

# Learning-at-the-Bench After-School Program (LAB-ASP): Impacts of Research Experiences for Students from Low-Resource Backgrounds

Devon Collins, Disan Davis, PhD, Jeanne Garbarino, PhD

**Science Outreach Program (RockEdu) Mission:** To provide inclusive, authentic, and supportive biomedical learning and research opportunities to *all members of the K-12 community* in a way that is dynamic and engaging, while keeping in mind cultural and social contexts.

## EQUITABLE ACCESS

ensuring all groups are provided with equal opportunities for STEM enrichment & employment

## INCLUSION

a process that encourages collaboration, flexibility, and fairness, and allows all students to participate to their fullest potential

## DIVERSITY

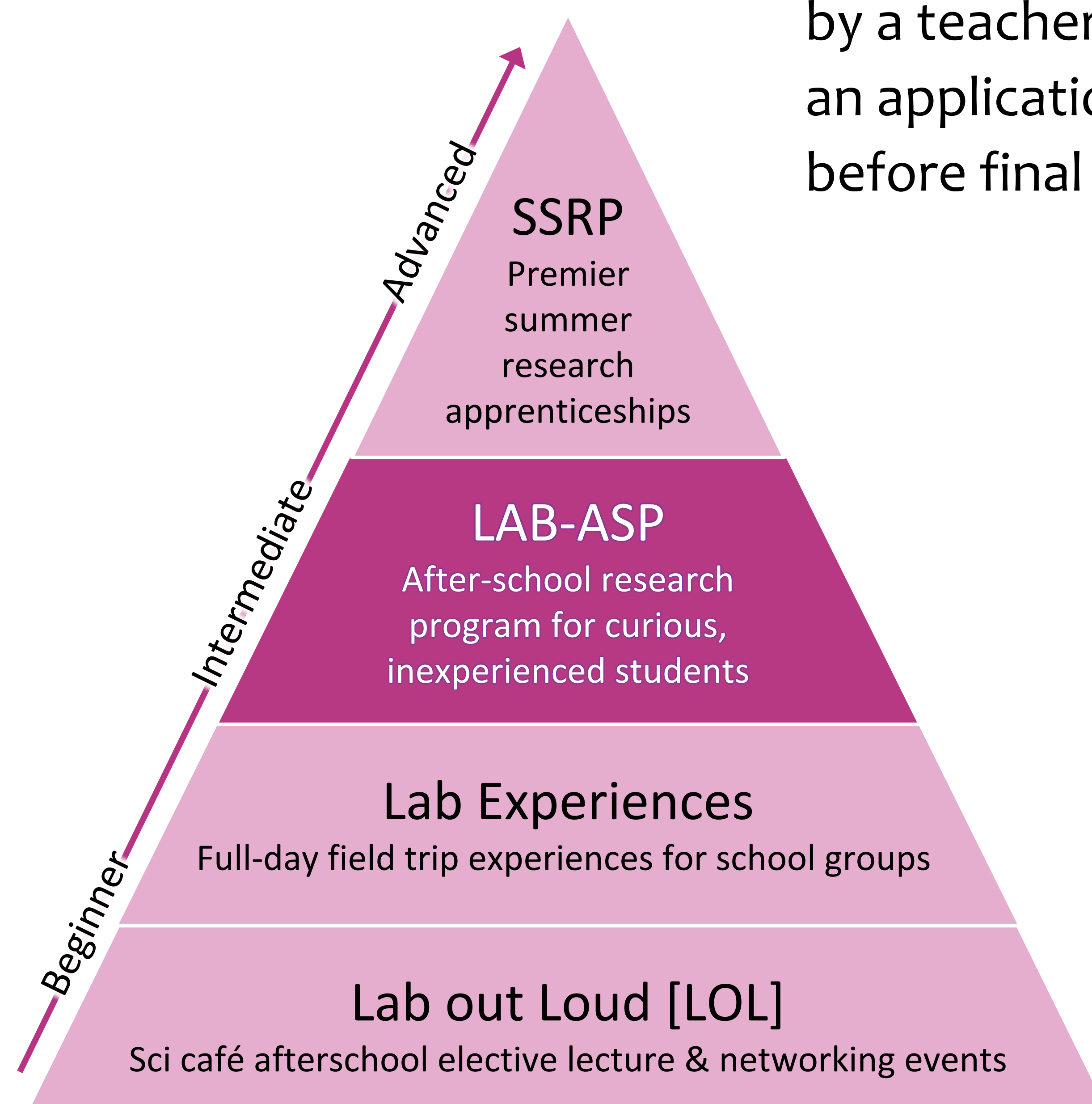
an inclusive cultivation of scientific talent by promoting scientific excellence across the entire social identity spectrum

RockEdu hosts a suite of programs structured to provide varied levels of engagement depending on student interest and experience.

LAB-ASP is a program specifically targeted to students who demonstrate an active interest in the scientific enterprise but lack prior research experience and the ability to obtain it within their current school environment.

**Acceptance process:** Students are nominated by a teacher or community leader, then submit an application, and a subset are interviewed before final acceptances are offered.

**The Program:** Students attend bi-weekly for 2-hour sessions of combined background instruction and laboratory experiences for 16 weeks. Following this, all students participate in the Summer Science Research Program (SSRP) for 7 weeks of full-time science research with a scientist mentor.

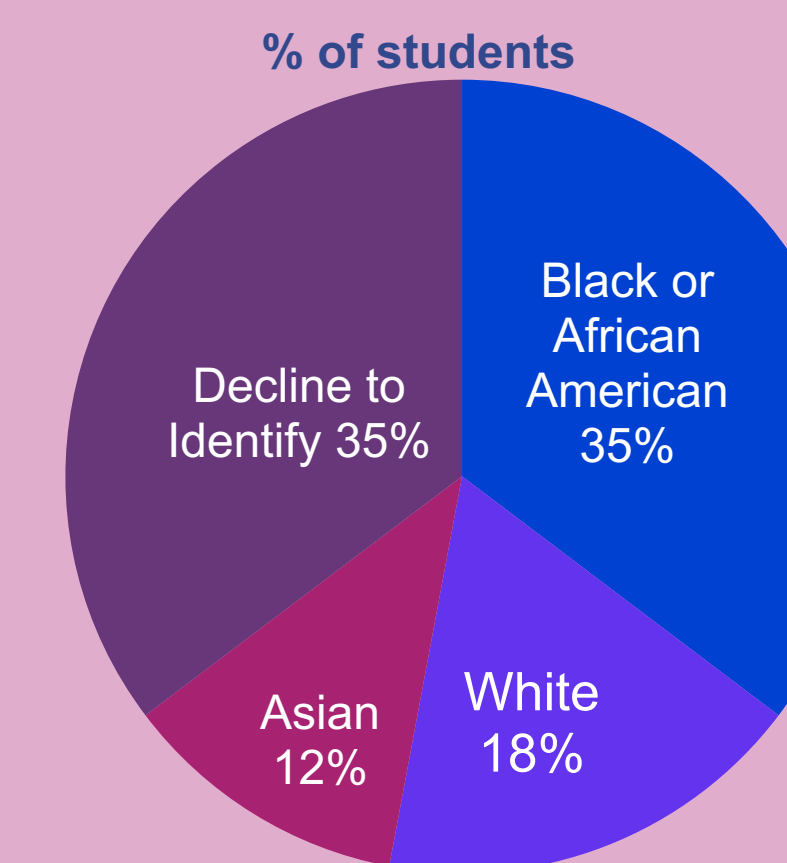
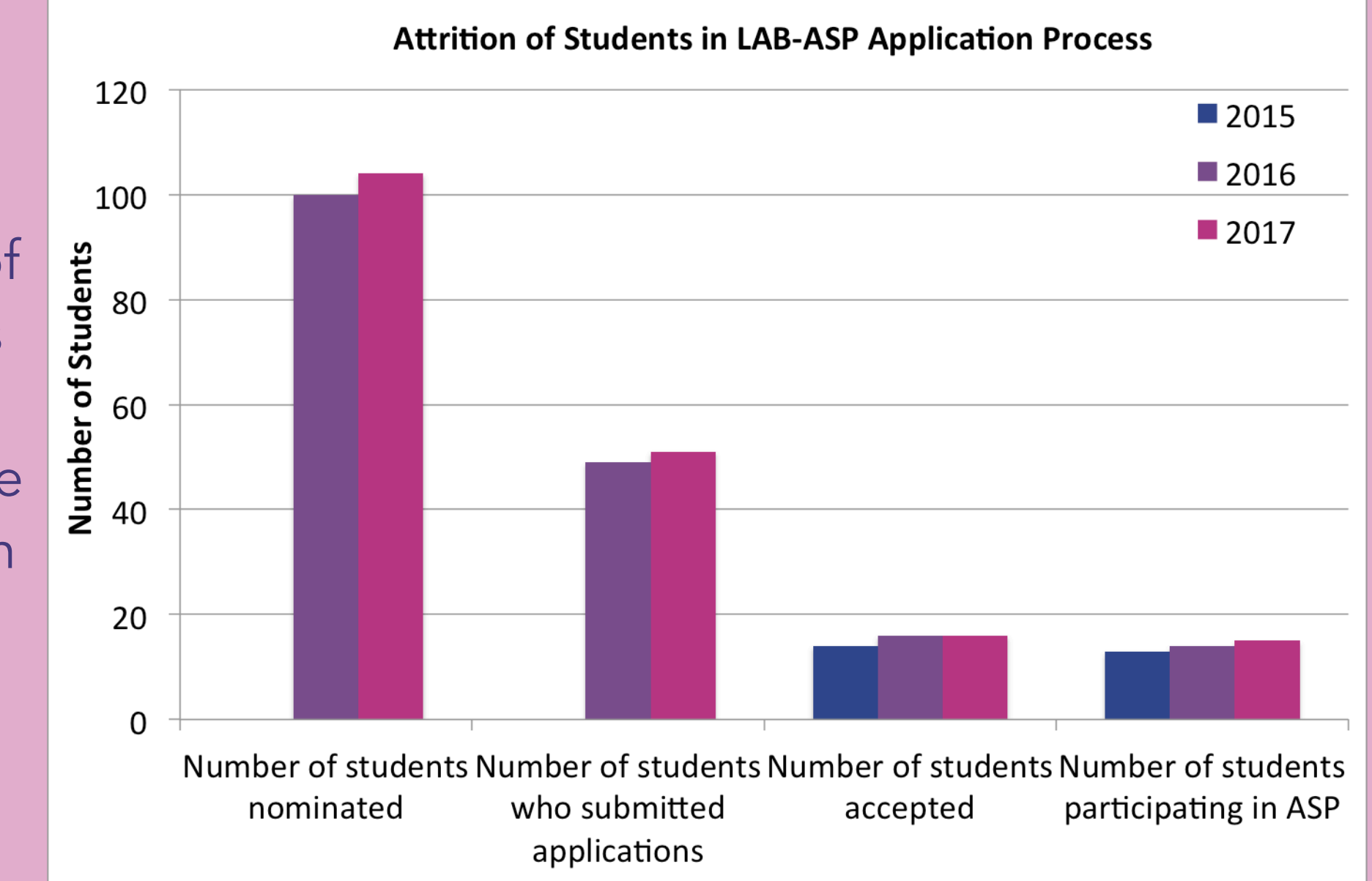


## Goals & Metrics:



### Are we reaching our target audience?

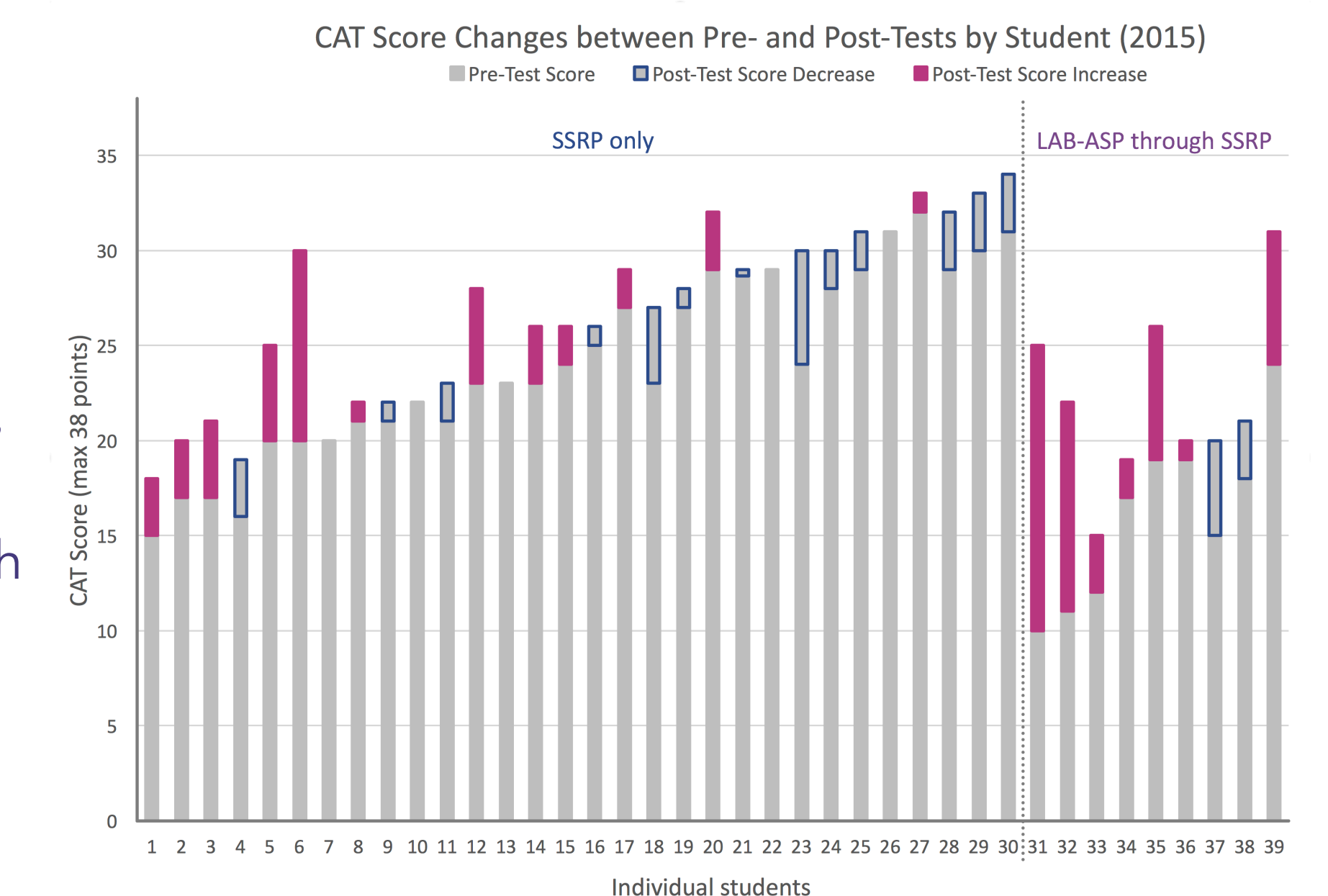
**Figure 1: LAB-ASP Applicant Attrition (2015-2017)** Students must be nominated in order to apply for the LAB-ASP Program. Unfortunately, only about 50% of nominees end up completing applications for the program. The program is still selective at this point, but it is unclear if we are missing some of our target audience in this process.



**Figure 2: LAB-ASP (2015 & 2016) Demographics** RockEdu makes a specific effort to recruit from schools that serve underrepresented and low-income high school students. Participants show significant racial diversity, as shown above, as well as ethnic, gender, and socioeconomic diversity (50% attend schools that qualify for Title-I funding).

### Is this program improving scientific literacy skills?

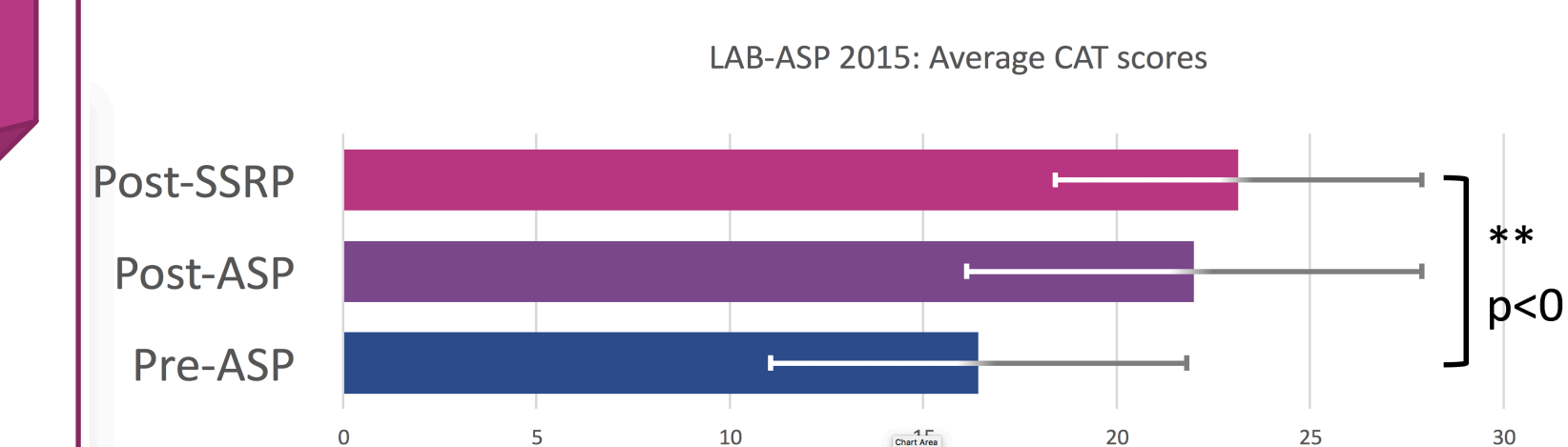
**Figure 3: SSRP and ASP CAT scores by student (2015)** The Critical Thinking Assessment Test (CAT) was used as a pre-post comparison for all consenting student participants. Score differences are shown in pink—while many students show improvements, some do not, the SSRP students (left) generally show much higher scores on this critical thinking assessment than do students entering though the ASP Program (right). While individual students are affected very differently, there do seem to be many ASP students who show substantial improvements upon exposure to science research through this program.



**Figure 4: ASP CAT scores from beginning to end of the program (2015)** The Critical Thinking Assessment Test (CAT) was administered for each consenting ASP student prior to starting the program, between the after school (ASP) and summer (SSRP) programs, and upon completion of the summer. Statistically significant improvements in CAT scores were observed over this progression.

Experiencing the discrimination I have because of my gender, I am beyond grateful for having [Jeanne] and Lizzie, and all the other wonderful women that were a part of outreach, as people to look up to. You all give me this motivation and make me realize that I could possibly do this and for that I will be beyond grateful.

— LAB-ASP & SSRP Participant, 2016



Through science outreach we aim to instill a passion for learning STEM through equitable opportunities that promote diversity and inclusion for ALL students.



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