

# One-Size-Won't-Fit-All

The Unique Challenges of Women and Girls in Computing



**STUDENT  
RESEARCH**  
foundation

# OUR FOCUS

---



**STEM: Computing**

**vs.**

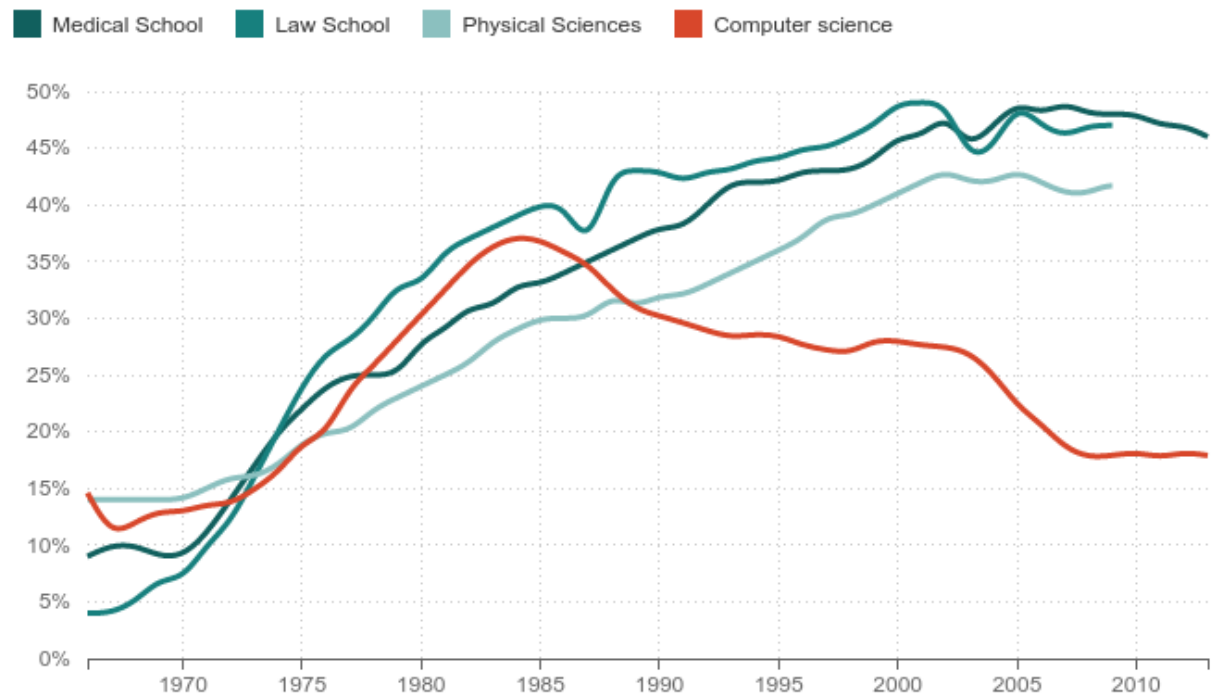


**STEM: Non-Computing**

# Women's Declining Presence in Computing

## What Happened To Women In Computer Science?

% Of Women Majors, By Field



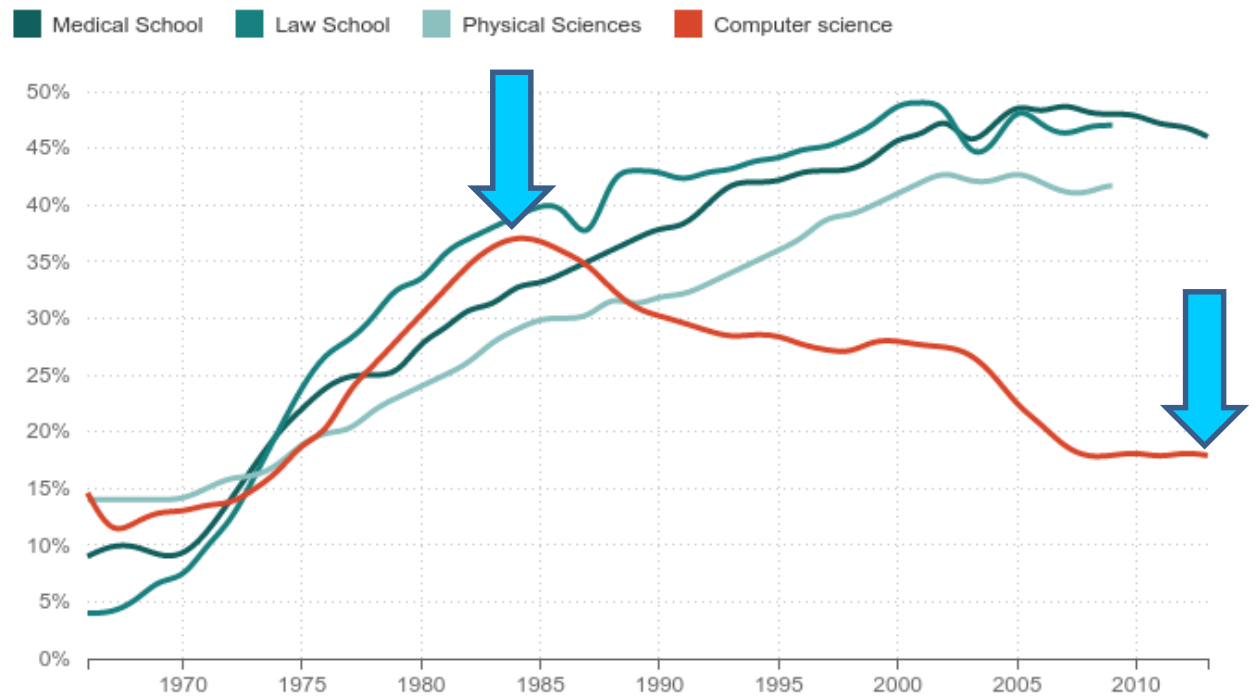
Source: National Science Foundation, American Bar Association, American Association of Medical Colleges

Credit: Quoctrung Bui/NPR

# Women's Declining Presence in Computing

## What Happened To Women In Computer Science?

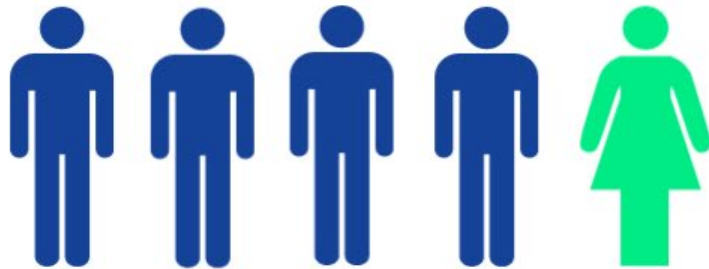
% Of Women Majors, By Field



Source: National Science Foundation, American Bar Association, American Association of Medical Colleges  
Credit: Quoctrung Bui/NPR

# Students Aspiring to Computing Careers

**Males outnumber  
Females**



79% of aspirants are Males and 21% are Females

**"A" Students more  
common among Females**

**FEMALES**

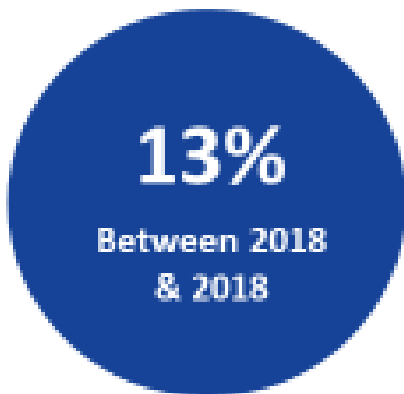
**54%**

**MALES**

**41%**

# NEEDED: Computer & IT Workers

## Expected Growth



## Expected New Jobs



Source: <https://www.bls.gov/emp/tables/emp-by-major-occupational-group.htm>

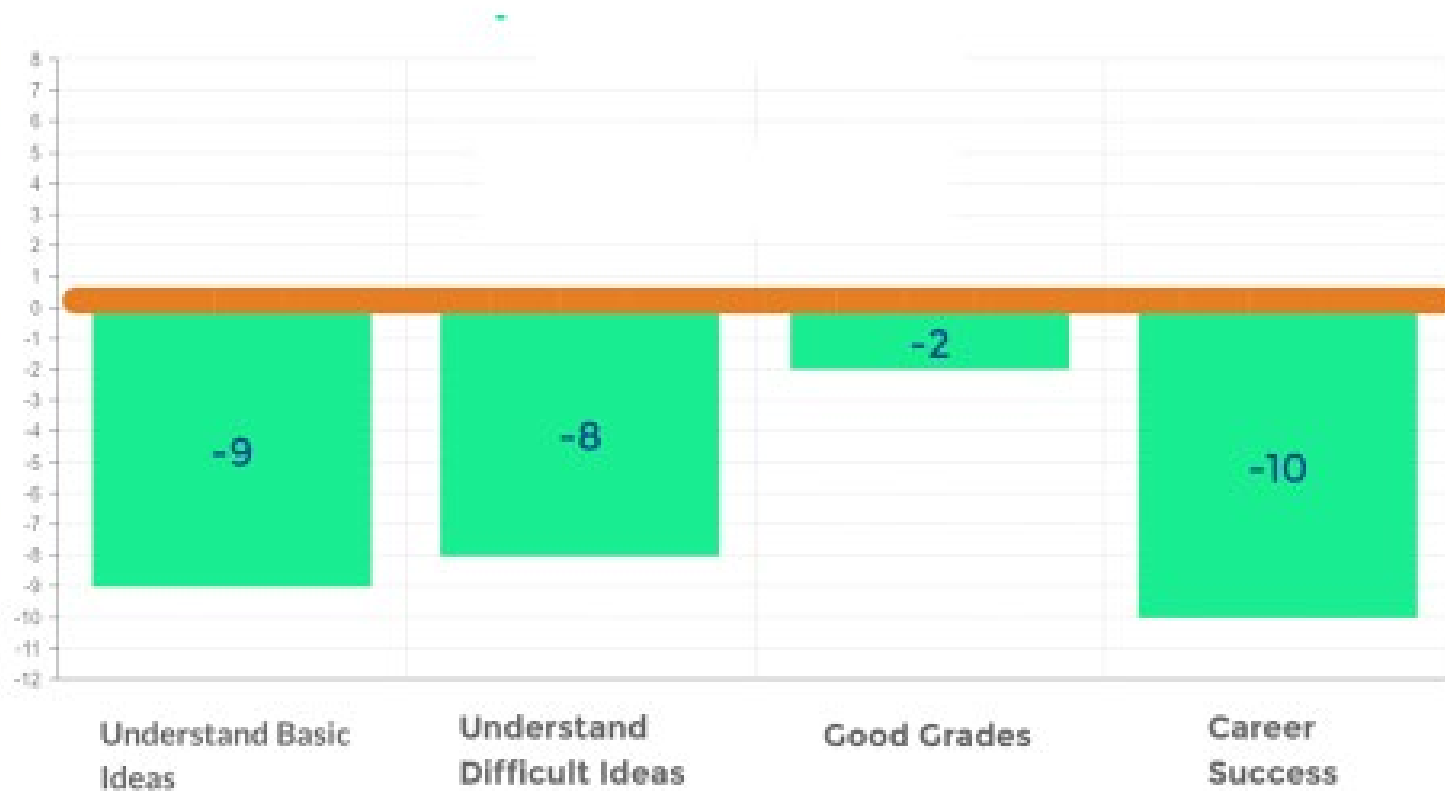




**STEM Confidence and  
Experience**

# Gender Gap in STEM Confidence: Computing Aspirants

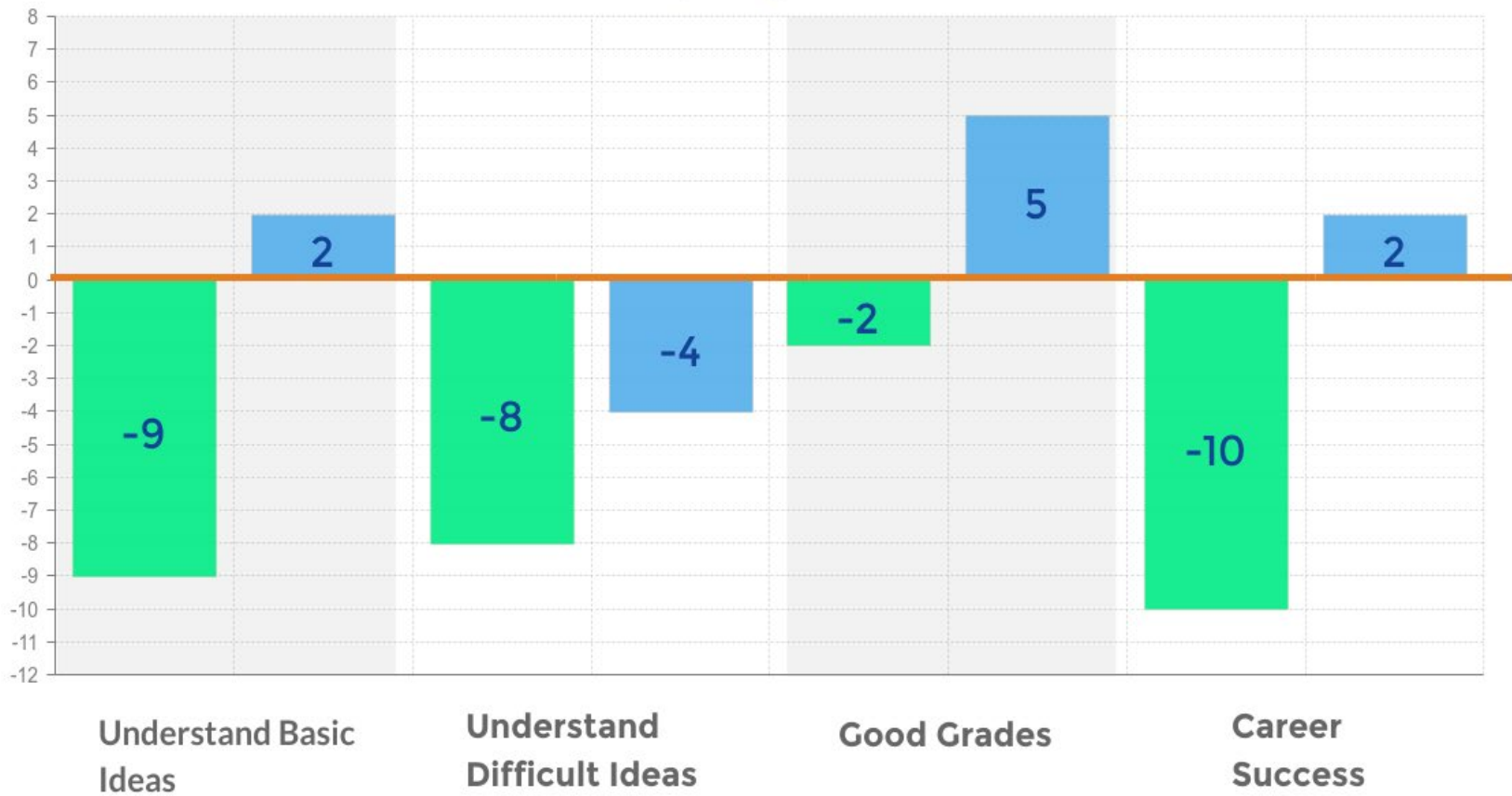
(% Females - % Males Completely Confident)





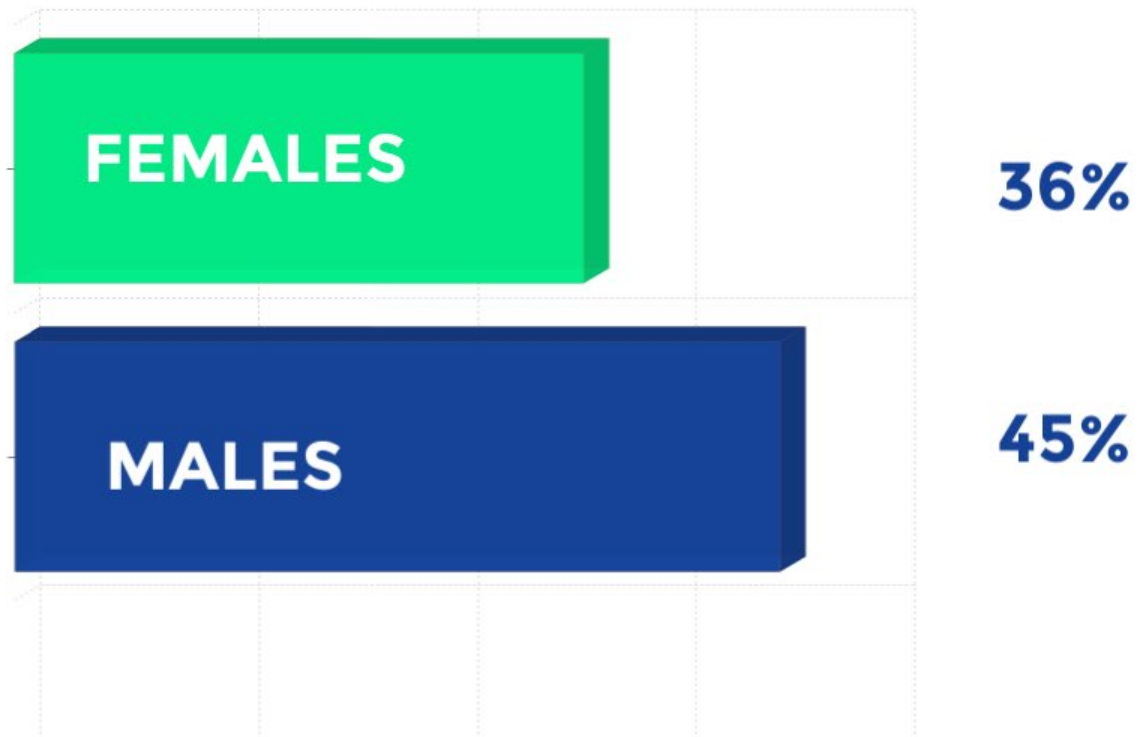
# Gender Gap in STEM Confidence: Computing Aspirants vs. Other STEM Aspirants

(% Females - % Males Completely Confident)



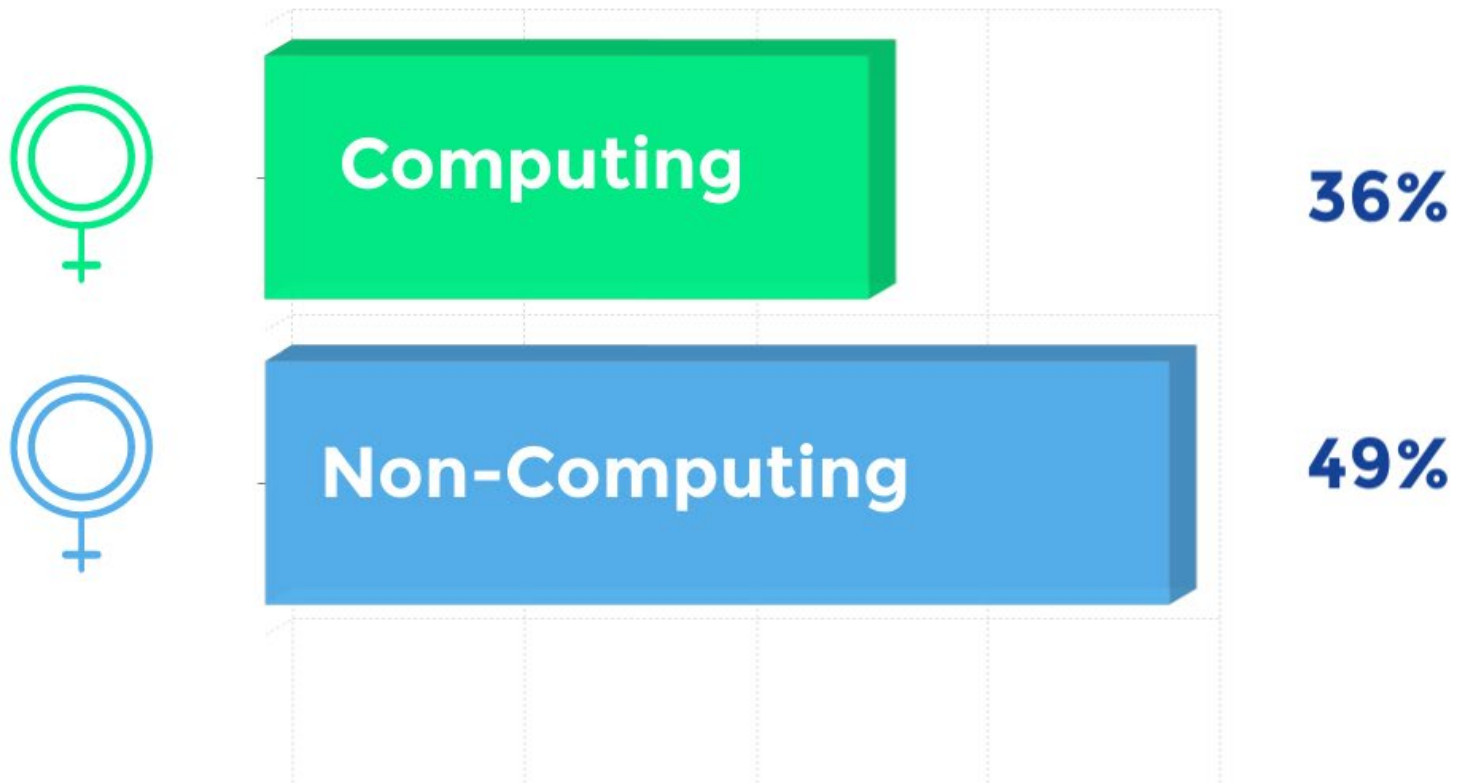
# Computing Career Aspirants: Confidence of Fair Treatment in STEM Classes

(% Completely Confident)



# Fair Treatment in STEM Classes: Female STEM Aspirants

(% Completely Confident)





Computing: Make it **Matter**

## Top Interests of Computing Career Aspirants\*

### Computing Aspirants' Top Interests\*

**39%**  
eSports



**24%**  
PAINTBALL



**16%**  
BASKETBALL



\*Interests are assessed based on the following question: Which SPORTS or ACTIVITIES might you participate in during college?

## Top Interests: Males\*

### MALE:

45%  
eSports 

26%  
PAINTBALL 

18%  
BASKETBALL 

Which SPORTS or ACTIVITIES might you participate in during college?



## Top Interests: Females vs. Males\*

### FEMALE:

51%  
ART



28%  
MUSIC



21%  
COMMUNITY  
SERVICE



### MALE:

45%  
eSports



26%  
PAINTBALL



18%  
BASKETBALL



\*Interests are assessed based on the following question: Which SPORTS or ACTIVITIES might you participate in during college?

What Matters?

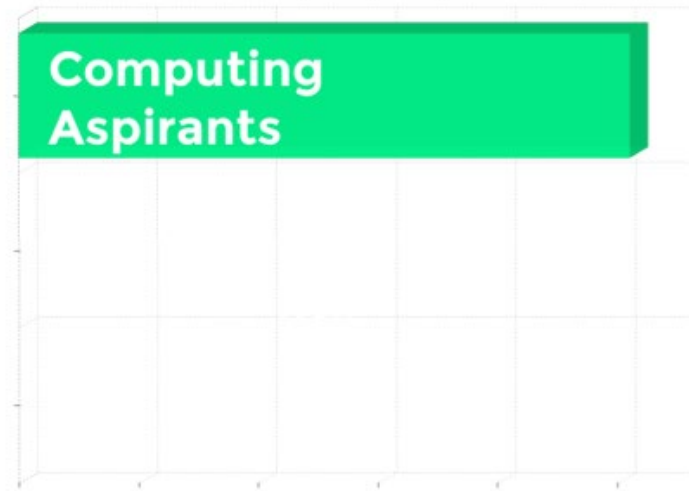
## Intend to Pursue Art as Extracurricular

(% intend to pursue ART in college)



Computing Aspirants

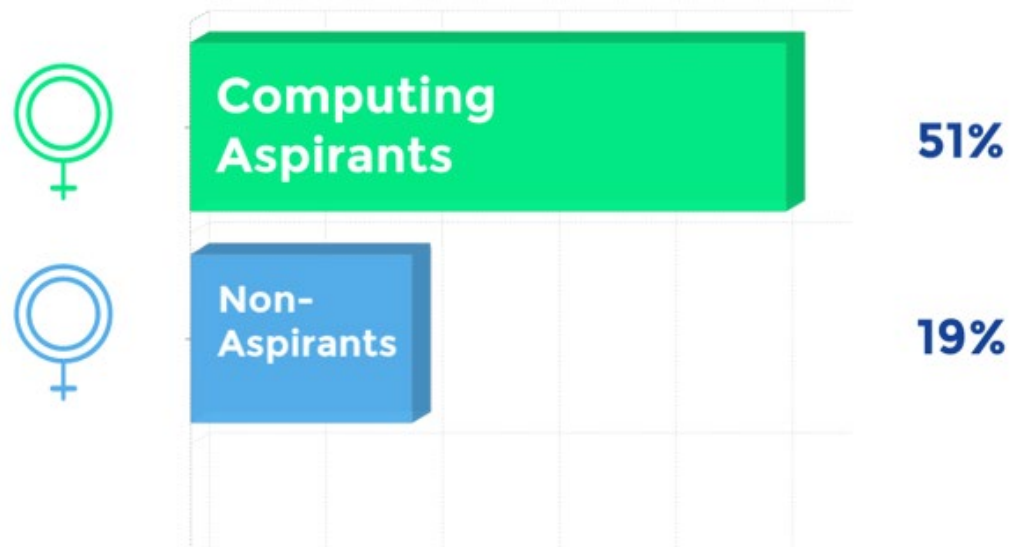
51%



What Matters?

## Intend to Pursue Art as Extracurricular

(% intend to pursue ART in college)



What Matters?

## Intend to Pursue Community Service as Extracurricular

(% intend to pursue COMMUNITY SERVICE in college)



Computing Aspirants

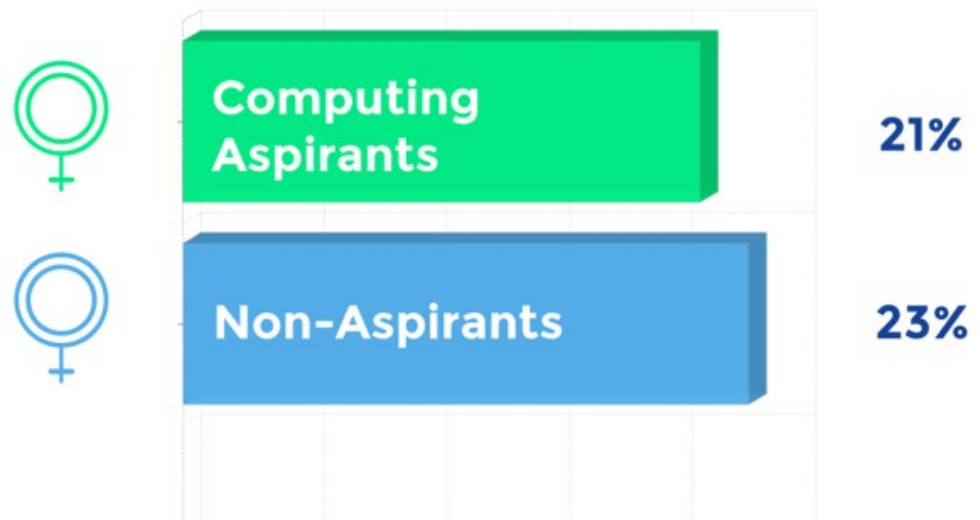
21%



What Matters?

## Intend to Pursue Community Service as Extracurricular

(% intend to pursue COMMUNITY SERVICE in college)





Do New Pathways to Computing Require  
**New Interventions?**

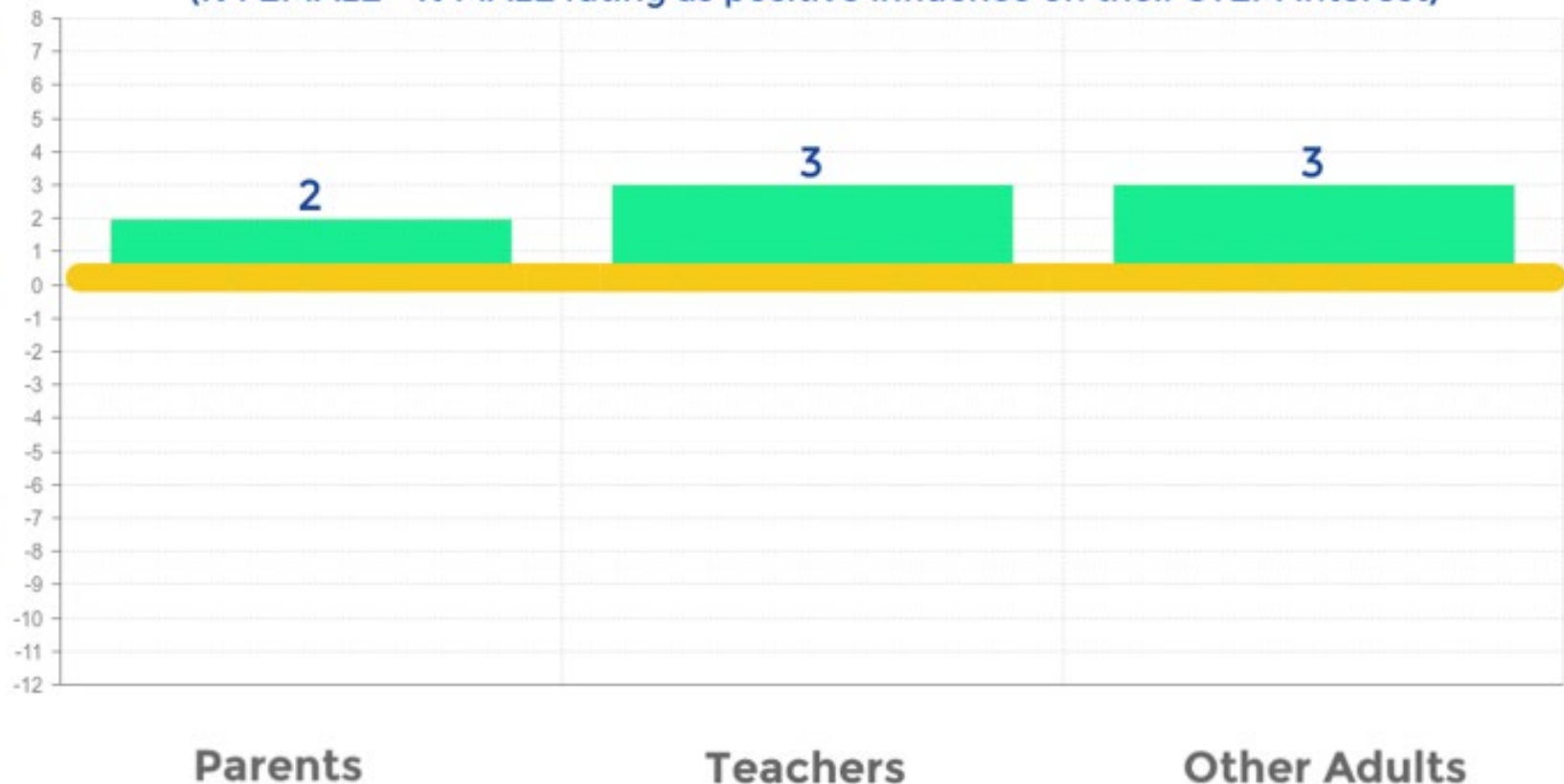




# Gender Gap in Positive Influence on STEM Interest

## Computing Aspirants

(% FEMALE - % MALE rating as positive influence on their STEM interest)





# Gender Gap in Positive Influence on STEM Interest

## Computing Aspirants

(% FEMALE - % MALE rating as positive influence on their STEM interest)



Pastimes

Out-of-School Activities

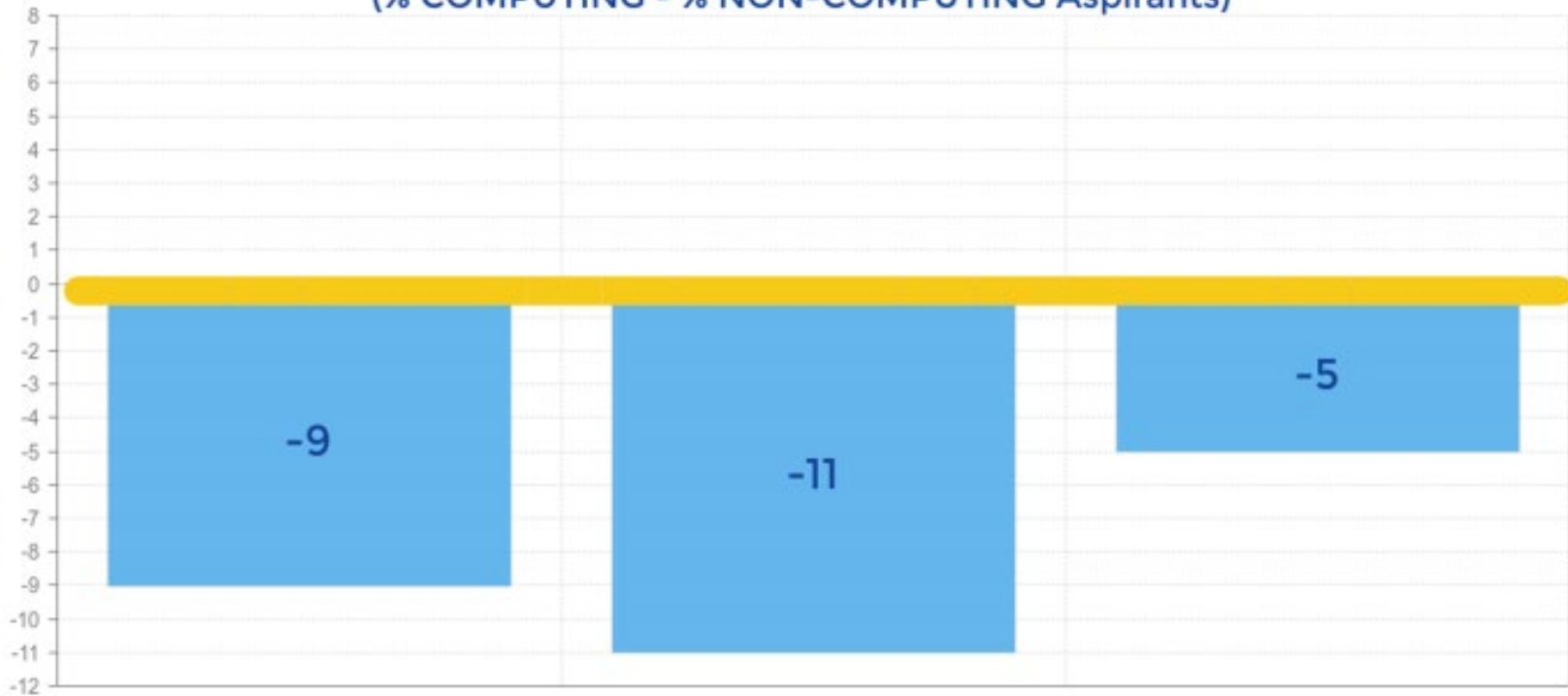
In-School Activities



# Gap in Positive Influence on STEM Interest

## Female STEM Aspirants

(% COMPUTING - % NON-COMPUTING Aspirants)



Parents

Teachers

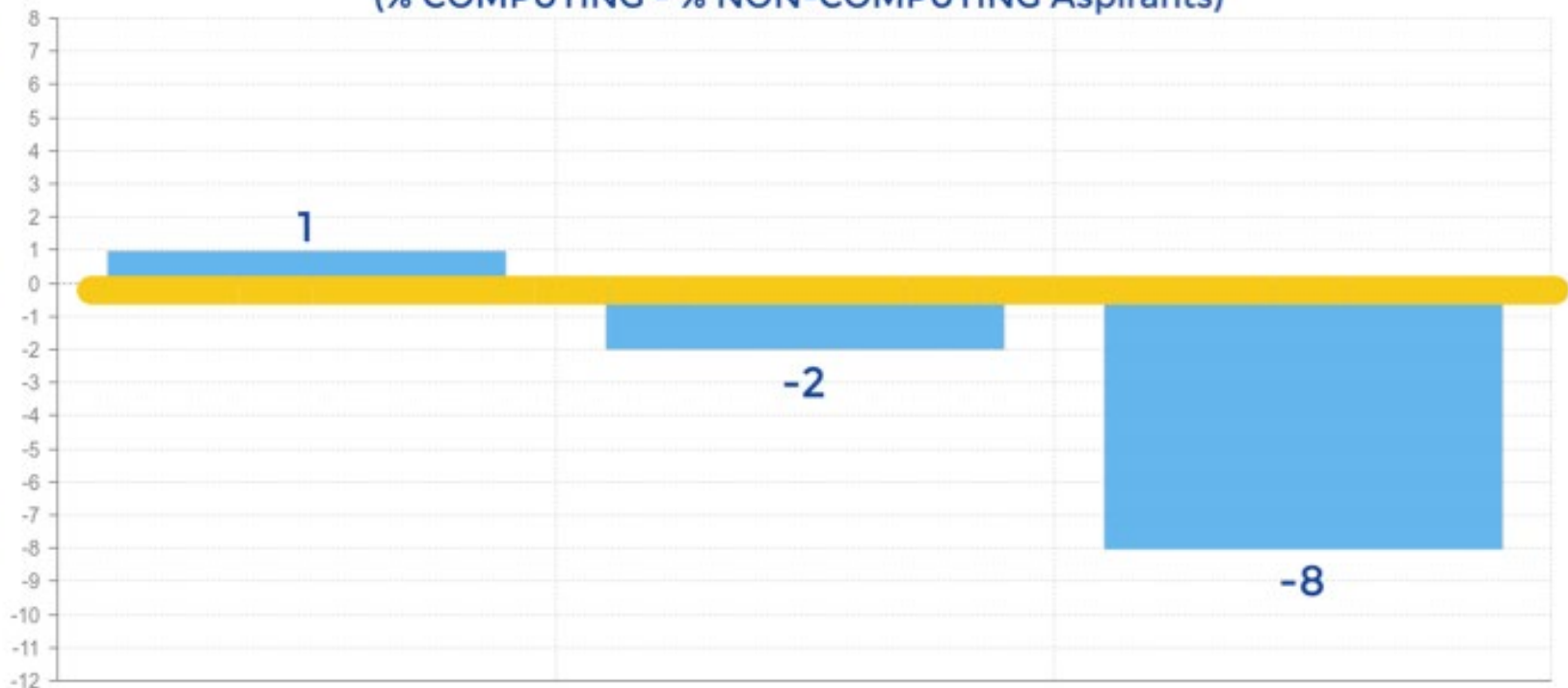
Other Adults



# Gap in Positive Influence on STEM Interest

## Female STEM Aspirants

(% COMPUTING - % NON-COMPUTING Aspirants)



Pastimes

Out-of-School Activities

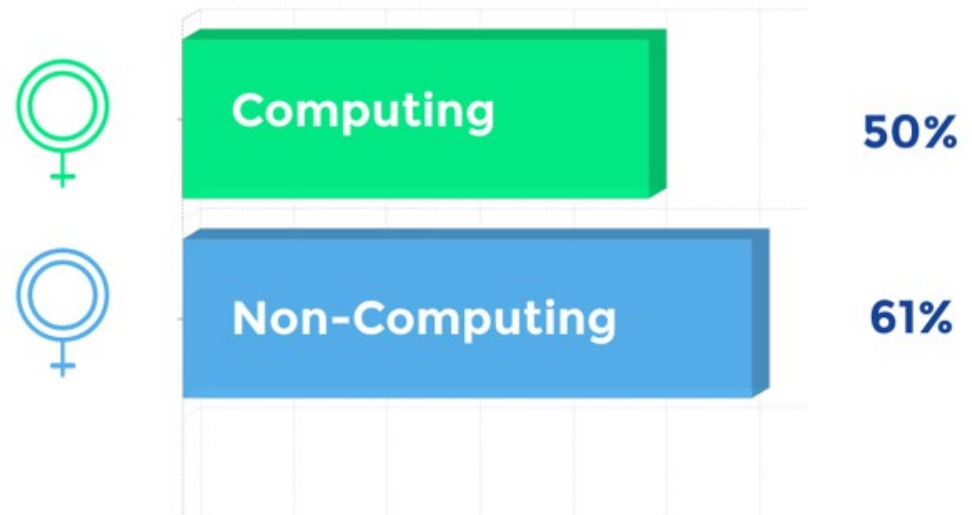
In-School Activities





## Teachers Rated Positive Influence on STEM Interest STEM Aspirants

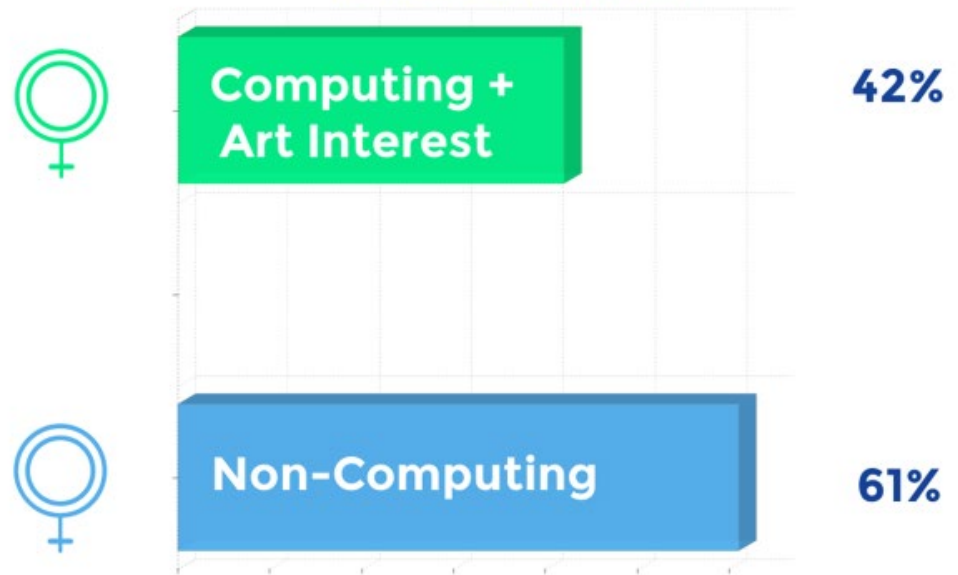
(% rate as positive influence)





## Teachers Rated Positive Influence on STEM Interest STEM Aspirants

(% rate as positive influence)







## Teachers Rated Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)



Computing +  
Art Interest

42%



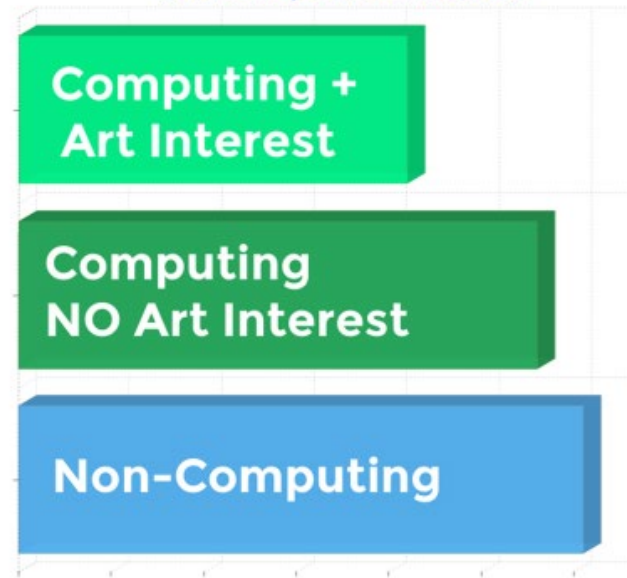
Computing  
NO Art Interest

56%



Non-Computing

61%





## Parents Rated Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)



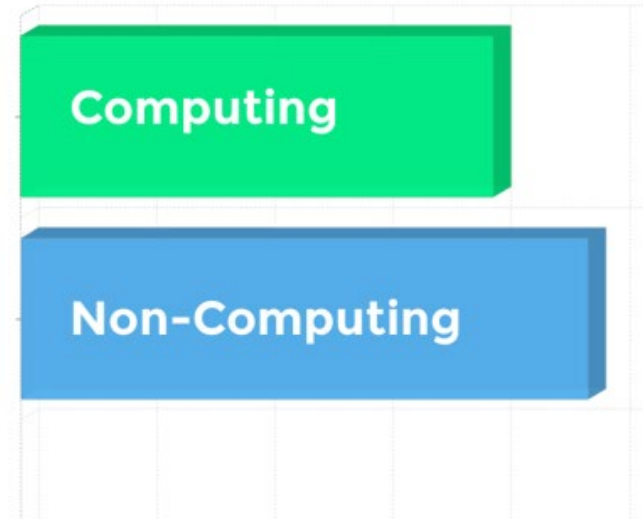
Computing

40%



Non-Computing

48%

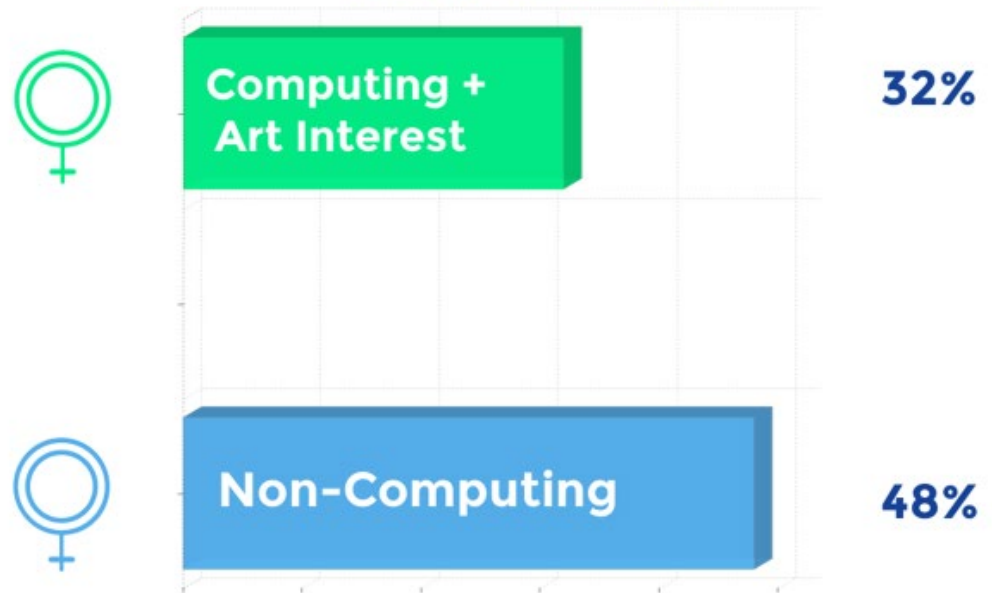




## Parents Rated Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)



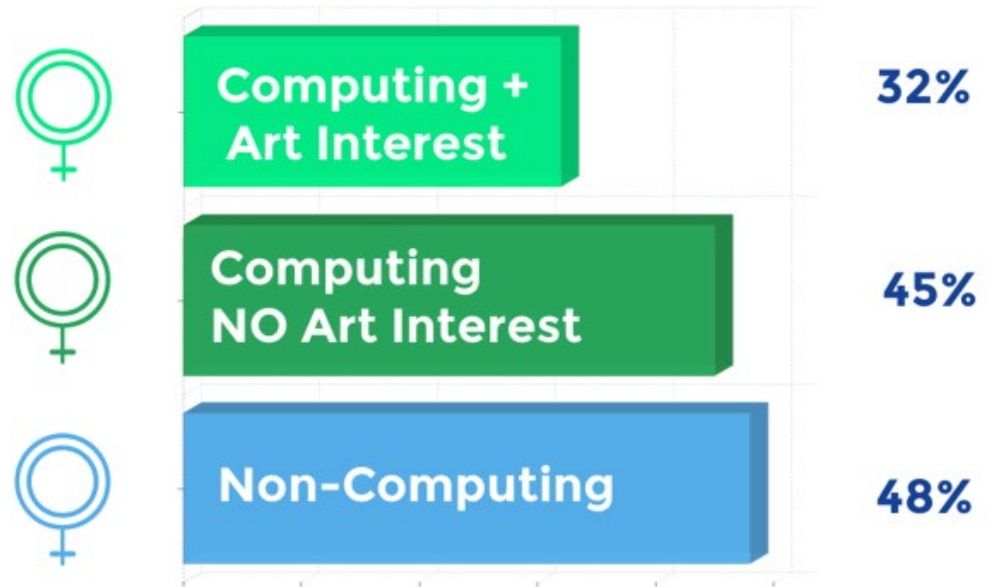




## Parents Rated Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)





## School Activities Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)



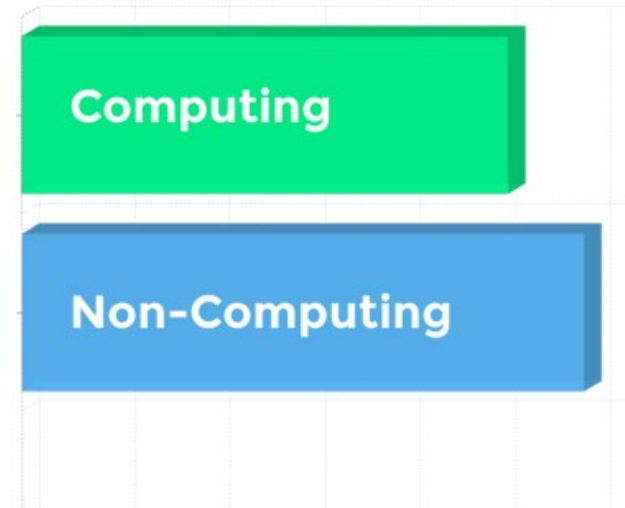
Computing

51%



Non-Computing

59%

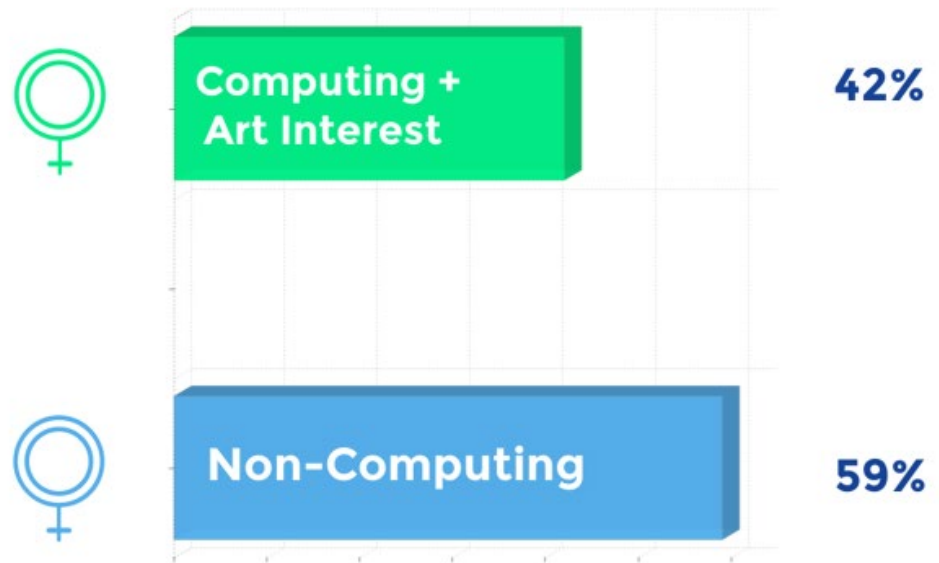




## School Activities Positive Influence on STEM Interest

### STEM Aspirants

(% rate as positive influence)



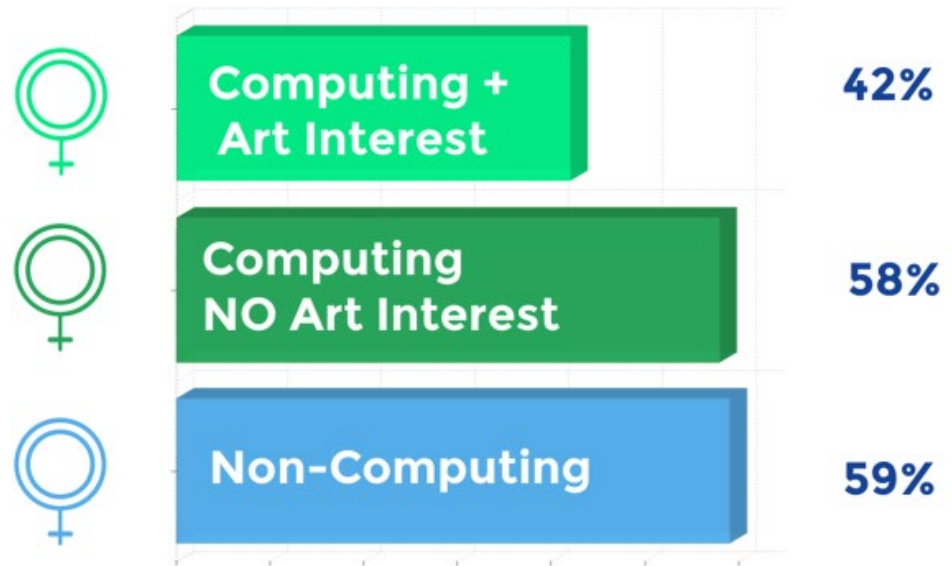




## School Activities Positive Influence on STEM Interest

### STEM Aspirants

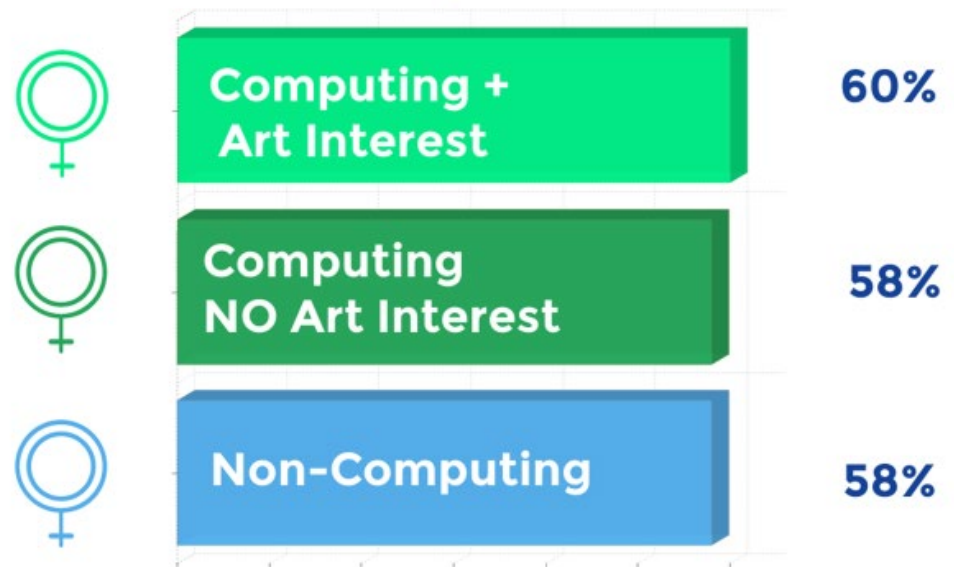
(% rate as positive influence)





## Pastimes Rated a Positive Influence on STEM Interest: Female STEM Aspirants

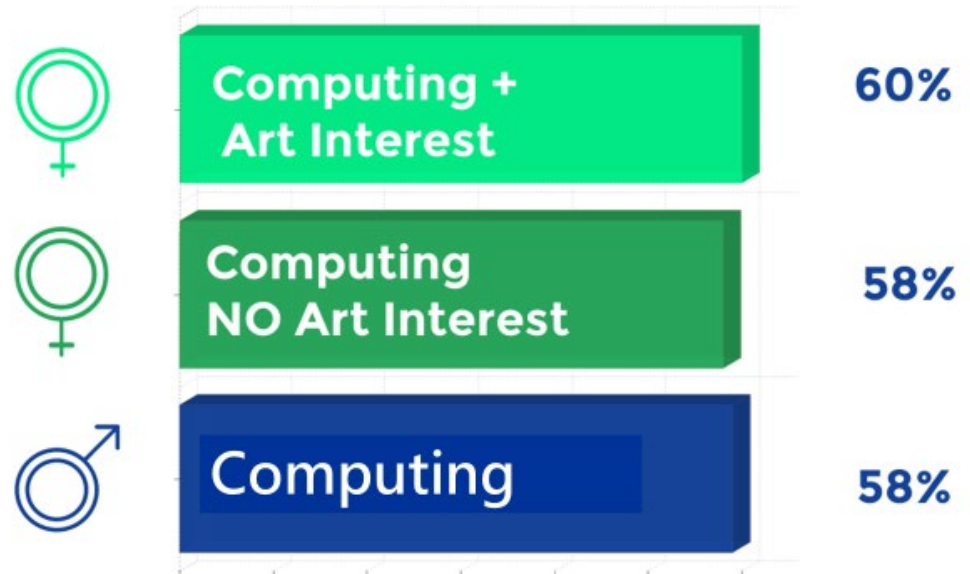
(% rate as positive influence)





## Pastimes Rated a Positive Influence on STEM Interest: STEM Aspirants

(% rate as positive influence)



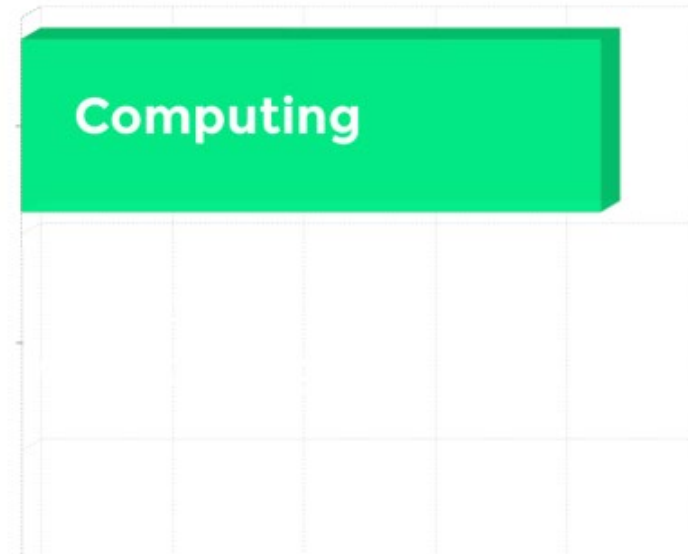




# Postsecondary Education Plans Uncertain

## STEM Aspirants

(% Uncertain)



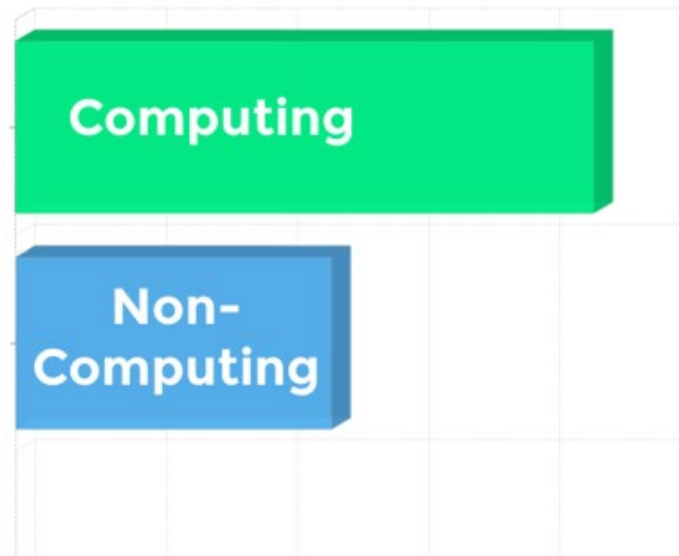
**22%**



# Postsecondary Education Plans Uncertain

## STEM Aspirants

(% Uncertain)



**22%**



**Non-  
Computing**

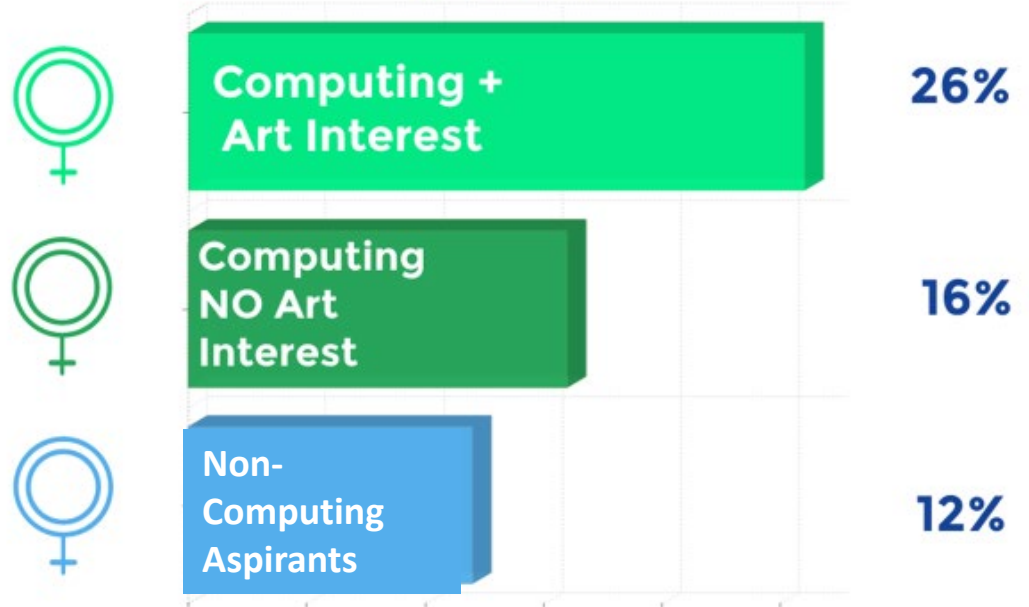
**12%**



# Postsecondary Education Plans Uncertain

## STEM Aspirants

(% Uncertain)







# Strategies Fueled by SRF Results

- Low confidence among computing aspirants
  - Argue for more diverse: role models, career examples, pathway discussions
  - Incentivize culture change w data on lack of confidence in career success and fair treatment
- High interest in art and social good
  - Elevate “CS+X” and integrated strategies; frame computing as a powerful tool
- Supportive adults and OST experiences
  - Focus on interventions within these flexible systems
  - Ensure an intersectional lens with respect to adult/family support structures
- Post-secondary uncertainty
  - Reduce uncertainty through exploration; resist the urge to narrow options in order to reduce uncertainty
- Remember: Computing engagement advocacy is relatively new compared to STEM more broadly (aka life sciences and engineering)

A woman with curly hair is shown from the chest up, looking at a laptop screen. She is wearing a light-colored button-down shirt. The entire image is overlaid with a semi-transparent blue filter. A white rectangular box with a thin border is centered horizontally and vertically, containing the word "Questions?". A white circle is positioned at the top center of the box, overlapping the top edge of the box and the top of the woman's head.

Questions?



# Discussion

# THANK YOU

---

**Debra L. Dodson, Ph.D.**  
Chief Research Scientist

609-658-0979

[ddodson@studentresearchfoundation.org](mailto:ddodson@studentresearchfoundation.org)

**Michael Conn, Ph.D.**  
Executive Director

845-490-3279

[michael@studentresearchfoundation.org](mailto:michael@studentresearchfoundation.org)



**STUDENT  
RESEARCH**  
foundation



**Stephanie Rodriguez, Ph.D.**  
VP Policy & Engagement  
[StephanieR@AnitaB.org](mailto:StephanieR@AnitaB.org)