



# 4-H SCIENCE

---

4-H COMMON MEASURES 2.0, 2019-20



**UNIVERSITY OF CALIFORNIA**  
Agriculture and Natural Resources

■ 4-H Youth Development Program

## Introduction

4-H learning experiences are based on the principles and practices of Positive Youth Development (PYD) and experiential and inquiry learning. PYD practices promote positive behavior and outcomes among youth. Experiential learning offers youth participants construct meanings through engaging experiences. In an inquiry-based learning environment, youth build understanding through active exploration and questioning. The 4-H youth development programs promote science, technology, engineering, and math (STEM) among youth and train them to design and implement STEM projects. Through engaging in science activities, 4-H Science programs encourage youth to pursue higher education and science careers. Trained 4-H adult staff and volunteers create an environment conducive for the youth to engage with science through hands-on activities and projects. The 4-H science programming efforts strive to increase scientific literacy and prepare youth for future careers in science-related fields.

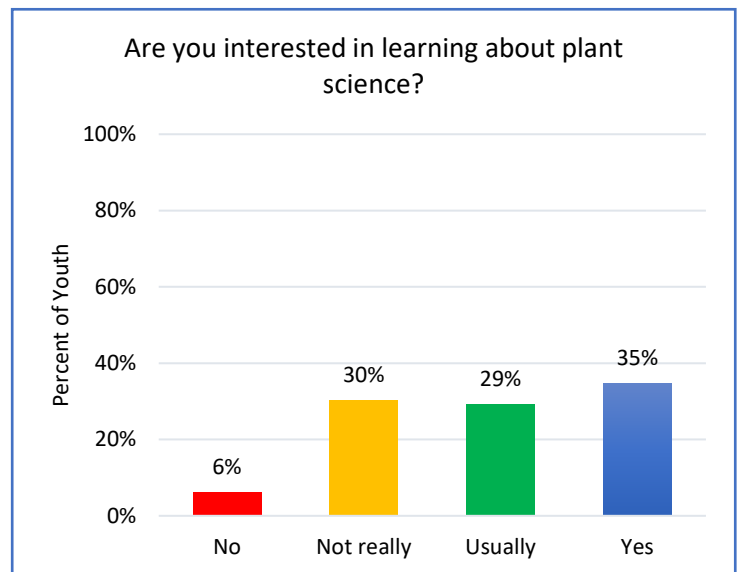
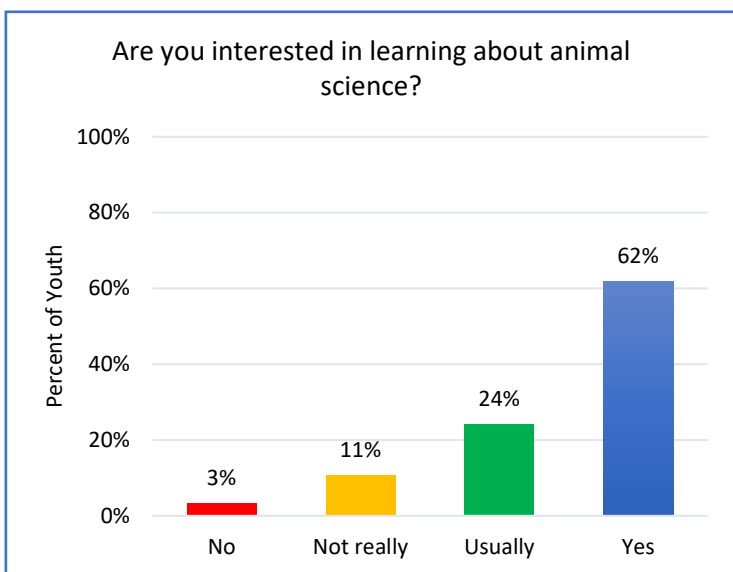
This report summarizes the findings from a Science survey completed by a sample of 4-H members during the 2019-20 program year. The Science survey is a part of the National 4-H Common Measures 2.0 developed to measure PYD outcomes. The summary report focuses on survey findings primarily related to interest in science and science thinking, including science skills and attitudes.

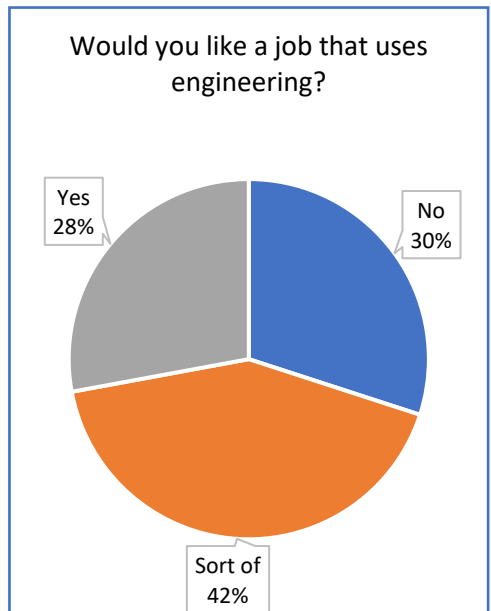
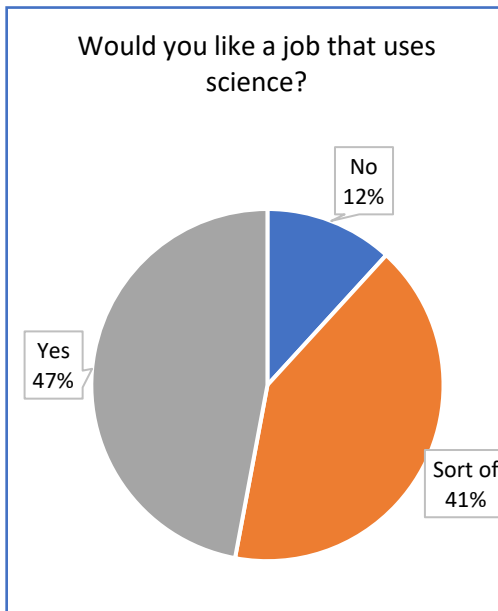
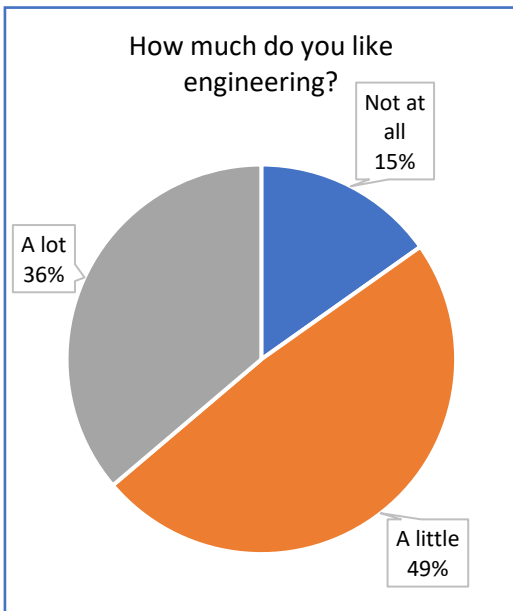
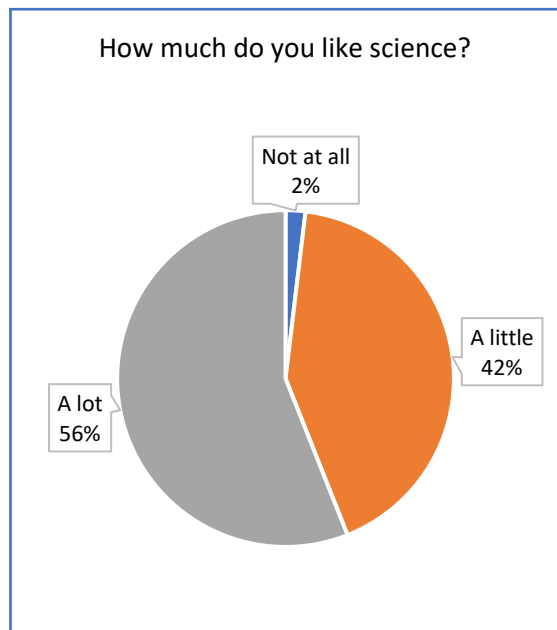
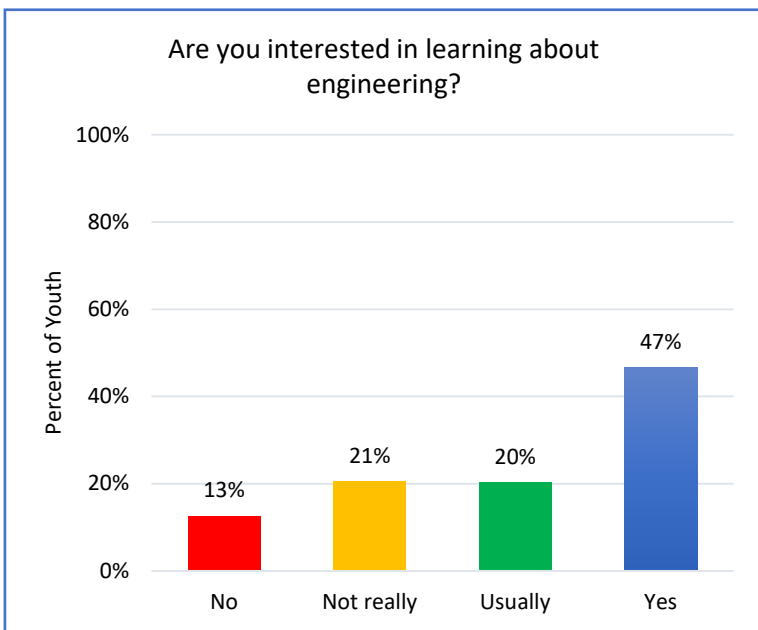
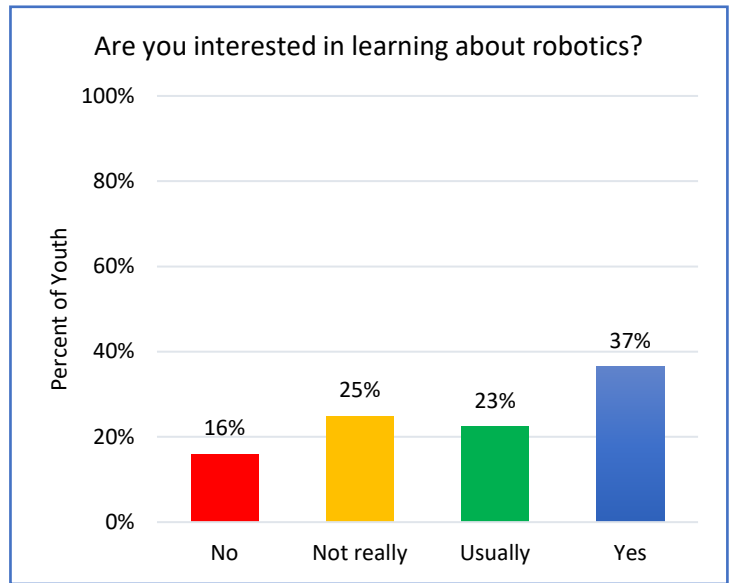
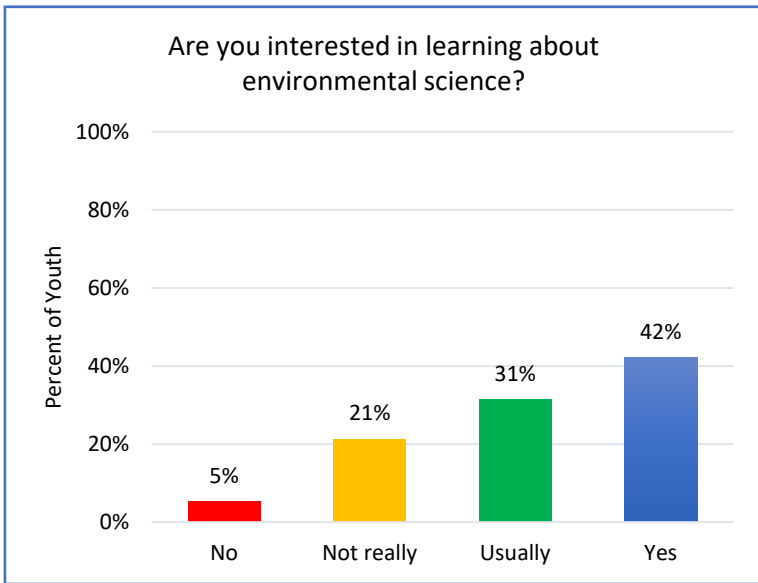
## Participants' 4-H Experience

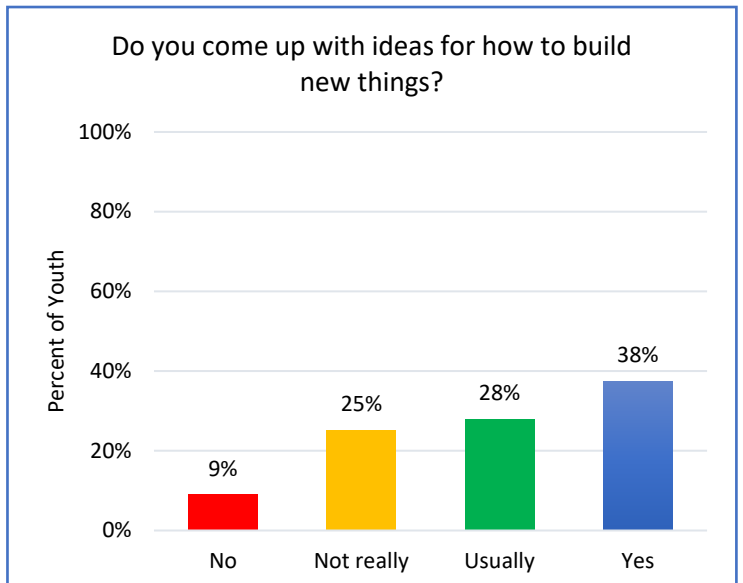
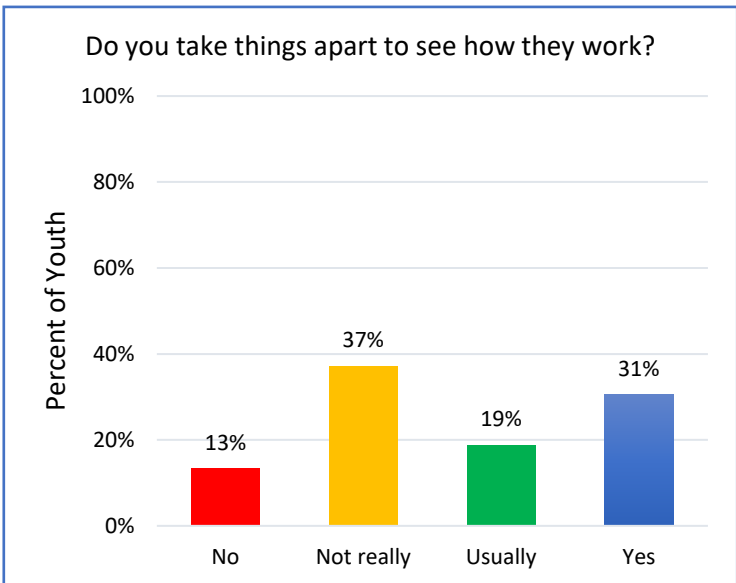
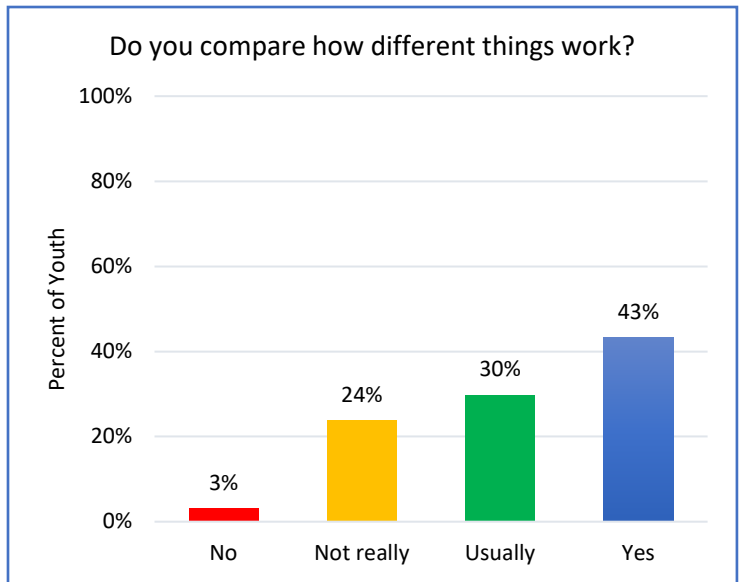
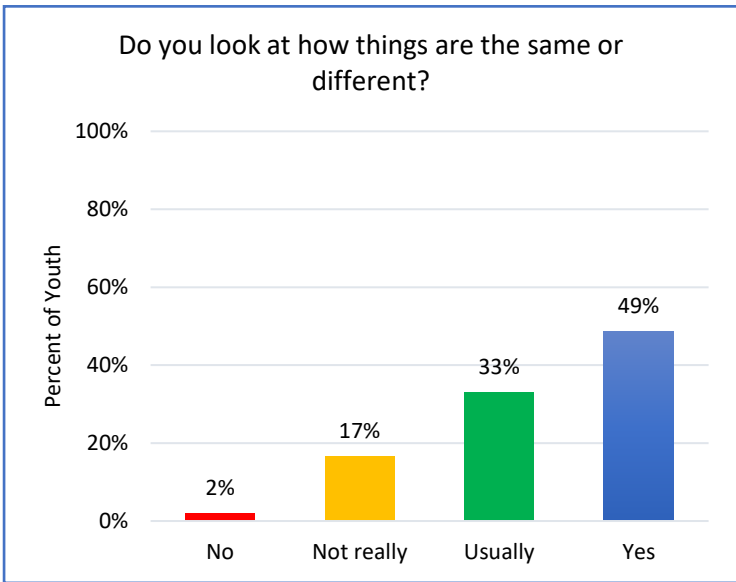
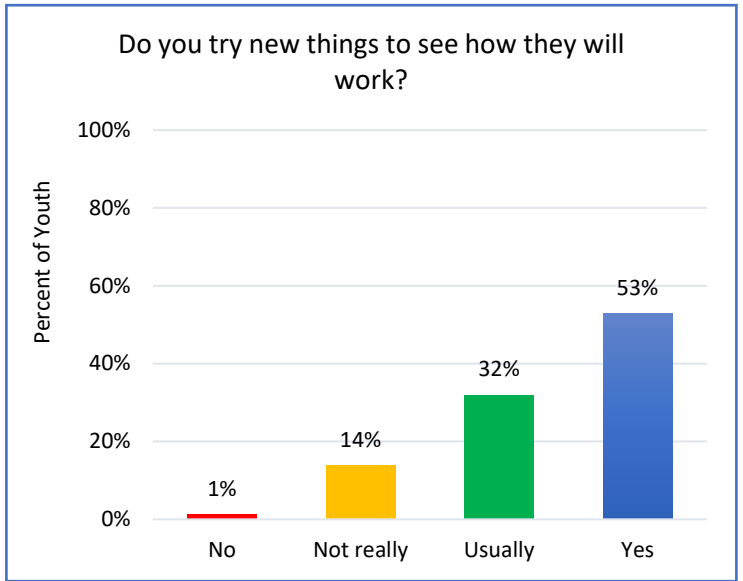
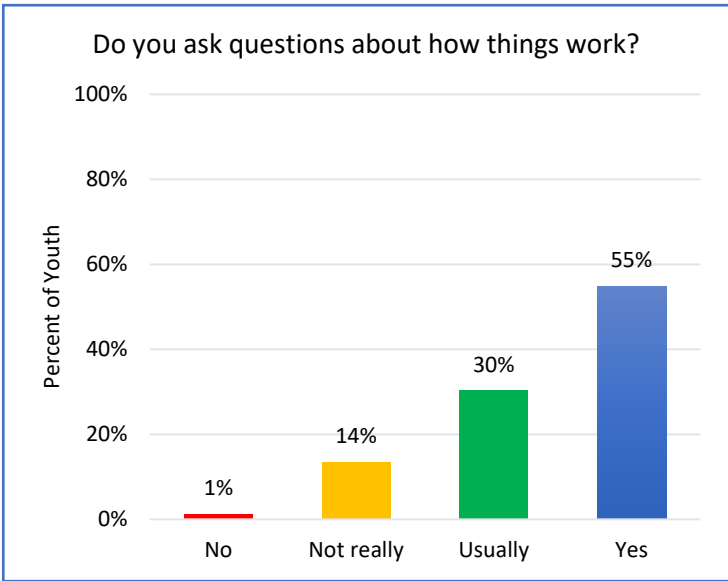
### Demographics

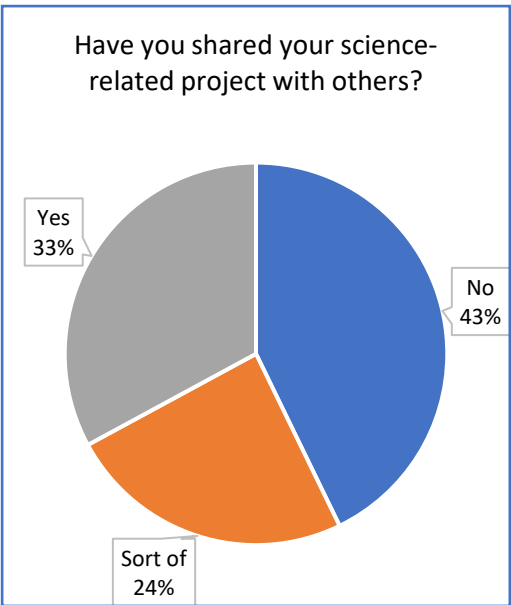
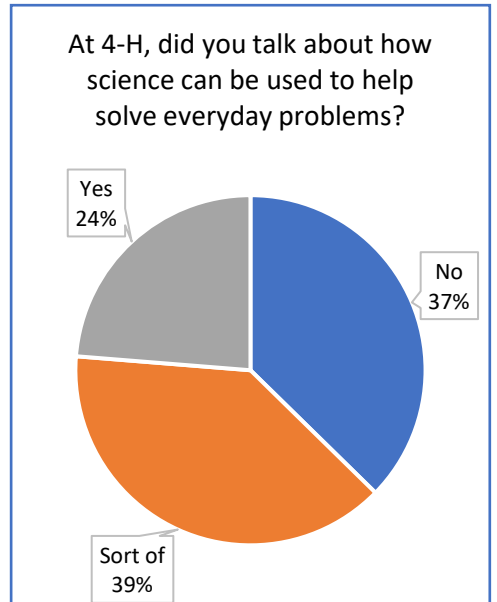
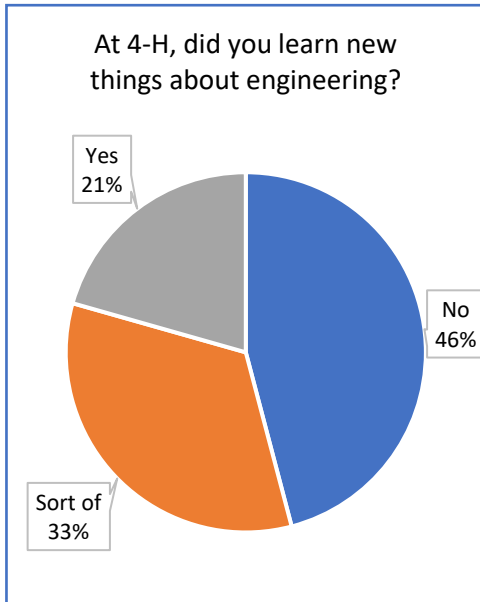
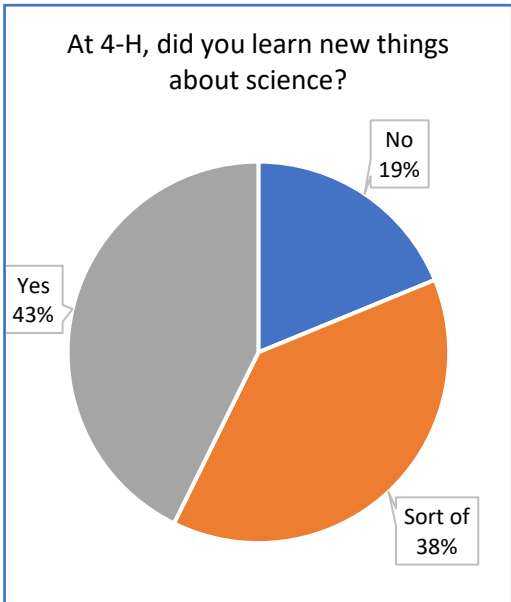
In total, 331 youth completed the Science survey. Youth were between the ages of 9 and 18, with the average age being 12.6 years (standard deviation= 2.3 years). Nearly 64.9% of respondents spent three or more years in 4-H. The sample was 68.7% female and 31.3% male, and 33.7% are Hispanic or Latino and 66.3% are not Hispanic or Latino. The racial breakdown of the sample was: 67.3% White, 2.0% African American, 4.9% Asian, 11.4% Multiple, 1.2% American Indian or Alaskan Native, and 13.1% Undetermined. Youth reported living on farms (19.8%), in rural areas (23.3%), towns (30.6%), suburbs (14.3%), and city areas (12.0%). Results are shown in the figures that follow. (Percentages may add up to 99% or 101% due to rounding.)

### Your Interest in Science and Science Thinking

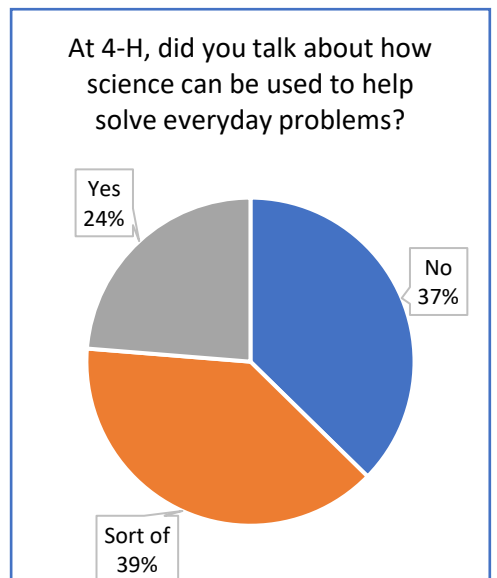
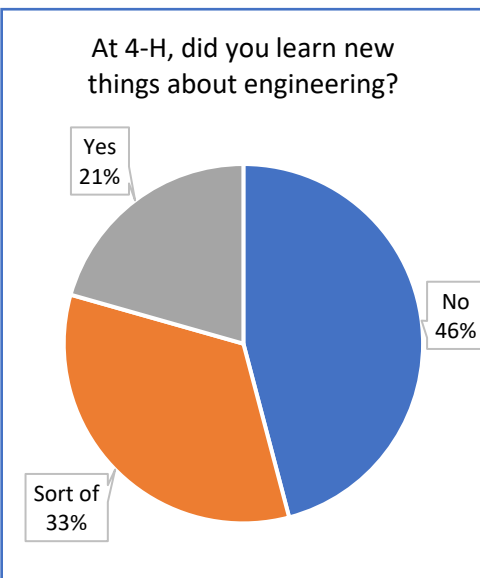
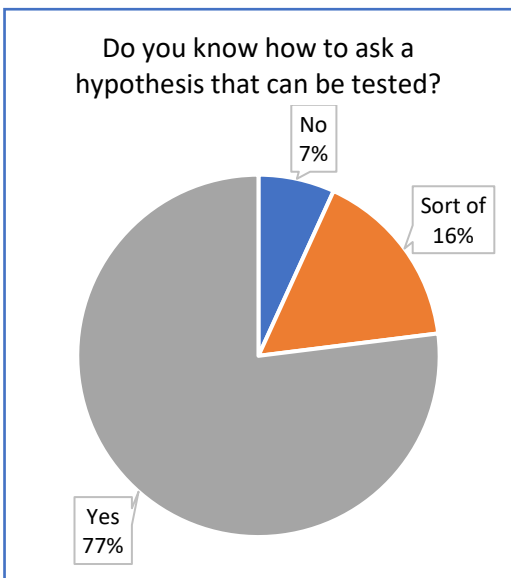


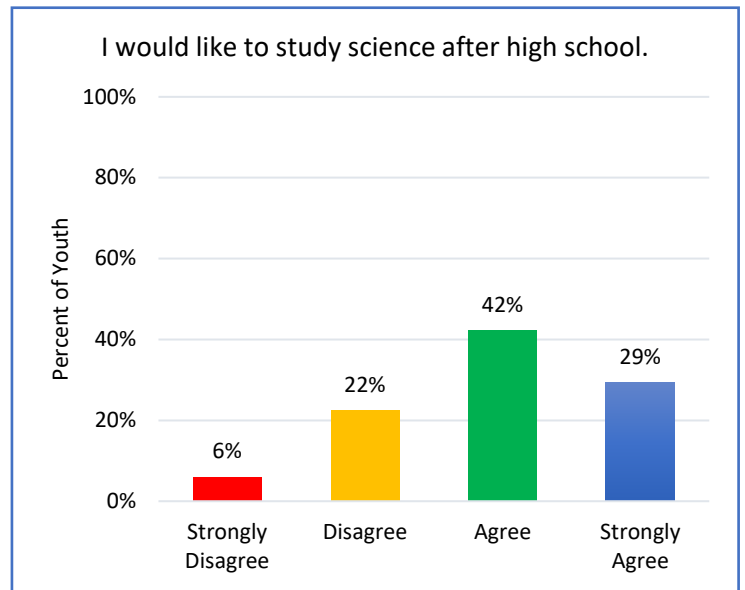
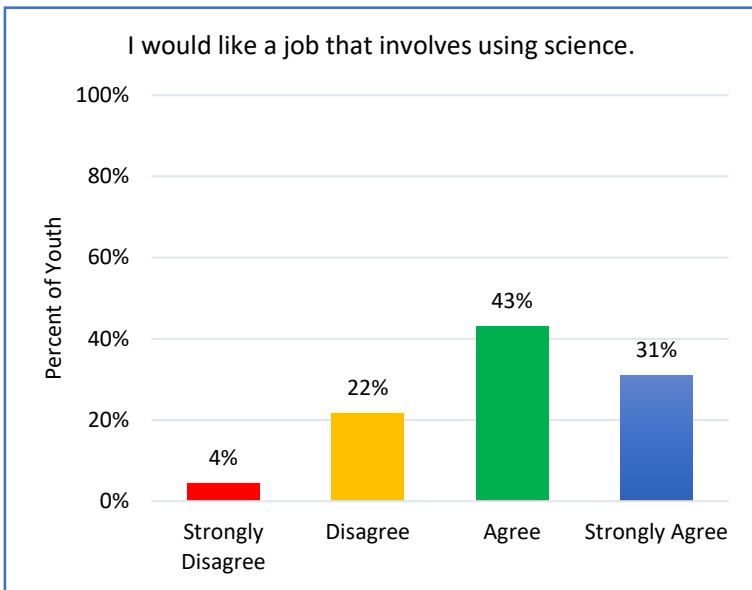
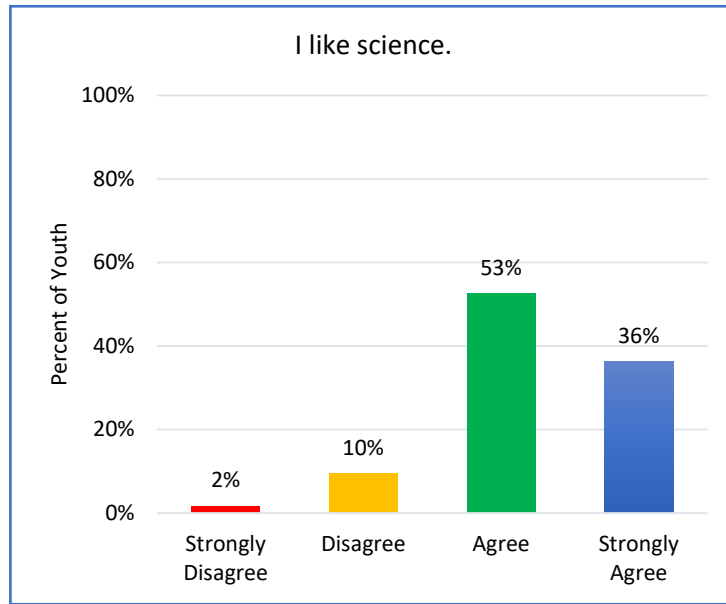
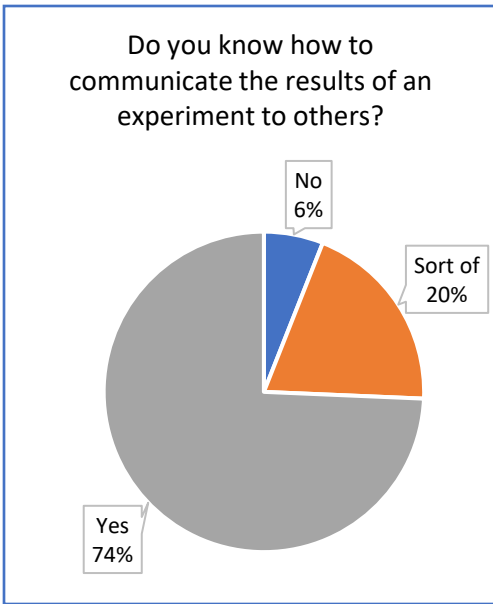






**Your Science Skills and Attitudes**





### Conclusion

Young people participating in 4-H have opportunities to strengthen their scientific literacy. The science learning goals of 4-H are to promote scientific literacy and increase youths' interest in science careers.<sup>1</sup> Previous research has shown that 4-H STEM program participation is associated with youth pursuing a greater number of higher-level science coursework in school.<sup>2</sup> Additionally, youth in 4-H Science programs are more enthusiastic about science than their peers.<sup>3</sup> In our dataset, a higher majority (89%) of respondents stated that they like science, 74% of youth indicated that they would like a job involving science, and 71% like to study science after high school. Previous research and the results presented here begin to build a promising case that the 4-H youth development program provides youth learning opportunities to increase their interest in science and science-related career fields.

## References

<sup>1</sup>National Institute of Food and Agriculture. (n.d.). *4-H Science*. <https://nifa.usda.gov/program/4-h-science>.

<sup>2</sup>Heck, K. E., Carlos, R. M., Barnett, C., & Smith, M. H. (2012). 4-H participation and science interest in youth. *Journal of Extension*, 50(2), 2FEA5.

<sup>3</sup>Mielke, M. & Butler, A. (2013). 4-H Science initiative: youth engagement, attitudes, and knowledge study. *Policy Studies Associates, Inc.* <https://files.eric.ed.gov/fulltext/ED591155.pdf>