



Improving Sun Protection Through Education and Access-Based Interventions

Anna Tomz¹, Dr. Lisa Chamberlain², Dr. Kristin Nord², and Dr. Peter Barnes²
¹Palo Alto High School, ²Stanford University



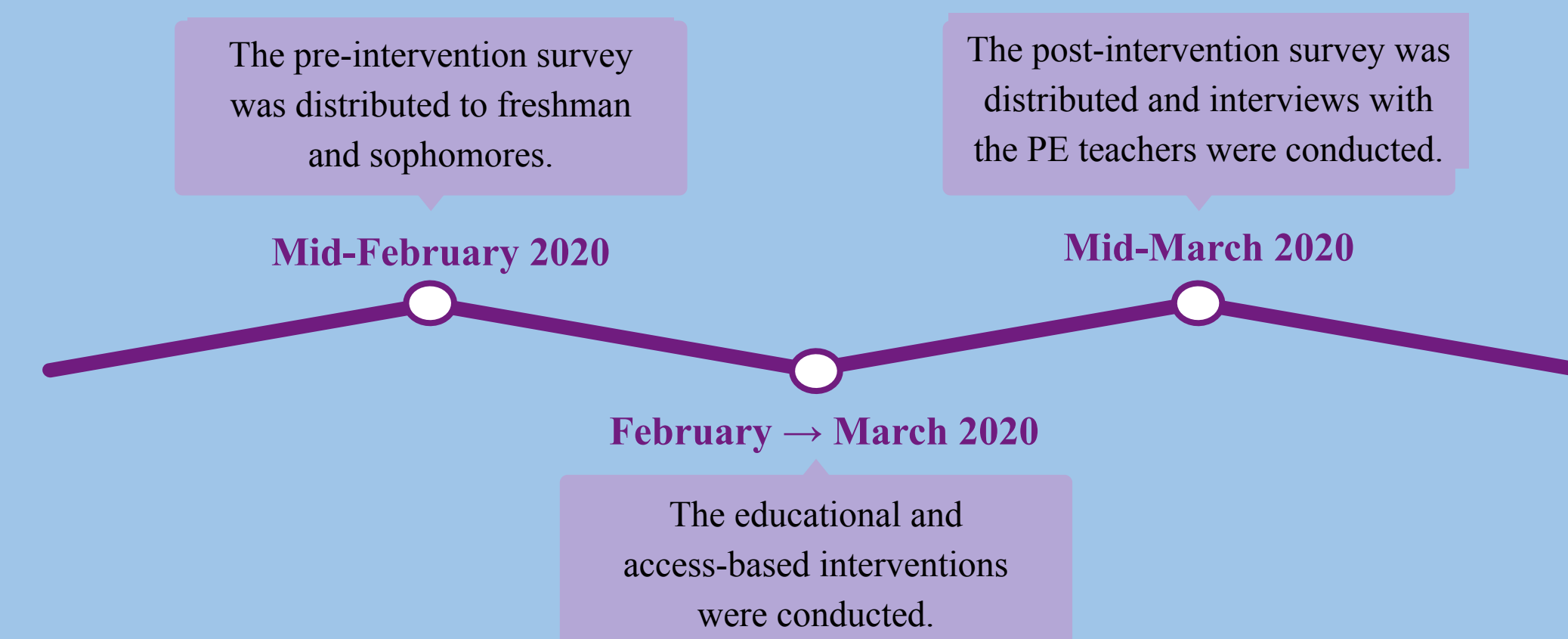
INTRODUCTION

Although skin cancer has simple preventative measures, it is still an extremely deadly and common disease. Certain groups, such as low-income or dark-skinned groups, are particularly susceptible to the development of skin cancer due to lack of access to sun protection or lack of education about sun protection. An educational intervention has been found to increase the likelihood of future sun protection. The hypothesis is that pairing educational and access-based interventions is an even more effective way to improve sun protection. The study was conducted at Palo Alto High School, and the impact of the intervention was measured through pre and post-surveys.

RESEARCH METHODOLOGIES

In a study the researcher conducted last year, it was found that an educational intervention was an effective way to decrease belief of common misconceptions and improve the likelihood that students will protect their skin more in the future. This year, the researcher continued and expanded the project. One-gallon sunscreen dispensers were placed in each locker room in the gym. Original and informative posters were also put up in the locker rooms and along the hallway of the gym.

An online pre-survey was conducted in February. All of the freshmen and sophomores received free access to sunscreen, but only half of the students were given an educational presentation. During mid-March, a second survey was conducted to determine the impact of the interventions. Interviews with the PE teachers were also conducted to gain insight as to what went well or what could have been improved.



CONCLUSIONS AND ANALYSIS

The project still yielded some interesting and promising findings. Around one third of students responded in the initial survey that they would be more likely to use sun protection more often if they were given free access to sunscreen at school, and it was astonishing that only around one fourth of students intend to use sunscreen at all.

The lack of statistical significance could be because of a low response rate on the second survey or because the interventions were conducted during an unpredictable and stressful time due to the COVID-19 pandemic. The researcher also failed to include a question in the second survey that differentiated which students were given the dual educational and access intervention versus just access.

One main takeaway from the interviews with the Palo Alto High School PE teachers was that the interventions were conducted properly. They also said they want to continue sun protection education and access at Palo Alto High School and hopefully across the Palo Alto Unified School District (PAUSD) next year because they see clear value in the effort, even though the study failed to show significant results given the problems previously stated. Helpful suggestions on how to improve sun protection education and access next year include repeating sun protection education over time, beginning education at a younger age, including more attention-grabbing images in the presentation, and implementing sun protection education in more than one class. Better placement needs to be found for the sunscreen dispensers, since one dispenser was in the girl's locker room and the other was in the men's pe office, at the request of the PE teachers.



One of the posters that was put up at Palo Alto High School.

DATA AND FINDINGS

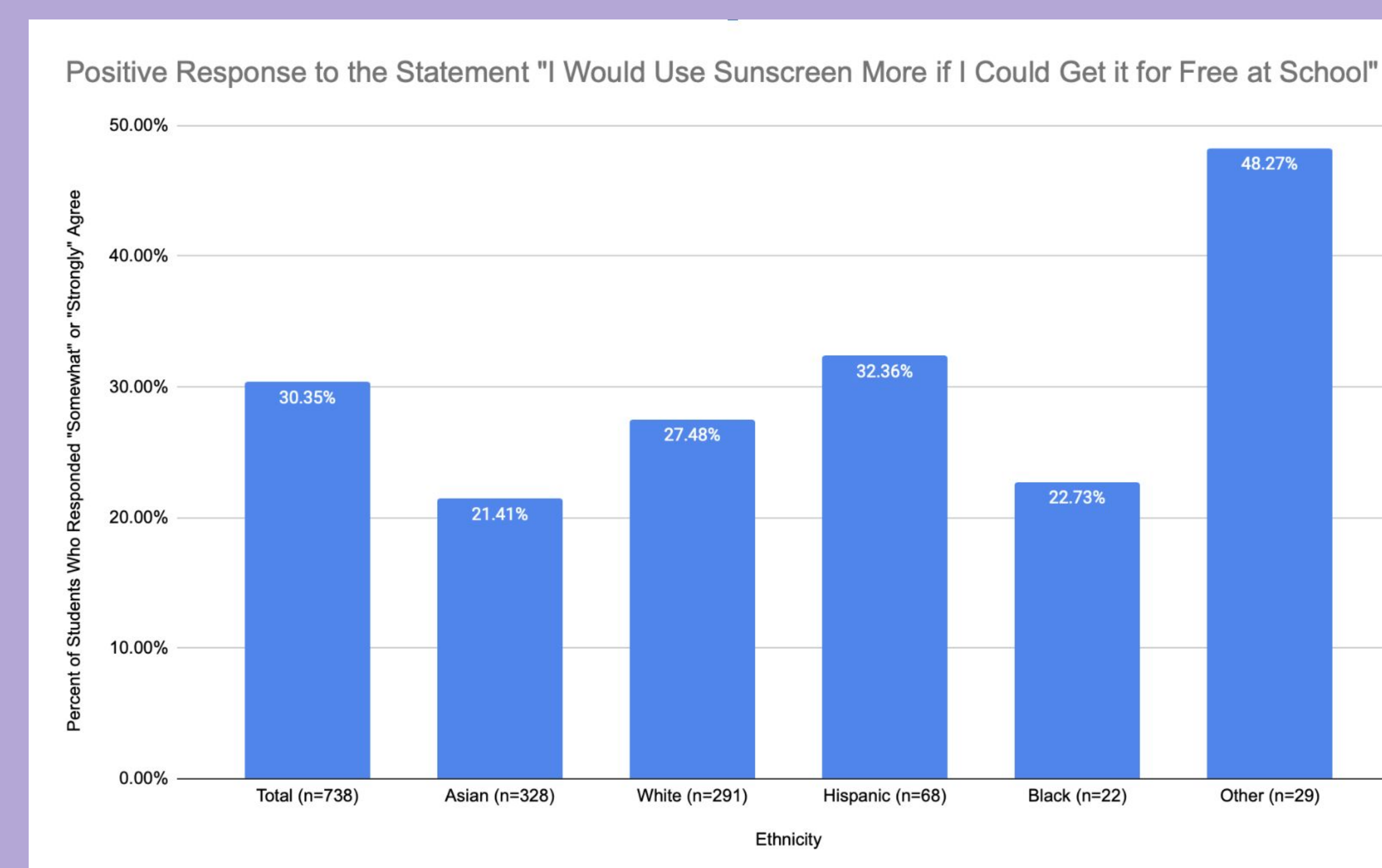


Figure 1. Response to the statement "I would use sunscreen more if I could get it for free at school."

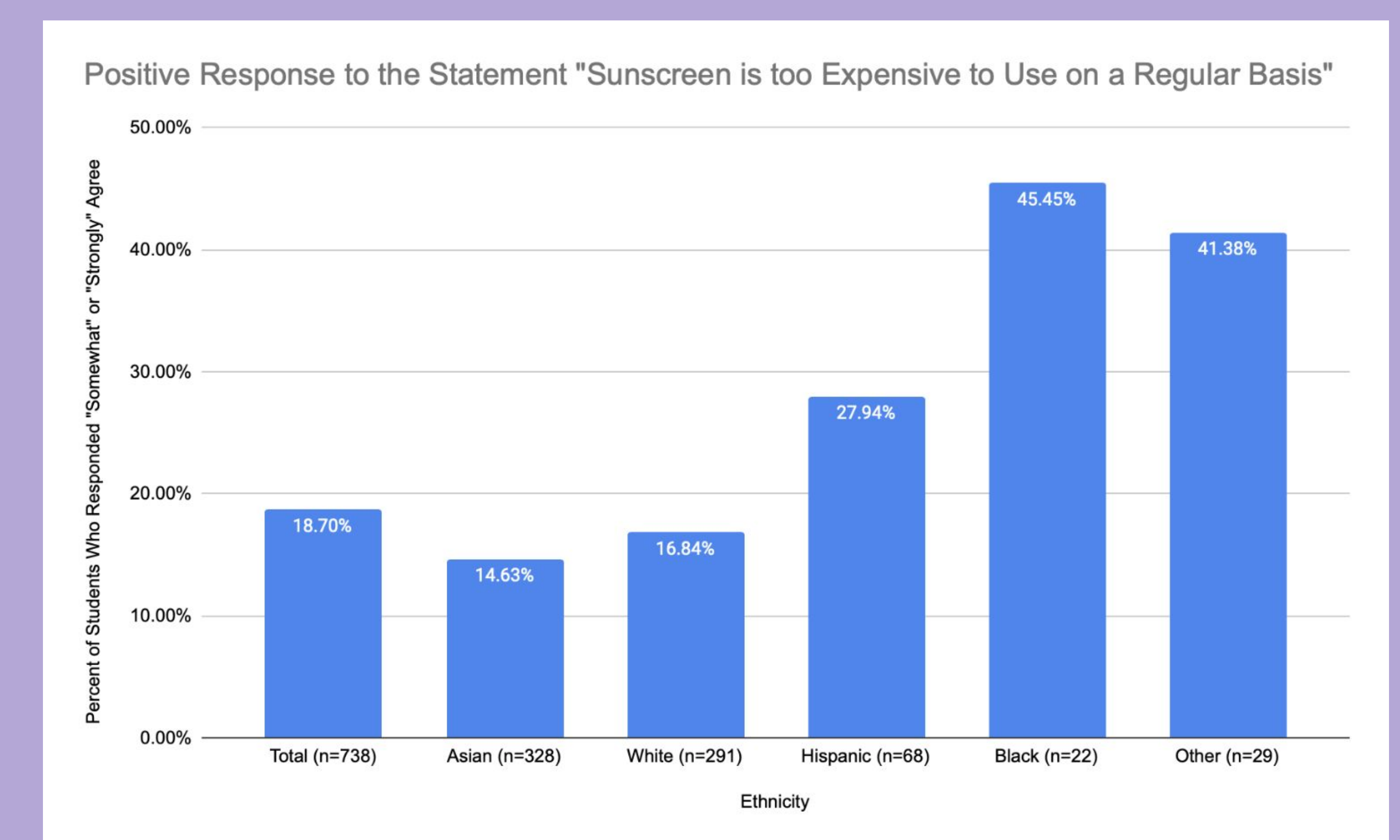


Figure 2. Response to the statement "Sunscreen is too expensive to use on a regular basis."

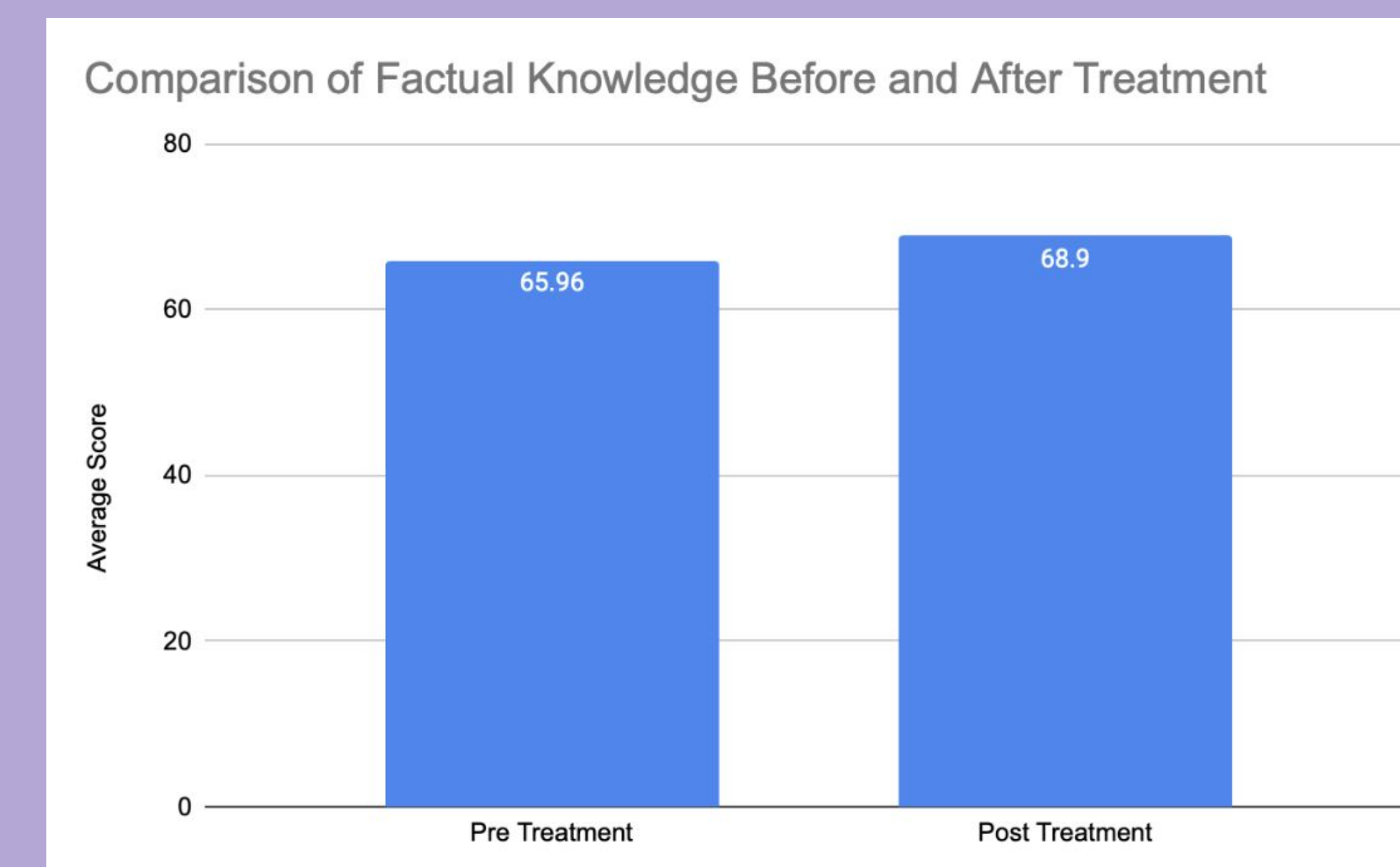


Figure 3. Comparison of factual knowledge before and after the intervention.

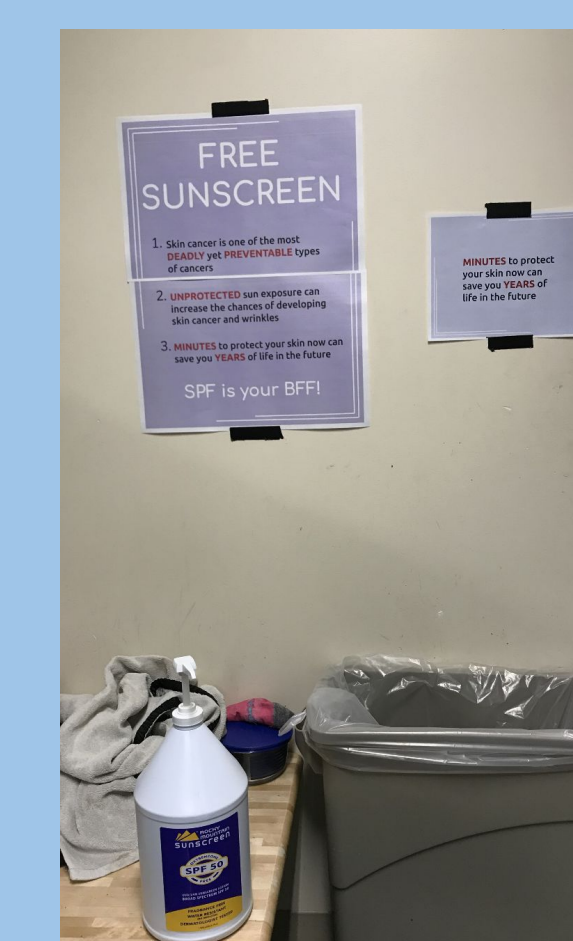
Some of the most interesting and promising findings can be seen in figures 1 and 2. The results comparing all of the survey questions from the pre and post-surveys were statistically insignificant. Given that the intervention did not affect responses to these questions, the pre-intervention and post-intervention responses were combined, thereby maximizing the accuracy of the results not only overall, but also within each racial group. The correlation between figure 1 and 2 is interesting because certain racial groups responded that they would use sunscreen more often if given free access but did not believe it was too expensive and vice versa.

The researcher then compared the average factual knowledge that students had about sun protection before and after the intervention in an effort to assess the intervention's effectiveness in educating students about sun protection and dispelling commonly believed myths (see figure 3). Before the intervention, the average score of factual knowledge was 65.96%. After the intervention, the average score of factual knowledge was 68.90%. There was an increase in average factual knowledge by 2.94 percentage points. Therefore, the intervention had a slightly positive impact on the students' factual knowledge about sun protection.

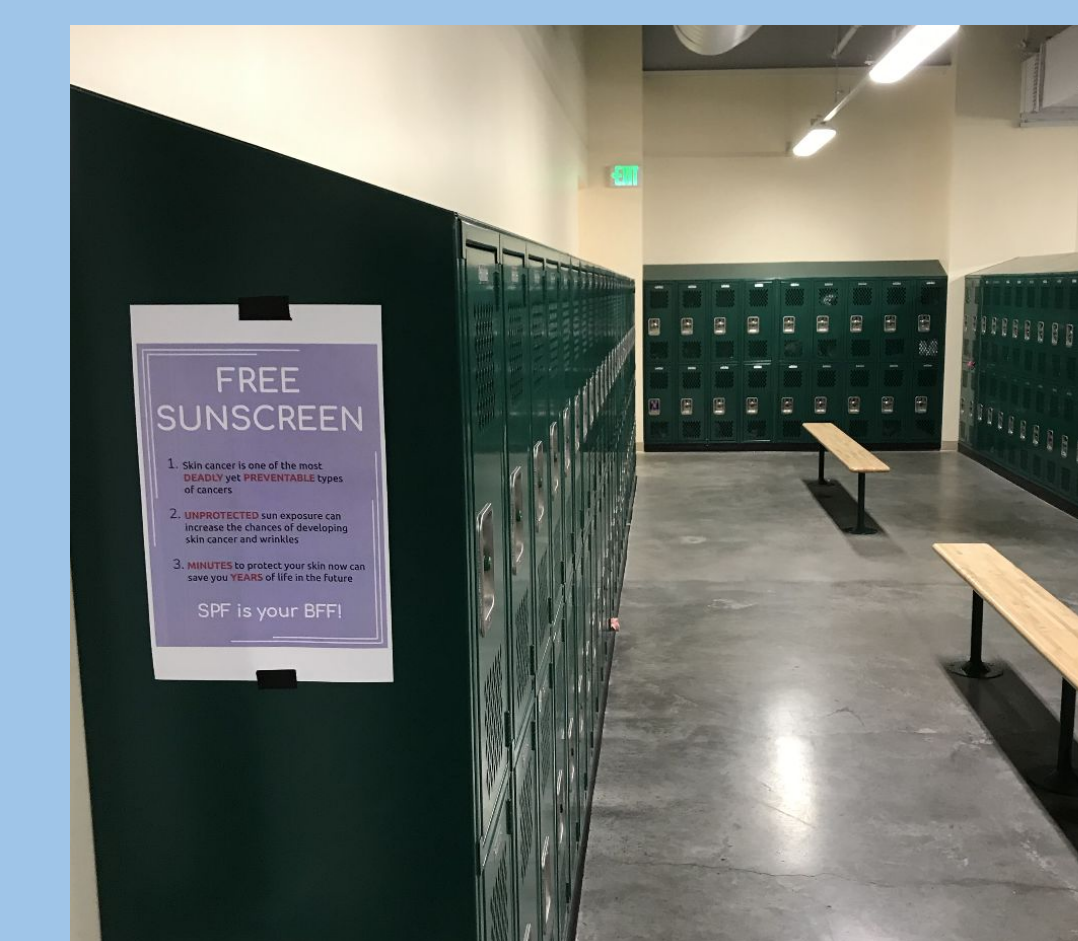
IMPLICATIONS AND NEXT STEPS

The researcher intends to work with PAUSD staff to improve sun protection education and access at schools next year. The PE teachers from elementary, middle, and high schools across the district are very interested in making sun protection part of the 2020-21 school year curriculum, but due to the uncertainty of school reopening next year, the teachers are revisiting the idea closer to the start of the school year. Additionally, funding will be requested so free access to sunscreen can be implemented in all schools in the district.

Finally, the researcher hopes that the Palo Alto Unified School District can act as a model and leader for other school districts and that other schools will implement sun protection into their regular curriculums in the future. This project has documented the need for increased education about and access to sun protection so students can adequately protect themselves on a regular basis and the important role that schools play in improving sun protection for students.



The sunscreen dispenser and posters in one of the locker rooms.



A photo of the poster in one of the locker rooms.

ACKNOWLEDGEMENTS

Thank you to Ms. Chute, Ms. Angell, and Mr. Bloom for helping with the creation of this project. Thank you to Dr. Chamberlain, Dr. Nord, and Dr. Barnes for offering advice throughout the year. Thank you to Ms. Tabron and PAUSD for providing funding for the sunscreen dispensers. Lastly, thank you to Ms. Mulroe, Mr. Diepenbrock, and the Palo Alto High School PE Department for helping conduct surveys, allowing sunscreen dispensers and posters to be put in the locker rooms, and for their support throughout the year.

REFERENCES

Boer, Henk, et al. "Effects of Pictures and Textual Arguments in Sun Protection Public Service Announcements." *Cancer Detection and Prevention*, U.S. National Library of Medicine, 31 Oct. 2006, <https://www.ncbi.nlm.nih.gov/pubmed/17079090>.

California Department of Education. (2018, September 10). Physical Education FAQs. Retrieved from <https://www.cde.ca.gov/pd/ca/pe/physedfaq.asp>.

Glanz, Karen & Saraiya, Mona & Wechsler, Howell (2002, April 26). Guidelines for School Programs to Prevent Skin Cancer Retrieved from <https://www.cdc.gov/mmwr/preview/mmwrhtml/r5104a1.htm>

Guy, Gery P, et al. "The Important Role of Schools in the Prevention of Skin Cancer." *JAMA Dermatology*, U.S. National Library of Medicine, 1 Oct. 2016, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6048593/>.

Heckman, Carolyn J and Coups, Elliot J (2011, August 31). Correlates of sunscreen use among high school students: a cross-sectional survey. Retrieved from <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-679>.

Holman, D. M., Berkowitz, Z., Guy, G. P., Hawkins, N. A., Saraiya, M., & Watson, M. (2015). Patterns of sunscreen use on the face and other exposed skin among US adults. *Journal of the American Academy of Dermatology*, 73(1), 83-92.e1.

Skin Cancer Foundation (2016, August 30). Dark skin tones and skin cancer: what you need to know. Retrieved from <https://www.skincancer.org/prevention/skin-cancer-and-skin-of-color>.