Good morning. I am so pleased that we have gathered here today. The subject of our work together is crucially important and I am reminded of how important the stakes are by two stories.

The first story comes from a 2014 interview with Dr. Patty Lopez, a national leader in STEM diversity initiatives, a senior engineer at Intel – and a first-generation college-goer and STEM major. In the interview, Lopez notes that women were not involved in the initial design of automobile airbags, with the consequence that the designs did not account for the fact that the average woman is shorter and sits closer to the steering wheel than the average man. As a result, untold women, and children, were injured or killed by the airbags meant to protect them.

The second story is about research, led by Esteban Burchard, into higher rates of asthma among racial and ethnic minorities in the U.S. In a 2014 article published in the journal *Nature*, Burchard, a professor of bioengineering, identified that historically non-white ethnic groups were not included in drug trials in sufficient numbers to identify differential effectiveness patterns. The result has been that many asthma drugs are less effective for people of non-European descent than for whites.

Significantly, Burchard writes that his life experience as a Mexican-American who grew up in a racially and ethnically diverse community is what prompted him to look for health disparities across racial and ethnic groups. As a result of his participation in this work, his research team has identified some of the critical factors responsible for differential asthma treatment success among Hispanic populations.

These examples vividly illustrate that the exclusion and underrepresentation of women and racial and ethnic minorities in STEM is a grave social injustice. This injustice does not simply wrong those who are excluded. It also has deep human consequences: when research teams are not diverse, perspectives are narrower and lives can be lost. A lack of diversity impedes the process of discovery and innovation.

The social-justice argument and the innovation argument for STEM diversity are inseparable. When intentional biases, unconscious attitudes, institutional structures, and lack of action to effect change combine to deprive members of minority groups and women from entering and succeeding in STEM fields, we all are diminished and we all lose. STEM diversity is essential to the social, physical, and structural health of our society. This is why we must confront the facts of how far we still have to go in addressing this challenge.

Nationally, we have been discussing lack of diversity in STEM for more than 25 years. Yet our progress in increasing diversity has been far slower and more uneven than we had hoped.
Data released by the National Science Foundation just last Thursday suggest there is some good news to report. Some K-12 school systems are doing a better job of engaging girls and racial and ethnic minorities in STEM. From 2008 to 2014, the percentage of women entering college with plans to major in a STEM discipline increased from 16% to 26%. Among African Americans (of all genders) over the same time period, planned majors in STEM increased from 20% to 29% of entering students and for Hispanics the increase was from 22% to 32%. This positive trend was true for both men and women.

There is encouragement in these data, but the STEM major interest of women and underrepresented minority students still lags significantly behind that of white male students. We are starting with smaller numbers of women and underrepresented minorities entering college with plans to major in STEM. And the pipeline to the STEM workforce continues to leak through college and beyond, disproportionately so for these groups compared to the college population as a whole. For example, we have persistence data about the women who entered college between 2010-2012. When these women began college, 20% planned a STEM major, but barely half of them actually took their degree in STEM as compared to 70% of men in the same period. And women’s degrees are weighted towards the health and life sciences, making the computing and engineering pipelines even smaller.

As the data I referenced a few moments ago demonstrates, African American and Latino students are now entering college with STEM interest levels approaching those of their white counterparts. But well less than half go on to earn a degree in STEM. From 2014 to 2016, African-American men and women collectively earned only 6% of all STEM degrees, and Latino men and women earned only 10% of all STEM degrees.

The workforce demographics are just as sobering. As of 2011, only 6% of STEM workers were African American and only 7% were Hispanic. Nearly one in five female science and engineering graduates is out of the labor force, compared with fewer than one in 10 male science and engineering graduates. Women receive 36% of STEM PhDs, yet they comprise only half that proportion – 18% – of full professors in science and engineering.

It is true that STEM attrition occurs across demographic categories but the challenge of persisting impacts some groups more than others demonstrating that we are not succeeding as educators, employers, or leaders. Worthy young people are being deprived of STEM opportunities, and employers and entire fields are being deprived of the talents and contributions of promising students and employees.

If we are to strengthen and accelerate diversity and persistence in STEM fields, I believe we must begin by offering a strong data- and research-informed case of why STEM diversity matters. The foundation for this case is the changing demographics of the United States. Just over half of our K-12 students are female. And as of 2012, more than 50% of the children now born in the U.S. are non-white. That is over half of our creative human potential. These students must be given equal opportunities and well-resourced encouragement to enter STEM fields if we are to avert workforce shortages in
critical sectors of the economy. Over the next decade, STEM jobs are expected to grow by 13%, outpacing growth in other fields. And STEM fields will only become more integral to our growth and success across the entire economy. As Bill Clinton used to say, “we don’t have a person to waste”: we need more people of all backgrounds to study and persist in STEM.

Yet this is not the only or the most compelling argument for making better investments in a diverse STEM workforce. Those examples of airbag design and asthma research? They’re just the tip of the iceberg. Multiple studies have documented that diversity in STEM teams leads to better problem-solving and increased innovation. Over a decade ago, an influential article published in the Proceedings of the National Academy of Sciences found that a team with problem-solving diversity outperformed a team previously deemed the best-performing. Teams that included a diversity of perspectives and approaches yielded stronger results than those built upon simple, and perhaps simplistic, meritocracy.

Similarly, a 2016 OECD report found that firms that employ research teams with a higher degree of diversity have better innovative capacity as measured by R&D intensity and efficiency.

Other major studies have shown that a diverse STEM workforce has the potential to improve corporate financial performance as well.

- A 2016 study by Dahlberg Advisors and Intel demonstrates that improving ethnic and gender diversity in the U.S. technology workforce represents a massive economic opportunity, one that could create about $500B in new value for the tech industry.

- McKinsey’s latest study of diversity in the workplace reaffirms the global relevance of the link between diversity and positive company financial performance.

So we know STEM diversity produces important, measurable benefits in both innovation and economic growth. But how do we increase STEM diversity to take full advantage of these benefits?

We actually already know a great deal about how to change the pattern of underrepresentation of people of color and women in STEM education. You’ll see and hear examples of this knowledge in the lightning talks later in the day. For now, I’ll make three brief points:

- First, it is critical to foster intellectual engagement and excitement through passionate teaching and through curricula that connect STEM fields to the interests and concerns of a diverse student body. We see this approach succeeding in initiatives like Girls Who Code and Black Girls Code; and we see it in the faculty of STEM Posse institutions who convey their passion for their disciplines and provide motivating academic experiences.
• Second, success requires building a climate of belonging for all students. Belonging can be created through seeing diverse students, faculty, and alumnae working in STEM. It demands a practice of identifying and addressing unconscious bias in our assumptions about students and about how we teach. It comes from acting on the belief that success in STEM is a matter of hard work and not just innate talent.

• Third, we must ensure that we work with students to cultivate the requisite STEM skills and knowledge for success. This is why Posse, and in particular STEM Posse, is so important. It identifies students with the interests, aptitude, leadership skills, and resilience to undertake STEM majors, and channels them into first-rate colleges and universities offering rigorous academic skill development, from core mathematics to advanced multi-disciplinary research.

The common thread here – and what the STEM Posse partnership enables so well – is that we need enthusiastic aspiring scientists, and we need them to become highly proficient, exceptionally well-trained, practicing scientists. We want them to love what they do, and also to be second to none in their ability to do it. In the next 10 years, STEM Posse and its current partner colleges and universities will enroll 1,100 more students planning on a STEM degree. My hope is that our work will inspire other colleges and to invest more time, energy, and resources to act on this knowledge, so that in another 25 years, we find ourselves having a much different conversation.