategies
- Guide college application process



SHORT-TERM OUTCOMES

- STEM-focused college path preparation
- STEM-focused college and career aspirations
- Peer and adult networks
- Sense of positive STEM identity

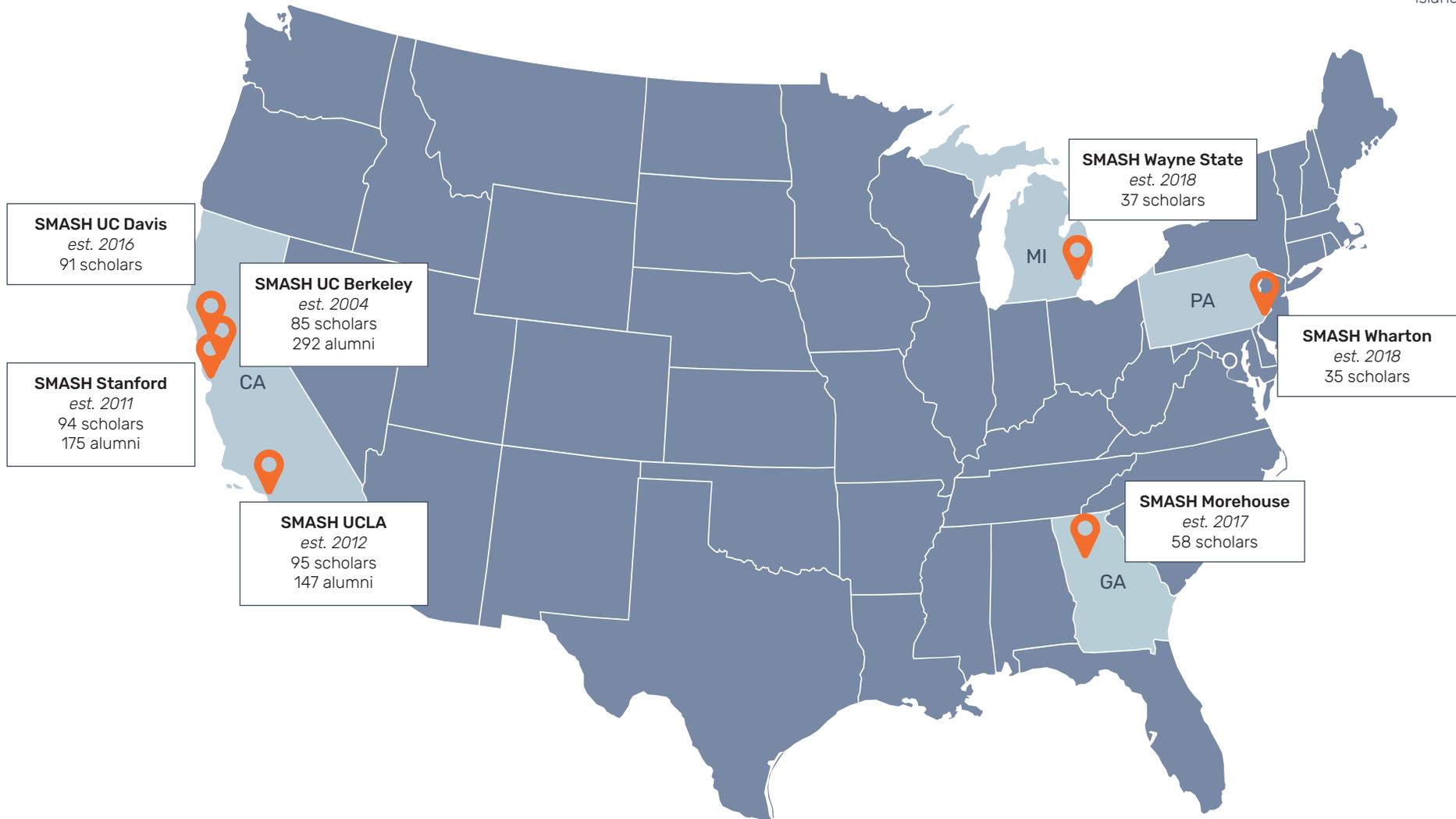
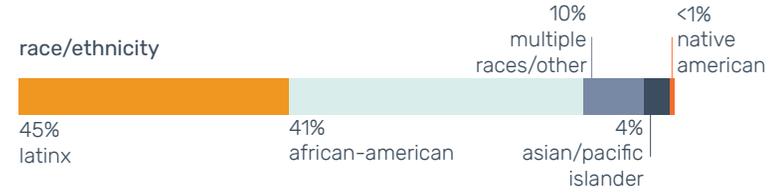
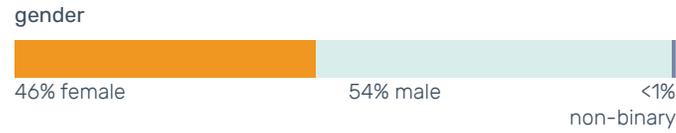


LONG-TERM OUTCOMES

- Entrance to and persistence in STEM major & career
- Sense of belonging and connection to STEM community
- Sense of positive STEM identity



495 current scholars



Note: Sites open less than 3 years have no alumni.

SMASH measures short-term, medium-term, and long-term student outcomes. Short-term impact for each summer academy is measured by:

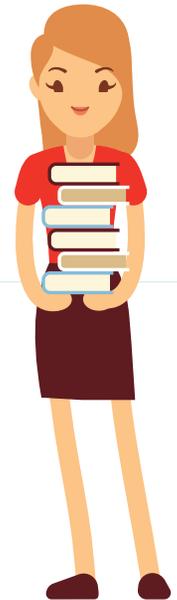
1

STEM-FOCUSED COLLEGE PREP PATH

Are scholars learning STEM content knowledge that is necessary to succeed in college?

99%

of scholars demonstrated significant growth¹ in at least one core subject assessment.²



2

STEM-FOCUSED COLLEGE + CAREER ASPIRATIONS

Does scholar engagement in STEM courses increase their interest in pursuing STEM in college and the workplace?

82%

of scholars plan to major in a STEM field in college.

3

PEER AND ADULT NETWORKS

Are scholars developing supportive peer and adult networks to guide and support their STEM trajectory?

77%

of scholars attending SMASH for the first time met a STEM professional who could help them navigate their professional path in STEM.



4

SENSE OF POSITIVE IDENTITY

Do scholars feel like they belong in and can succeed in STEM?

82%

of scholars when thinking about a career in STEM, see themselves fitting in well.

¹ See Report Methodology for significant growth calculation.

² Core subjects include science, math, and computer science.

SCHOLAR HIGHLIGHT: COMPUTER SCIENCE GROWTH

Since 2013, the SMASH program has integrated computer science as a focal content area in order to increase scholars' computing skills and knowledge. Over the course of the program, scholars participate in a 3-year sequenced project-based learning curriculum to increase their interest, engagement, and knowledge of computing content.

This summer, SMASH scholars demonstrated significant growth in computer science content knowledge.



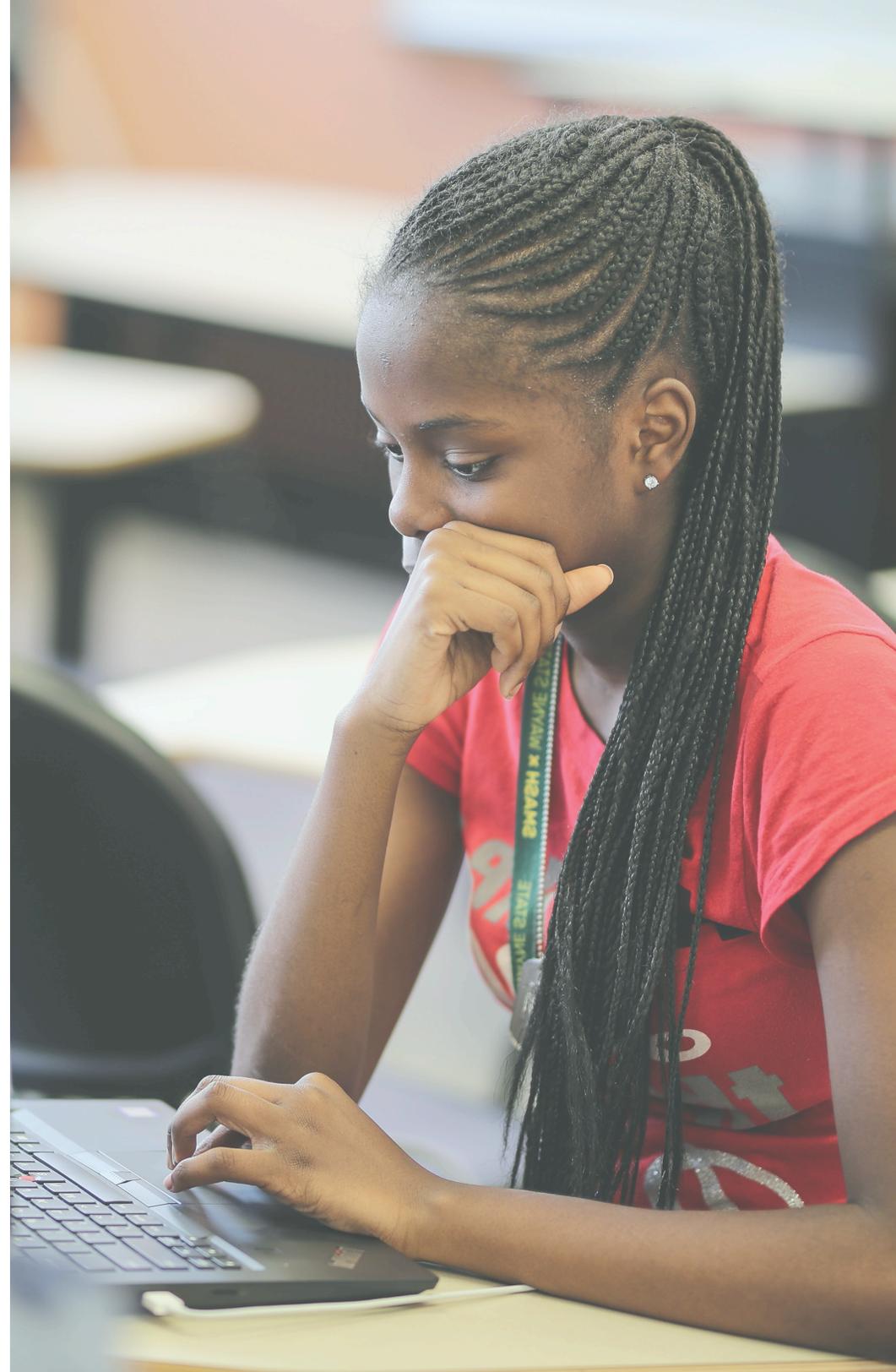
83%

of male scholars demonstrated significant growth³ on their Computer Science assessments.



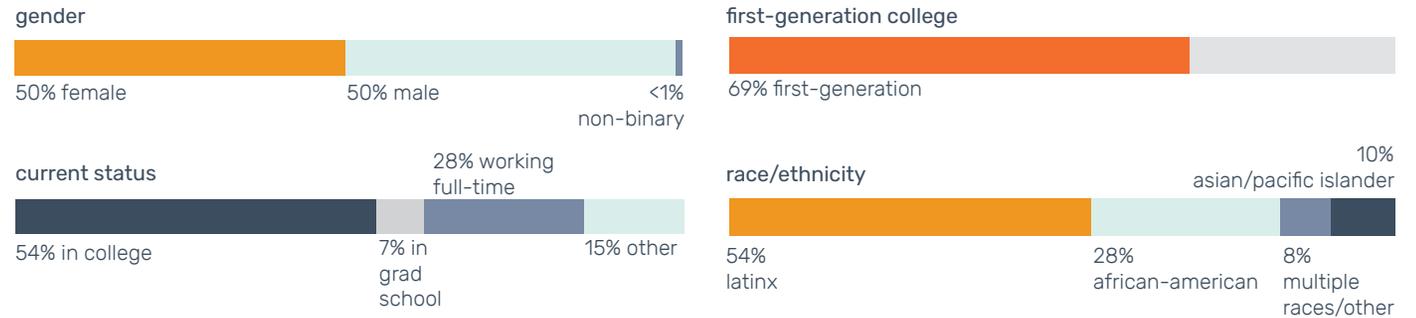
85%

of female scholars demonstrated significant growth on their Computer Science assessments.



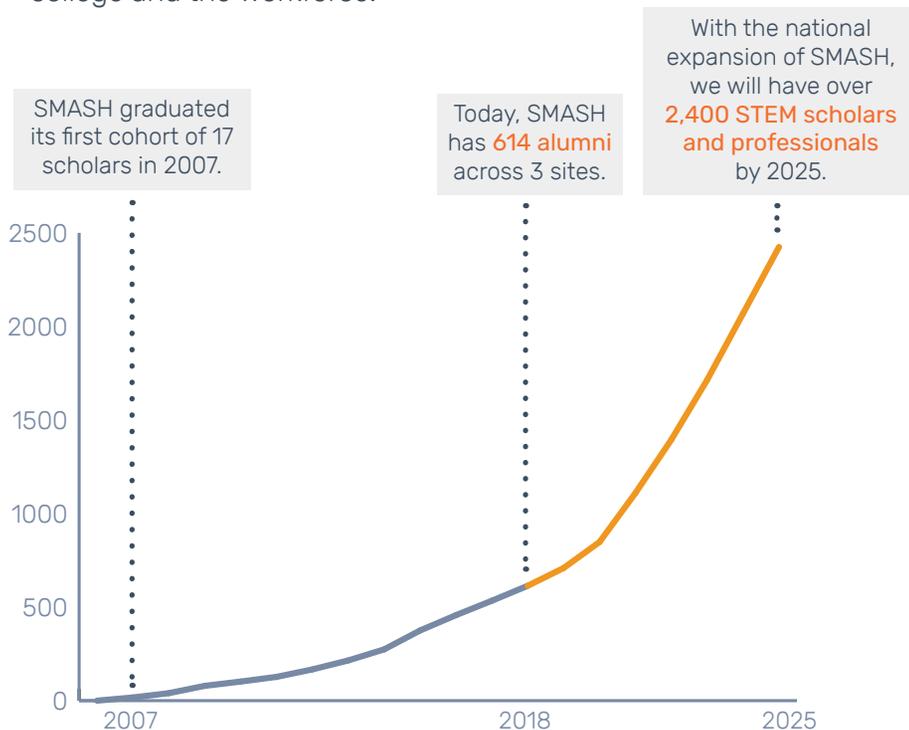
³ See Report Methodology for significant growth calculation.

614 active alumni



SMASH ALUMNI

Our alumni programming provides coaching, networking, internships, and other supports that help SMASH alumni transition into college and the workforce.



⁴ This metric includes both the Top 50 Universities and the Top 50 Liberal Arts Colleges listed in US News and World Report 2019.

Alumni Journey

100% graduate high school, in comparison to the national average of **83%**.

3.79 average high school graduating GPA

86% attend a 4-year college.

55% attend a US News and World Report Top 50 College/University.⁴

- 6** most frequently attended colleges
1. UC Berkeley (49)
 2. USC (25)
 3. UC Santa Cruz (24)
 4. UC Davis (21)
 5. UCLA (21)
 6. UC San Diego (21)

ALUMNI HIGHLIGHT: SMASH RISING

Decades of social science research shows that students – especially underrepresented students of color – retain knowledge better when they can connect to what they learn and apply it to the world around them.

That's why we piloted a project-based internship program for our SMASH alumni who are rising first and second year college students. They gain early workplace exposure with industry leaders, and the industry taps the talent of our amazing young people. Alumni worked on projects including cryptocurrency, app development, and cancer research. Our 2018 partners included:



85% increased their sense of belonging in the STEM field.

100% increased their STEM networks (peers and professionals).

100% improved a workforce readiness skill (collaboration, teamwork, or public speaking).

“SMASH Rising made me feel like I accomplished something and had an impact on the company! I enjoyed working on something that actually had an impact.

- SMASH Berkeley Alumnus,
Cal Poly San Luis Obispo

⁵ National average is 45%; ⁶ National average is 13%; ⁷ National average is 34%;

⁸ National average is 6%.

83% intend to major in STEM, which is **almost twice** the national average.⁵

30% of STEM majors are in the computer sciences, which is more than **twice** the national average.⁶

3 most common STEM majors

1. Computer Sciences (90)
2. Biological Sciences (57)
3. Engineering (51)

86% complete their Bachelor's degree within five years, in comparison to the national average of **60%**.

72% complete a Bachelor's degree in STEM, which is more than **twice** the national average.⁷

65% pursuing an advanced degree are in STEM, in comparison to the national average of **36%**.

46% working full-time are in STEM occupations, which is almost **8x** the national average.⁸

REPORT METHODOLOGY

The SMASH evaluation process was created to examine the program activities and growth in scholar outcomes (see page 3 for SMASH program logic model). SMASH evaluation data have been collected each summer for nine years, along with annual alumni surveys to examine longitudinal outcomes of SMASH scholars. The data and findings are subsequently used to inform program planning and development.

Data Collection

The SMASH impact evaluation included three forms of data collection: (1) Academic assessments examining growth in mathematics, science, and computer science knowledge, (2) SMASH scholar impact survey examining students' attitudes and aspirations, (3) SMASH alumni survey tracking post-secondary data of SMASH alumni. Scholar data were collected at both pre- and post-SMASH program and alumni data were collected annually.

Analytical Procedures

For SMASH impact data, statistical significance levels for scholars were calculated using effect size benchmarking (a way of quantifying the size of a difference between two means after identifying that there is a statistically significant difference between the scores pre-program and post-program). Descriptive statistics were used for the alumni data.

Definitions

STEM fields were defined using a combination of the Higher Education Research Institute STEM Disciplines list and the STEM Designated Degree Program List from the U.S. Immigrations and Customs Enforcement.

For the classification of computer sciences, majors included those using computers to manage and process information (e.g. Computer and Information Sciences, Computer Engineering, Data Analytics).

For additional detailed information of survey instruments, analytical procedures, and definitions please contact research@kaporcenter.org.

