# COMPARISON OF TECHNOVATION LEARNING GAINS BETWEEN DIFFERENT COUNTRIES

**Richard Jung and Tara Chklovski, 2017**

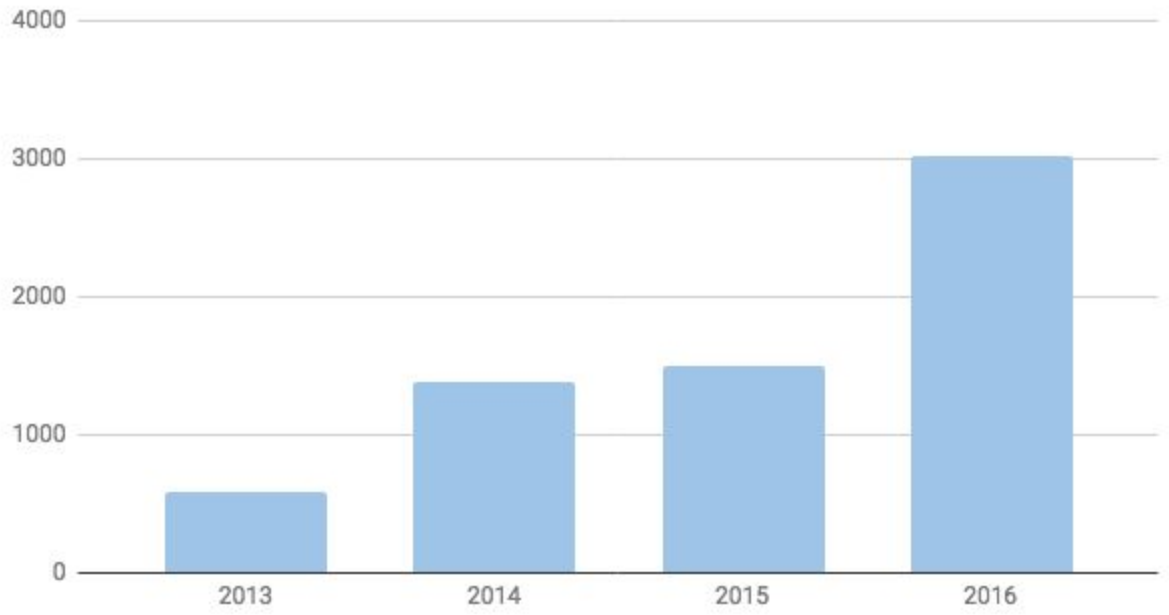
This year, we entered into our eighth year running Technovation globally. Technovation is the world's largest technology entrepreneurship competition for girls aged 10-18. Through the 100-hour Technovation program, girls identify a problem in their community, develop a mobile app and launch a startup that addresses that problem. They are supported through the entire process by mentors (who can be educators, industry professionals, or parents).

We analyzed pre- and post- surveys that were administered to Technovation girls from 2014 through 2016. The numbers reported below represent only those girls who completed the pre- and post-surveys (n = 5146 ; 49 % of the total group of girls who completed the program).

Through this analysis we were trying to answer the following questions:

- Are there any global trends in how girls are developing their sense of self-efficacy and identity as technology entrepreneurs?
- What is the effect of increasing our reach on program impact? 2014 and 2016 were years of significant growth (2x) for Technovation and we were curious about the effects of that growth.
- What is the impact of improved curriculum and training on program efficacy?

Total number of girls who completed the Technovation curriculum, 2013–2016




This report shares some of our initial findings. We compared student responses across each year on the following:

### Persistence

- I can cope with not doing well on an assignment.
- Even if the work is hard in the Technovation program I can learn it.
- I am a hard worker

### Self Efficacy

- When something goes wrong, I am able to learn from it.
- I am confident talking about business models
- I am confident using technology.

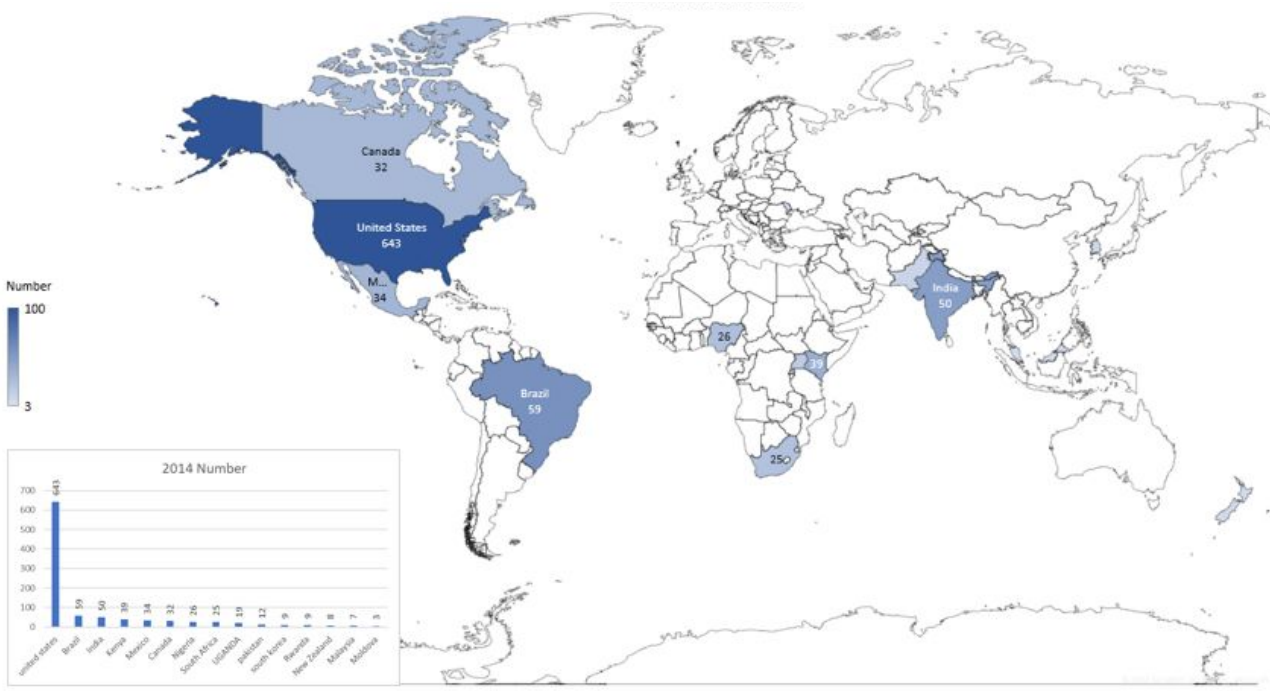
### Future Plans

- I plan to take advanced classes in Computer Science
- I am considering a career in technology
- Do you plan to enroll in honors or advanced classes next year?
- I am taking or plan to take advanced classes in math and science

The maps and graphs below show the following:

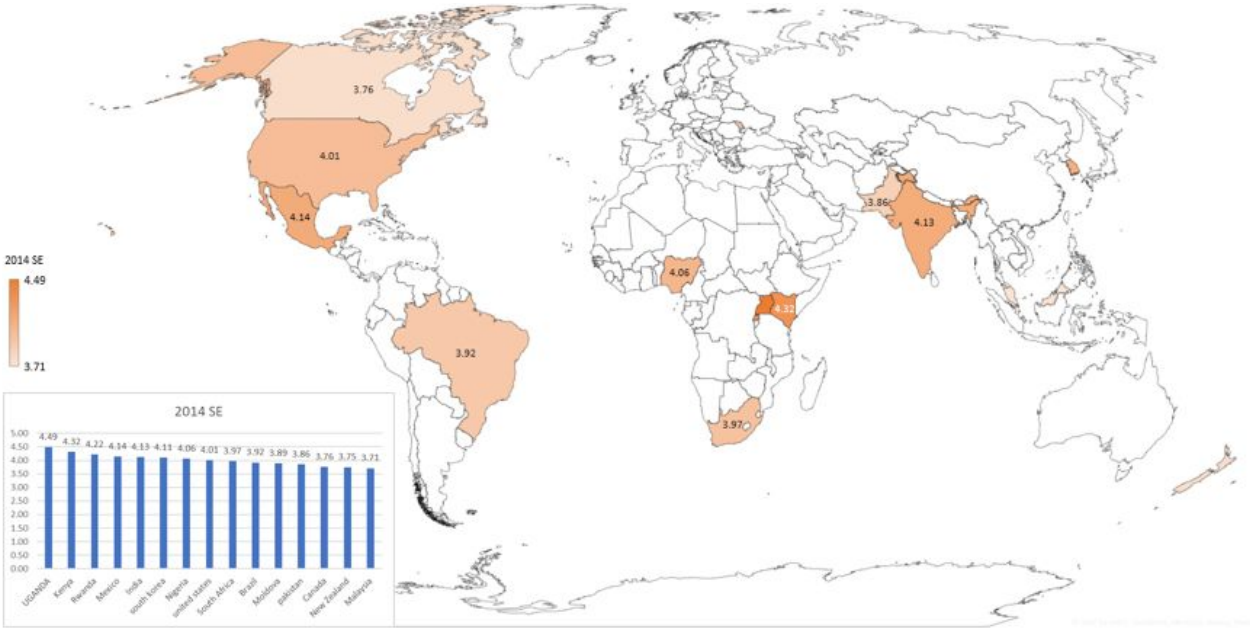
- Gains in persistence, self-efficacy and future plans around technology by country and year. An important point to note here is that the highest scoring countries do not have a sufficient sample size (<10). Hence we specifically compare gains across the top 10 countries for each of the three years.
- Comparison of gains across each year by top 5 countries (United States, Brazil, India, Mexico and Canada)

**Total Number of Technovation Girls in 2014**

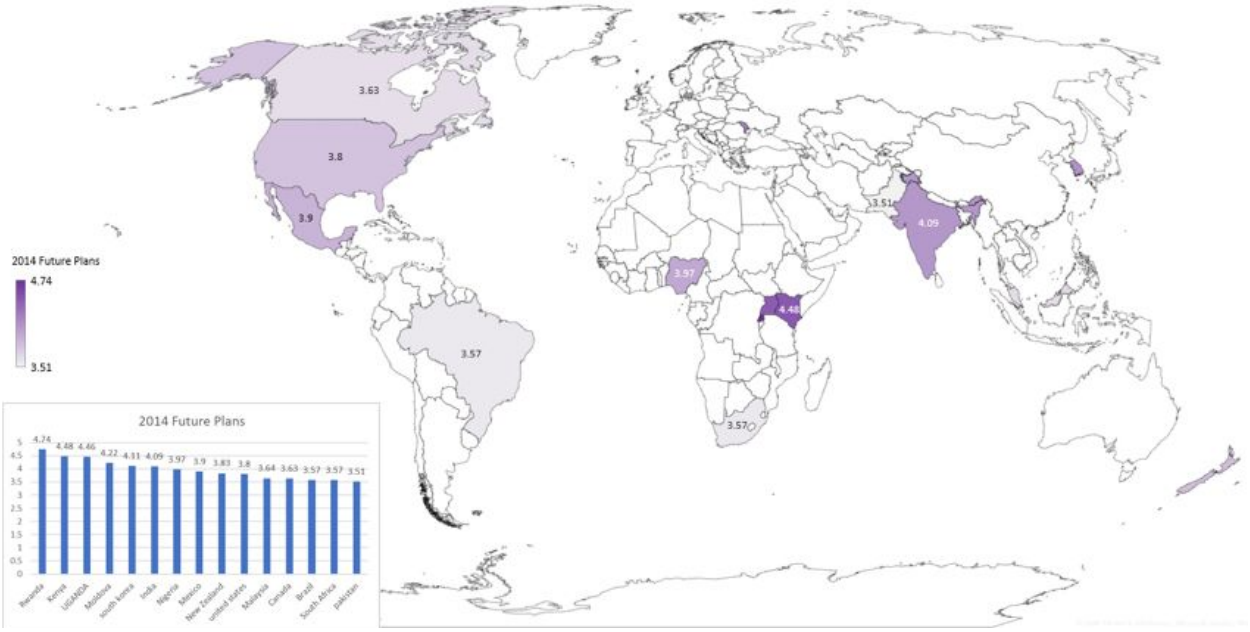


## Average Gains in Persistence across 2014 Technovation Cohort

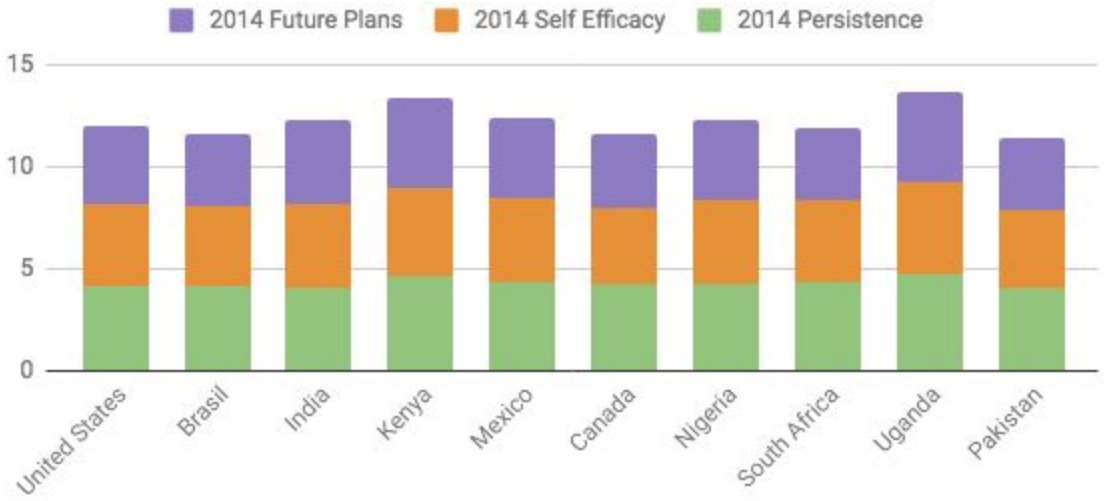

## Average Gains in Self Efficacy across 2014 Technovation Cohort



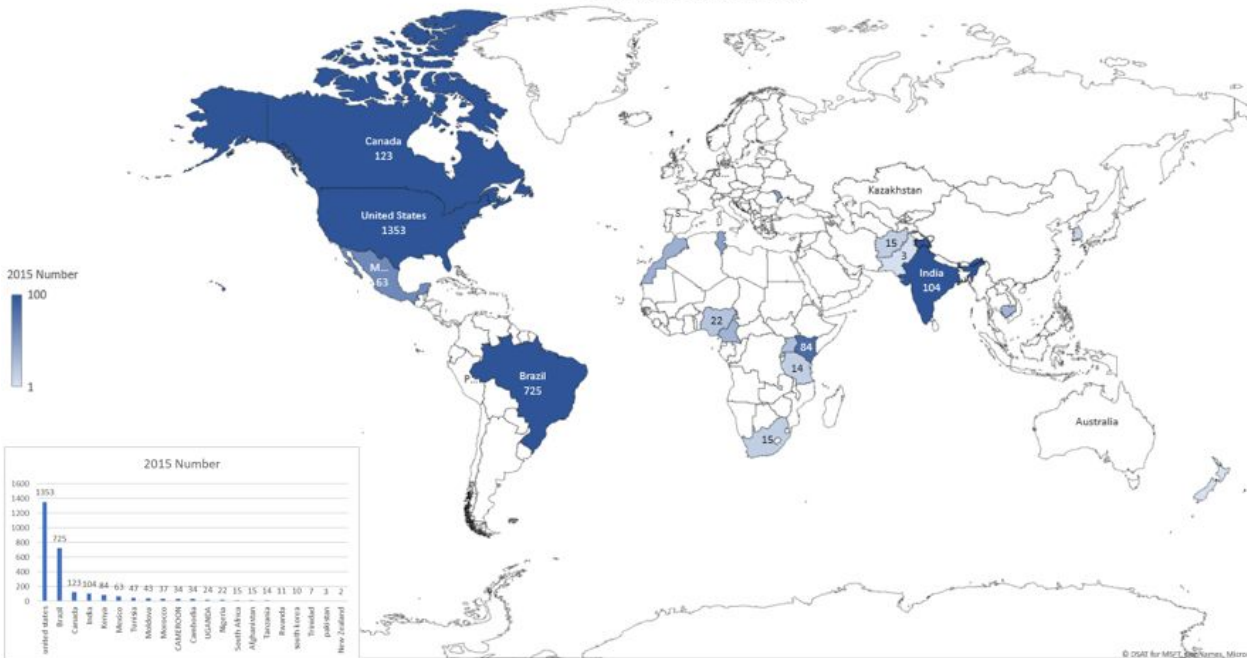
## Average Interest in Pursuing CS across 2014 Technovation Cohort



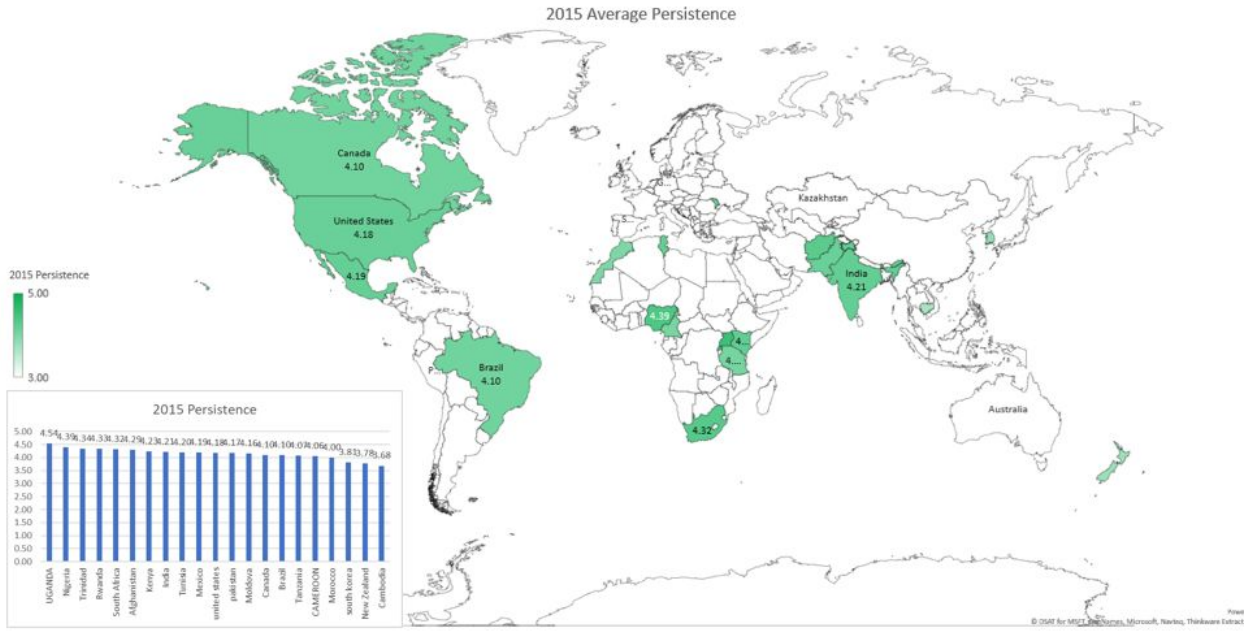

## 2014 Technovation Gains Across Top 10 Countries



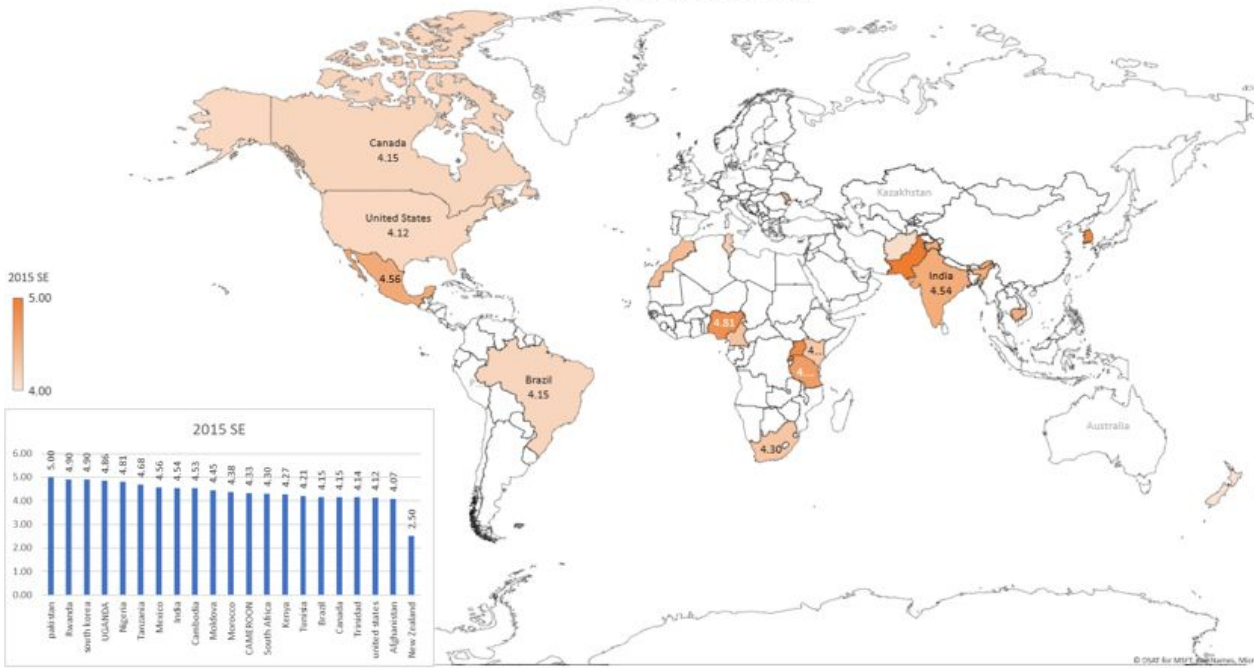
## Total Number of Technovation Girls in 2015



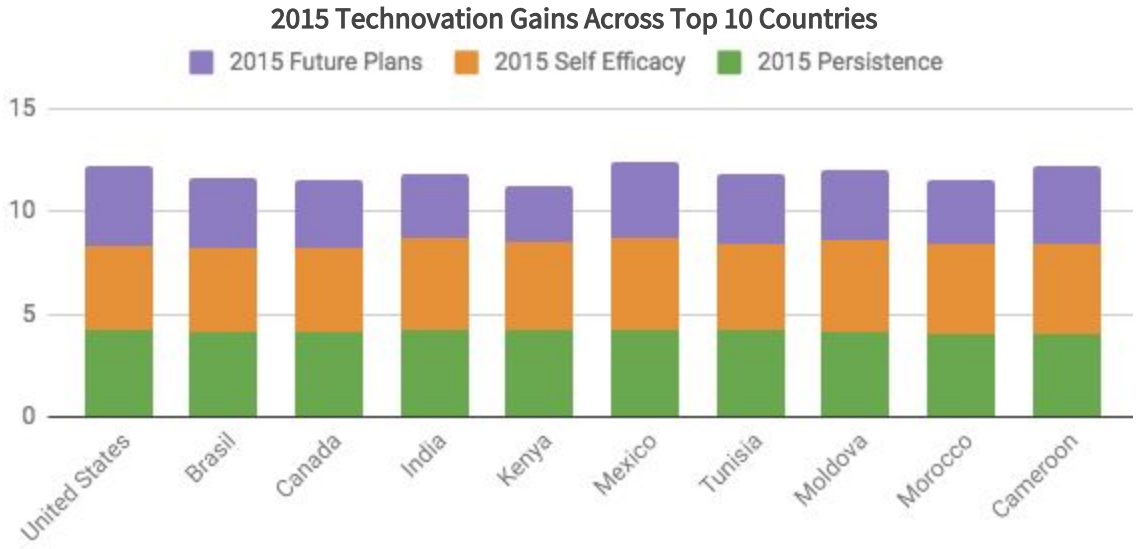

## Average Gains in Persistence across 2015 Technovation Cohort



## Average Gains in Self Efficacy across 2015 Technovation Cohort



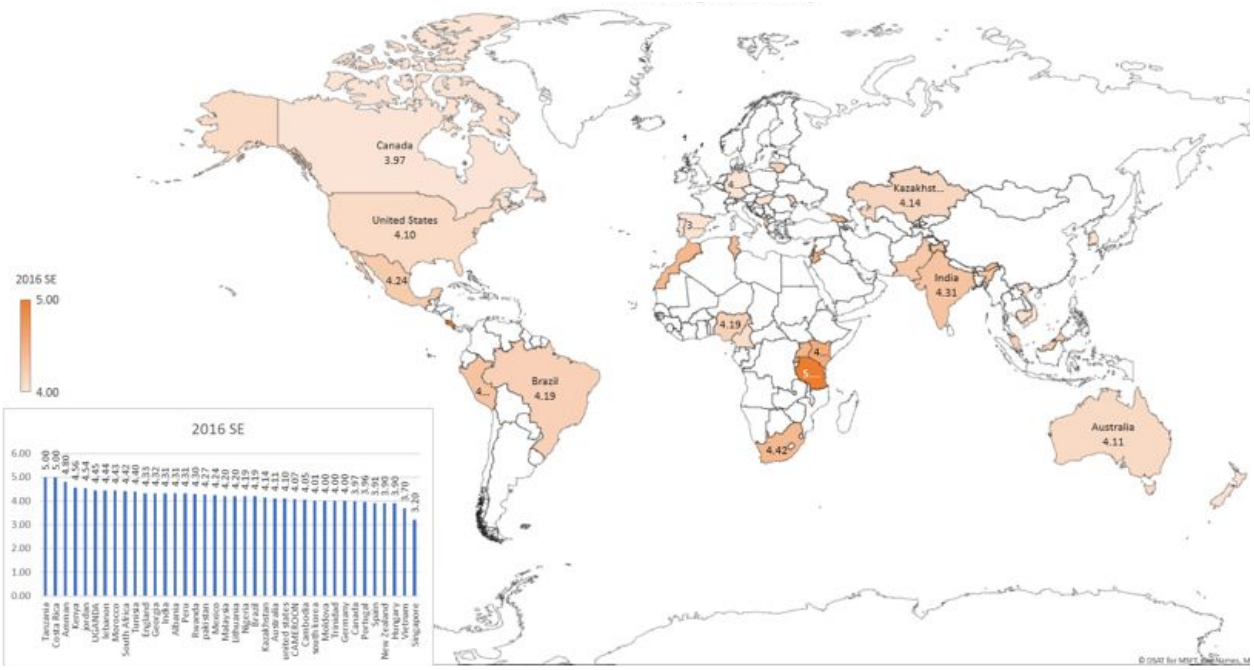

## Average Interest in Pursuing CS across 2015 Technovation Cohort


2015 Technovation Gains Across Top 10 Countries
2015 Future Plans
2015 Self Efficacy
2015 Persistence
15
10
5
0
United States
Brasil
Canada
India
Kenya
Mexico
Tunisia
Moldova
Morocco
Cameroon

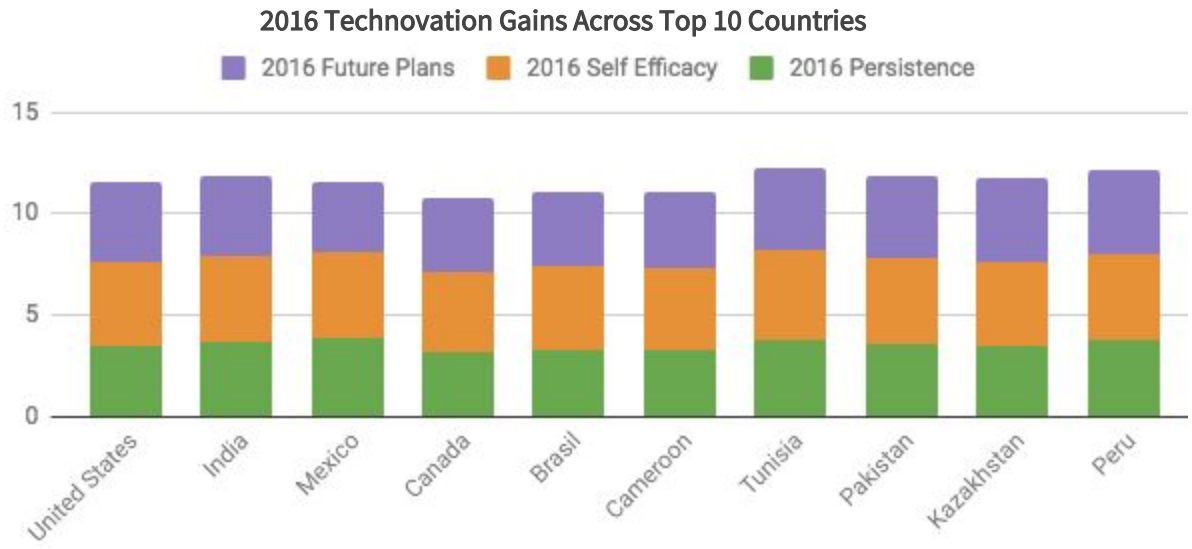
## Total Number of Technovation Girls in 2016

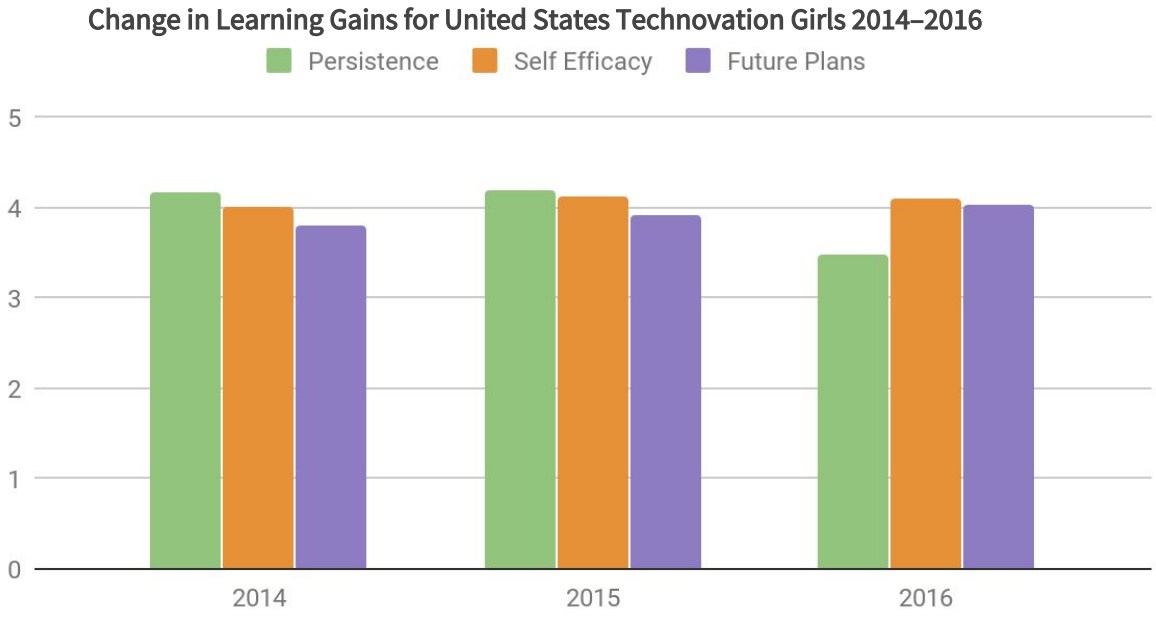

## Average Gains in Persistence across 2016 Technovation Cohort

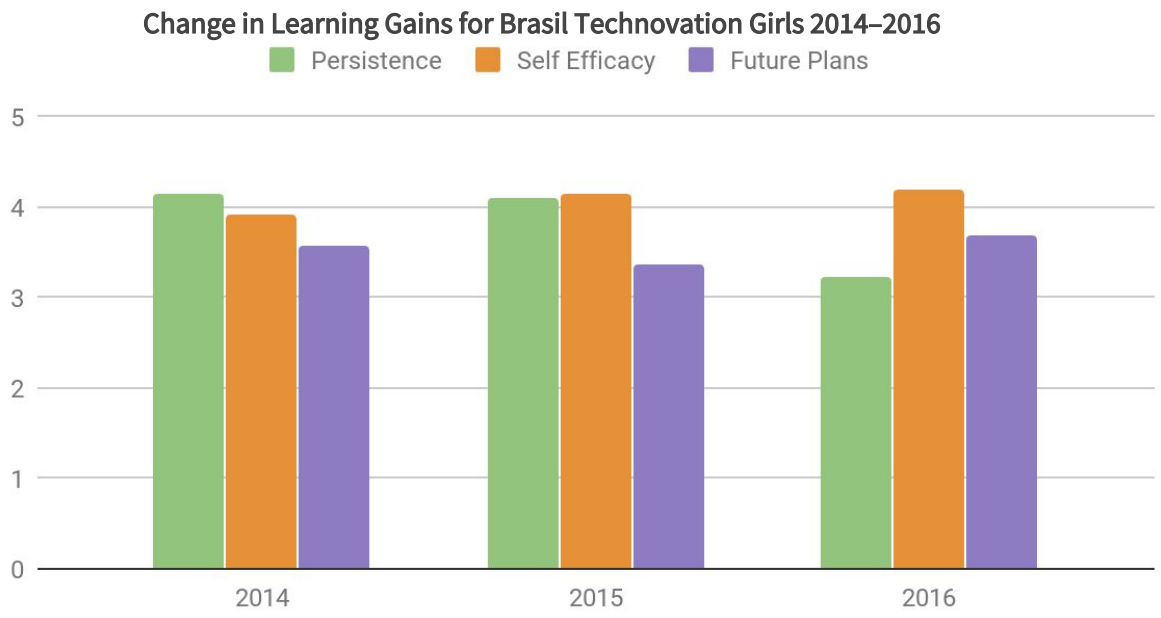
## Average Gains in Self Efficacy across 2016 Technovation Cohort

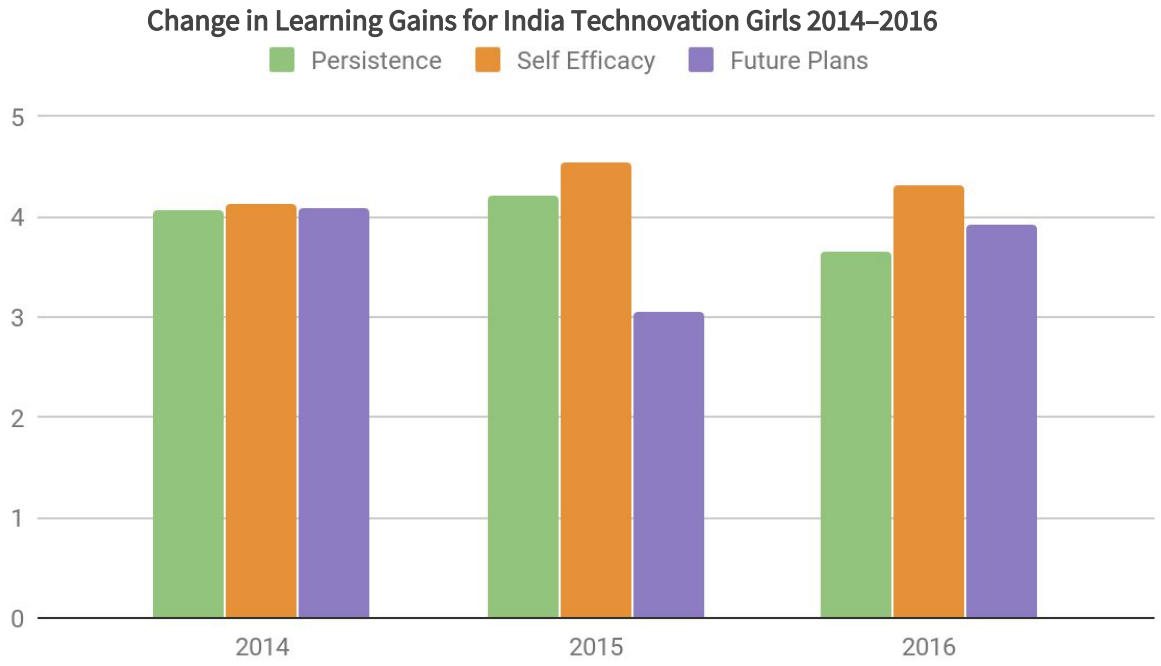



## Average Interest in Pursuing CS across 2015 Technovation Cohort






Change in Learning Gains for Mexico Technovation Girls 2014–2016


Change in Learning Gains for Canada Technovation Girls 2014–2016


## Conclusion and Future Work

Overall it is hard to identify any clear patterns in the data, despite two clear external factors of increased scale and improved curriculum and training. This is most likely due to the number of variables in program implementation.

Our next steps will be to collect and connect program inputs (by region) to this data, so we can gain a better understanding of what was happening on the ground that resulted in specific gains.