



The Highlanders FRC Team #4499 Executive Summaries

1. Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

Through 4499's foundation, 100% of students pursue higher education—95% in STEM fields. 15% of graduates earn prestigious scholarships including Harvey Scholar, CSU Scott Scholars, Boettcher, and more totaling up to \$10,265,000 in the last 3 years. 36% of students currently mentor FIRST teams, while 28% of alumni return to mentor. 41% of students have interned at companies such as Scion Aviation, Medtronic, and Collins Aerospace, contributing to fields such as satellite guidance and aviation. (497)

2. Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

Our community, the state of Colorado, consists of 65% White, 4% Black, 3% Asian, 22% Hispanic, 1% Native American/Other, and 5% Multiracial. Considering the lack of diversity in our community, we are a majority-minority team of 25 students: 28% Asian, 8% Hispanic, 8% Arab, 36% Indian, and 20% Caucasian, where 36% are 1st generation immigrants. Over the past 3 years, 75% of our students have been minorities. 72% of our students are bilingual, with 60% having English as their second language. (495)

3. Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* mission in ways that are effective, scalable, sustainable, and creative.

Our team shares FIRST by demoing our robots at 4 events last year reaching over 8000 people. Additionally, we volunteer at FIRST events such as the FLLC qualifiers and the FTC state championship. Starting with young students, our team teaches the FIRST core values through our Rocky the Robot children's book series which comprises 8 books and has been translated into 7 languages. To achieve sustainable growth, we also trained 6 teachers last year to run our STEM rover camp reaching 175 students. (500)

4. Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

Our team strives to ignite passion, inspire exploration, and extend curiosity to communities around us giving students — from any school, location, or financial status — a safe environment to learn, discover, design, fabricate, and code. To accomplish these goals, we have made our team free and accessible for all students, created a workforce development program to lead students toward the future, and led 14 outreach events in the last year inspiring both our students and the community around us. (502)

5. What impact has your team seen from your efforts described in the above question? How does your team measure impact?

Our team measures impact through both the technical and non-technical growth of our members and the lives we have changed. In the last 3 years, 39 students have earned a total of 1724 hours in industry skills and soft skills, like digital literacy, technical writing, and critical thinking. Our team participates in and creates outreach events spanning from local to international communities, impacting 39 Highlanders and 27000 people through STEM learning and experiences in the last 3 years. (494)

6. Please provide specific examples of how your team and team members act as role models for the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

4499 has developed courses in team management, safety, and sustainability. These have been shared with 6 *FIRST* organizations. We host Shop Talk, a statewide collaborative meeting during the build season that fosters collaboration and knowledge sharing. This year, we launched the international standup, involving teams across 5 time zones and 4 countries, to share ideas. We supported workshops at Medtronic and the Colorado *FIRST* mentor training, teaching 8 separate classes to over 375 people. (495)

7. Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

Our team has assisted 24 FLL teams, 12 FTC teams, and 42 FRC teams in the last 3 years. This year, 4499 is supporting and mentoring 2 rookie FRC teams in our state, assisting them with programming, strategy, and design. Globally, we funded and started Ecuador's first five, currently unofficial, FLL teams, introducing 50 new students to *FIRST*. We created two FTC teams to recruit 19 students. Our organization has grown to support 6 teams in the past 3 years, with a total of 89 students. (477)

8. What other initiatives have you created, grown, sustained, or participated in (*FIRST* or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?

Our team has created an international mentorship program for students who need help with advanced concepts like calculus and physics. This program is being piloted in rural schools in India and Ecuador, with plans to extend it to other international locations like China. Through this, 23 students have learned new topics. We have also developed a Rocky the Robot video game for young students that highlights the FIRST core values. We currently have two levels of the game completed and available! (498)

9. Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.

We partner with Neaera Consulting, a local business, to help develop technologies for connected roadways. Through this partnership, we work together to develop technologies to improve roadside safety and alert vehicles of oncoming pedestrians. 11 students developed a rover to protect first responders that is currently on the roadways in Virginia! With this ongoing partnership, our team has received over \$500,000 in grants to develop cutting-edge transportation technologies to make roads safe! (497)

10. Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

In addition to completing FIRST ED&I training annually, we have developed our own program to promote a safe and inclusive space. As a community-based team, we bring STEM education worldwide, reaching underserved areas in Jordan, Ecuador, and India—places where even mail is uncommon. By filling suitcases with LEGOs, rovers, and STEM kits, we have worked with refugees in Jordan, low-income students in Ecuador, and an all-girls orphanage in India. Through hands-on activities, we bridge language barriers. (506)

11. Explain how you ensure your team and the initiatives you have created will be sustainable.

In Ecuador, we have ensured sustainability by training 7 teachers to continue the program year-round. 2 of these teachers have been hired at schools to expand the curriculum we taught, creating a self-sustaining cycle. In India, after promoting the importance of STEM through various events, we partnered with a school district: STEM Labs-Bangalore, to develop a STEM curriculum for teachers and are continuing to supply these programs by sending money and resources on a regular basis. (488)

12. Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

Our team lacks women's participation. With only two girls on our 25-member team, we recognize the need for change. This year, we've expanded our Women in STEM initiative to inspire and support young women in STEM careers. Through a **mentorship program**, we connect students with professional female engineers, providing guidance, support, and real-world insights. This partnership fosters confidence,

networking opportunities, and career exploration, helping young women navigate their STEM journey.
(492)

13. Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique, particularly noteworthy or had a large impact.

Our program provides life-changing experiences through demos, camps, and social media, reaching as many people as possible. This year alone, we've directly impacted 15,000 people through STEM initiatives, with an additional 50,000 through social media. Additionally, our team has developed a highly efficient scouting app: Polar Forecast. We have shared this tool with the broader *FIRST* community, forming scouting alliances at multiple regionals, hosting training sessions, and making this app public.
(484)

14. (OPTIONAL) Please use this space to ask 1 question to your *FIRST* Impact Award Judges which will be answered after each event with feedback from the judges.

To help teams who may be unsure of what question to put in the optional feedback question, we have compiled a few options that teams may choose from:

- **Is there something more that we can do to improve our presentation?**
- **Is there anything missing from our submitted materials?**
- **Which outreach activity do you feel we execute most effectively?**

When evaluating the merit of outreach events, how does the location factor into your assessment? Does reaching a large number of people locally hold more weight than engaging a smaller but potentially more underserved international audience?