Introduction & Methods

The best way to solve a problem is to first gather information from those it is affecting, and then spread that information to as many people as possible. Gender equality in STEM is one such problem that requires more attention if it is to be addressed. Our project aimed, for the most part, to gather information, but also, to a lesser extent, sought to spread the word about the issue. This report explains how we gathered our data, gives a summary of the data, and details why it is important.

We held two focus groups, the first one with female students in STEM, which was conducted in person, and the other with men in STEM, which took the form of an online survey. Originally, we had planned to do the men’s focus group in person as well, but we found that it was much more difficult to convince men to commit to a two hour window of time for discussing gender equality than it was women.

The mood of the first focus group was intended to be very casual, because we wanted our participants to feel comfortable speaking their minds and voicing their opinions. We did have a wide range of questions prepared just in case conversation stalled, but we rarely had to use those, since all the women were very willing to share their experiences. Even though there were only four women in attendance (not counting the two of us who were hosting the focus group), the conversation lasted for the entirety of the planned two hours, with very few moments of silence. The information gathered in this focus group is summarized in the following section.

Creating an online survey for the men’s focus group was a little trickier. We included several of the same general questions we asked the women, for example, “What made you decide to pursue a career in STEM?” and “Do you see an even gender ratio among the students in your classes?” Those questions are easy enough to answer in writing, but a large part of what made the first focus group successful was being able to ask follow up questions and respond to what was being said. In crafting our questions for the men’s survey, we had to create a balance between asking very detailed and thought-provoking questions while not making them too wordy or difficult to follow. We also incorporated small portions of data from the women’s focus group into a few of our questions to see how our male participants would respond to the experiences of their female counterparts. Overall, we had 13 participants, which is more than we had for the women’s focus group, probably due to the convenience of an online survey versus physically having to attend a focus group. Some of our participants provided very long, detailed responses, and others had just one or two words to say; their results are also detailed later in the report.

The analysis that follows describes the commonalities and disparities between the academic and professional experiences of women and men pursuing an undergraduate degree in STEM.
Women in STEM Focus Group Summary

The focus group was composed of four women majoring from animal science to biology. Three of them are double majoring in something outside of STEM such as French, English and Spanish because of their loves in science, writing and foreign language.

All women interviewed argued that the main reasons they have decided to go for STEM was because they loved and enjoyed science and their parents as well as their mentors have helped them to decide which route to go.

Moreover, two of the women in STEM interviewed during the process stated that they wanted to teach English at first as majoring in STEM would require lot of work, more focus and lot of sacrifices. Nevertheless as the years pass by, one of them after being exposed to a research project finally realized that she had not touch graphic papers for over two years and she felt something was missing from her and that was science. She finally decided to go to medical school after her bachelor degree and is now in the pre-med track. In regard to the second woman in STEM with similar background, she thought that going to medical school will be too much time consuming considering that she want to have children and have a family and medical school plus residency won’t allowed her to have that life style though she loves science and enjoyed her science classes in high school. She also thought that there would be no writing in STEM and pursuing a career in medicine will push her to let go her passion of writing and literature. Having her dad and good mentor helped her to realize that doctors do more than just taking care of patients, they do research and publish books as well. Her study abroad also helped her to see the big picture when she witnessed women working hard in the healthcare field while having family and taking care of their children.

All of the four agreed that yes science is hard, it takes effort and they have questioned so many times why they are even in some of their science classes but their passion of science and the strong desire to pursue something they love overcome their fears and all the obstacles that they will be facing both during their academic journey as women in STEM and their career journey.

Most of them have stated that they never have experienced biases in their classroom except for one who has stated that one day she was supposed to pick up something in another lab in the agriculture department and surprisingly, the man she met said in her face that he did not imagine her as a woman but instead a man. Another common thing that most of them have experienced was when advisors have suggested to change their major to a BA instead of a BS, kind of like an easier pathway to skip some of the harder science courses such as calculus. Most importantly, one of the six women have stated that being in a classroom with less women made her change her physics major.

According to her, it was not making any sense to be surrounded by peers (men) who have more confidence on themselves and seem know more about the material than she does as every time she feels lost and not prepared for an exam the man sitting next to her is always sure that he will do well and understand what is going on. Having a male professor also made the situation worse as she could not relate to anyone in the class and she felt intimidating by both her male classmates and her teacher as well.

According to the four women in STEM in this interview, the best way to solve the issue is to change our mindset about science and STEM in general. Instead of repeating the term “science is hard” and suggesting change of major for an easier path, the focus should be providing more resources to help women in STEM, especially freshmen to succeed in their classes. Having a
Men in STEM Focus Group Summary

A total of thirteen men were surveyed in this project. Their perspectives, indicative of various issues women and men in STEM face, are compiled below. A shortened form of the question we asked is given first, and the responses follow.

“Why STEM?” The majority of men commented that they desired a challenge, found STEM interesting, or were exposed at an early age to the sciences. Through these paths, the men were influenced to pursue a career in STEM.

“Have you been discouraged throughout your academic career?” At 7 votes, the majority of the men polled responded that they had not been discouraged in any facet. A smaller number spoke of the issues with the large time commitment, hard coursework, and lack of self confidence. Finally, one male spoke of his complications in STEM due to his race. While he did not face challenges in regard to his personal ability, race seemingly played a large negative role in his STEM journey.

“Is there an even gender ratio in STEM classes?” All but one of the males perceived the gender ratio in their STEM classes as obtaining a markedly noticeable gender disparity, noting an unfair representation of both genders present in the class. One male, however, specifically stated that more women are involved in STEM classes, especially in biology and the life sciences.

“Is there an even gender ratio of faculty in STEM?” Most men acknowledged there is a significant uneven gender distribution in STEM teaching professionals. Furthermore, the large part of faculty is comprised of males. While a significant number of the men witnessed this difference, several claimed there exists an even rationing of male and female STEM faculty and professionals.

“Do professors/TAs favor one gender?” Every single one of the men surveyed responded that these faculty members do not tend to favor one gender over the other; however, one male acknowledged that some professors make backward comments toward women and are “archaic in their thinking about women in science.”

“Have you witnessed discrimination?” Most men said they have either not noticed discrimination or had not personally witnessed the bias. Two males provided instances in which they noticed women being the subject of discrimination. More specifically, one male observed a professor directing a comment toward a female student remarking that it was brave of her to pursue a career in medicine.

“Do men take over projects?” The overwhelming majority of men said that there is no difference in the leadership of group projects and that men are not inclined to take complete control. One responded commenting that women are more often smarter than males and subsequently tend to lead group projects.

“Have you or someone you know faced the Confidence Gap?” All but one male acknowledged facing or knowing someone that has faced the Confidence Gap phenomenon; several males
commented that, in general, men tend to be more outwardly confident, and women often hold themselves to higher standards than men.

“Have you or someone you know faced the Imposter Syndrome?” Four males admitted to struggling through times where self confidence was lacking and doubt in their abilities was great, while all others negated the instance of having experienced Imposter Syndrome. One male attributed his dealings with this syndrome to his race.

“Have you ever thought about how you would balance family and work?” The majority of men acknowledged thinking about their future work-life balance, but all admitted to not placing as much anxiety and worry on the matter as most women. All said women contemplate this phenomenon to a much larger extent, likely as a result of individual personalities and societal pressures.

In summation, most males agreed that there are a multitude of inequalities witnessed between men and women in and pursuing STEM careers. In efforts to solve the many issues and challenges for women in STEM, most men suggested the complete eradication of gender biases and social constructs through eliminating the manipulative scope of the media, as well as bringing attention to males the current crises. Additionally, men viewed early outreach programs, workplace equality and opportunity, and strong encouragement for women in STEM as fundamental pillars to addressing and solving these prevalent issues.

**Conclusion**

Overall, our data shows that there are sizeable differences between the experiences faced by women and men in STEM. Consequently, these experiences seem to have shaped the outlook that women and men have on gender inequality. For example, several women reported having male lab partners or classmates that would try to dominate an assignment that they did not know much about, meanwhile devaluing or ignoring the opinion of the woman they were working with. When asked if they had ever observed this happening, or if they had ever done it themselves, most of the men said no. Because men, and white men in particular, have the privilege of being the dominant demographic in STEM, they are often blind to the struggles that those without that privilege face.

Fortunately, many of the male respondents seemed at least vaguely aware that there were some problems with gender equality in STEM—noticeing uneven gender divides among students and professors, being aware that women have to think more than men do about balancing their careers with their future families, etc.—and a few of them responded to our questions in a way that made it seem like they had given this topic some thought.

However—and this could just be a result of the impersonal nature of online surveys—the women in the focus group had so many more opinions, ideas, and experiences to share in regards to what they think are the biggest problems with gender inequality, why they exist, and what we can do to fix them. As expected, being the target of discrimination made the women much more aware that it existed.

While our goal of gathering information on what challenges students in STEM face was met, and while we hope that by talking about these issues we have made the students themselves more aware, there is still further research to be done. When it comes to STEM education, students are just half of the equation. We need to examine the experiences of STEM professors and administrators with their students in regards to gender, and see where the incongruities lie.
Furthermore, while the research we have done with students here is valuable, it needs to be replicated on a much larger scale, with more participants.

While it is important to gather as much data as possible, it is even more important to start introducing new protocols and policy changes that will make STEM a more inclusive field for women. There is a lot more research to be done, but this problem is far too ubiquitous for us to not start acting now.