What did we learn from the project about the gender gap in science in Asia, Africa, Latin America?

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- Africa (established in 2005)
- Asia and the Pacific (established in 2006)
- Latin America and the Caribbean (established in 2007)

For this reason, regional workshops were organized in 2017 to bring in a regional perspective into the three tasks of the survey

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Asia regional workshop, Taiwan, November, 2017

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Latin America regional workshop, Colombia, November, 2017

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Asia regional workshop,
Taiwan, November, 2017

Latin America regional workshop,
Colombia, November, 2017

Africa regional workshop,
South Africa, December, 2017

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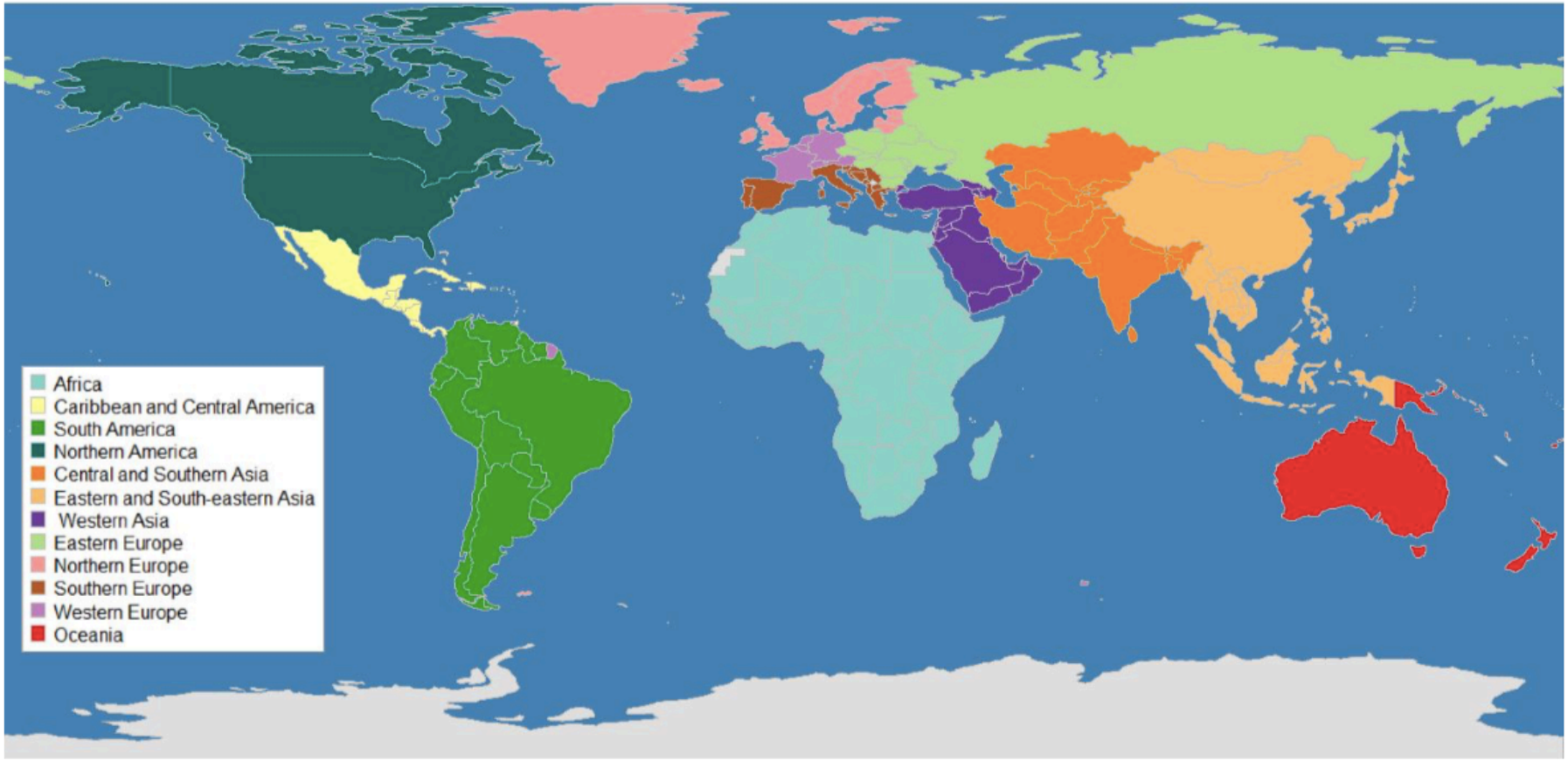
I will give you information obtained mostly through the Global Survey, but also from the other 2 tasks.

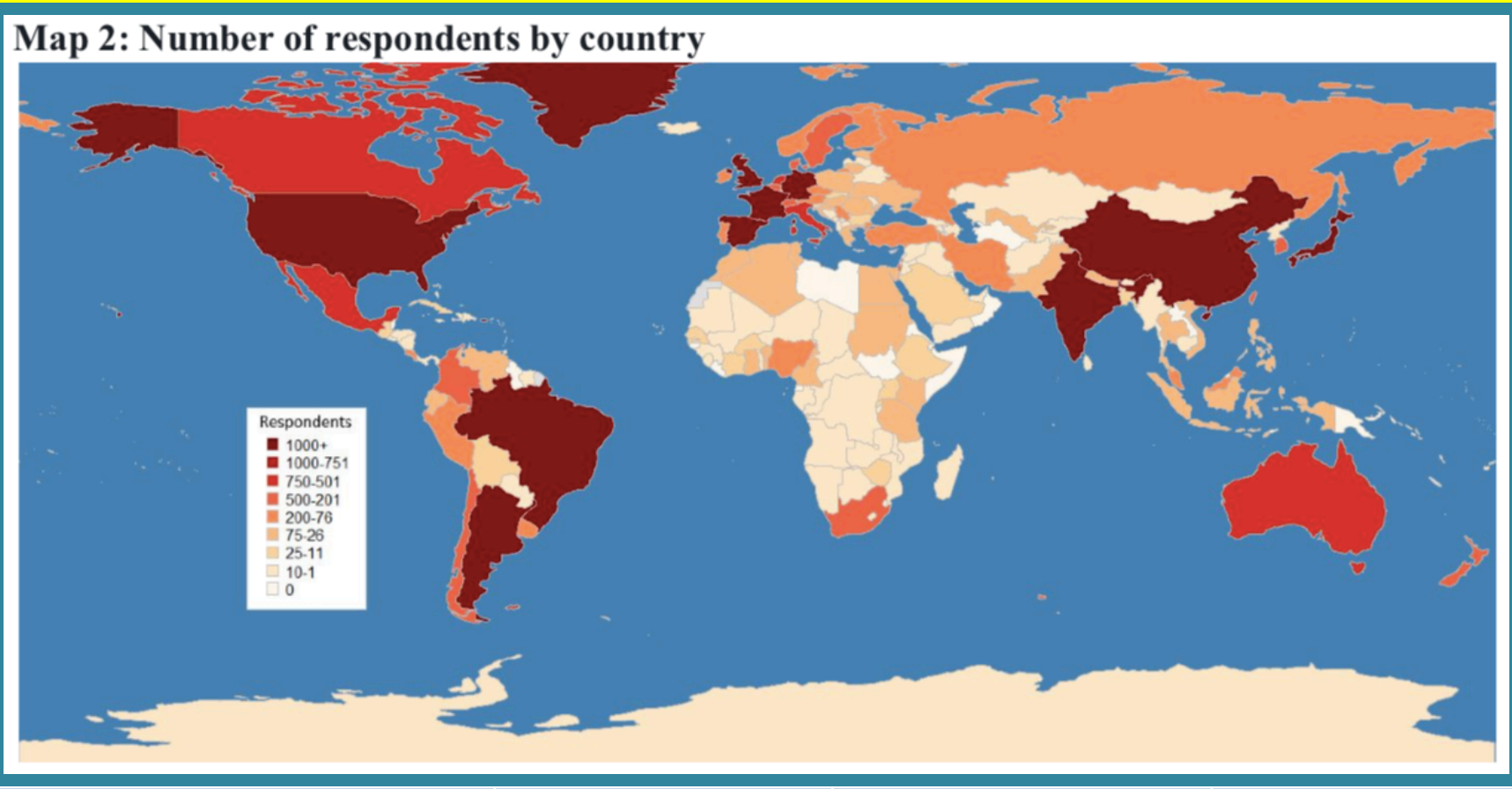
Map 1: Geographic regions used in the analyses



Asia/Pacific: Western Asia, Central/Southern Asia, & Eastern/South-East Asia

Latin America & Caribbean: Central America (including Mexico)/Caribbean & South America

Task 1. The Global Survey



	Responses	% Grand Total	% Expected
Grand Total	32406	100	70
Africa	1277	3.9	126
Asia/Pacific	6588	20.3	33
LAC	4034	12.4	259

Africa by country

Responses from Africa, Grand Total: 1277 (F: 61%)			
Country	**Number**	**Fraction**	**Accumulated**
South Africa	497	0,39	0,39
Nigeria	195	0,15	0,54
Kenya	58	0,05	0,59
Algeria	57	0,04	0,63
Morocco	49	0,04	0,67
Tunisia	38	0,03	0,70
Cameroon	35	0,03	0,73
Egypt	30	0,02	0,75
Ghana	28	0,02	0,77
Benin	27	0,02	0,79
Sudan	27	0,02	0,82
UR of Tanzania	26	0,02	0,84
Zimbabwe	22	0,02	0,85
Ethiopia	21	0,02	0,87
Senegal	21	0,02	0,89
Uganda	20	0,02	0,90

Asia by subregion and main countries in each subregion (overall: F: 39.5%)

Responses from Eastern/South-East Asia, GT: 4794 (F: 36%)			
Country	**Number**	**Fraction**	**Accumulated**
Japan	2459	0,51	0,51
China	1200	0,25	0,76
Rep of Korea	412	0,09	0,85
Taiwan	321	0,07	0,92

Responses from Central/Southern Asia, GT: 1415 (F: 45%)			
Country	**Number**	**Fraction**	**Accumulated**
India	1136	0,80	0,80
Islamic Rep of Iran	92	0,07	0,87
Pakistan	74	0,05	0,92

Responses from Western Asia, GT=377 (F: 59%)			
Country	**Number**	**Fraction**	**Accumulated**
Israel	208	0,55	0,55
Turkey	116	0,31	0,86
Saudi Arabia	16	0,04	0,90
United Arab Emirates	9	0,02	0,93

Latin America and the Caribbean (F: 53%) by subregion and main countries in each subregion

Responses from Central America/Caribbean, GT=677 (F:52%)			
Country	**Number**	**Fraction**	**Accumulated**
Mexico	523	0,77	0,77
Costa Rica	83	0,12	0,90
Cuba	18	0,03	0,92
Guatemala	16	0,02	0,95

Responses from South America, GT=3357 (F: 53%)			
Country	**Number**	**Fraction**	**Accumulated**
Argentina	1131	0,34	0,34
Brazil	1114	0,33	0,67
Colombia	426	0,13	0,80
Chile	322	0,10	0,89
Uruguay	127	0,04	0,93
Peru	89	0,03	0,96

Doctoral studies: Advisors and Program

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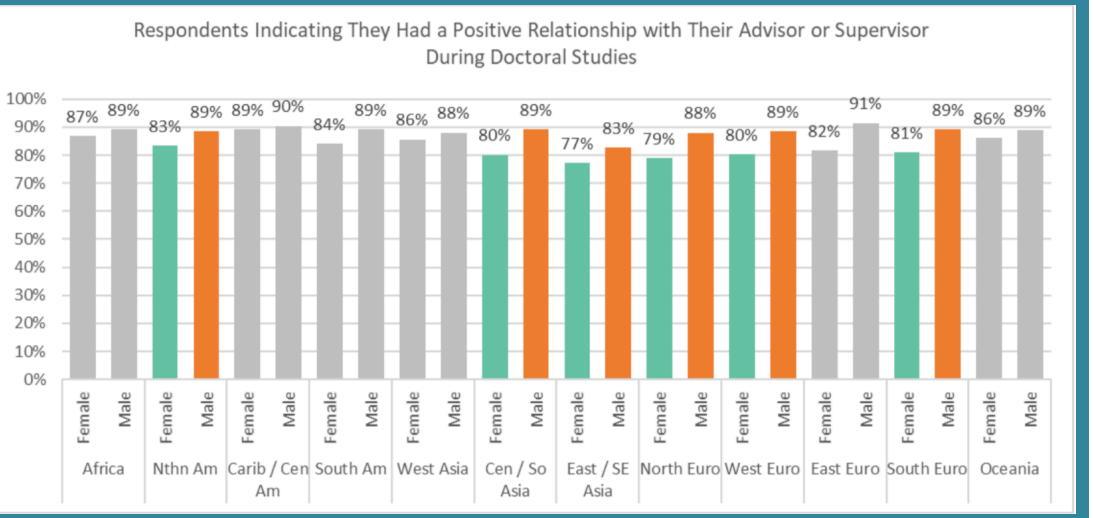
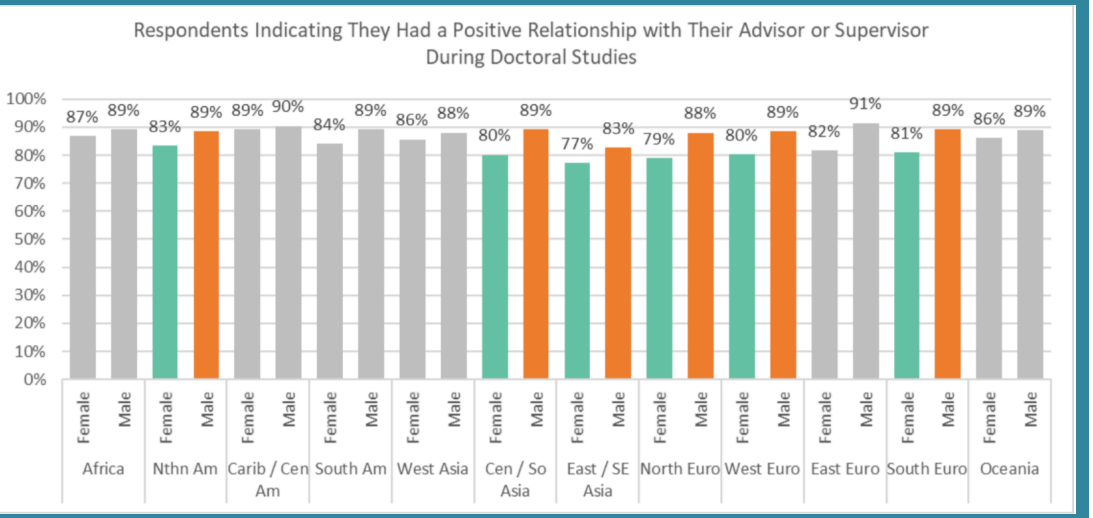


Most F & M indicated positive relationships with advisor. Positive responses lowest for F in Eastern/South-east Asia

No significant difference in positive responses between F & M in Africa and in LAC.

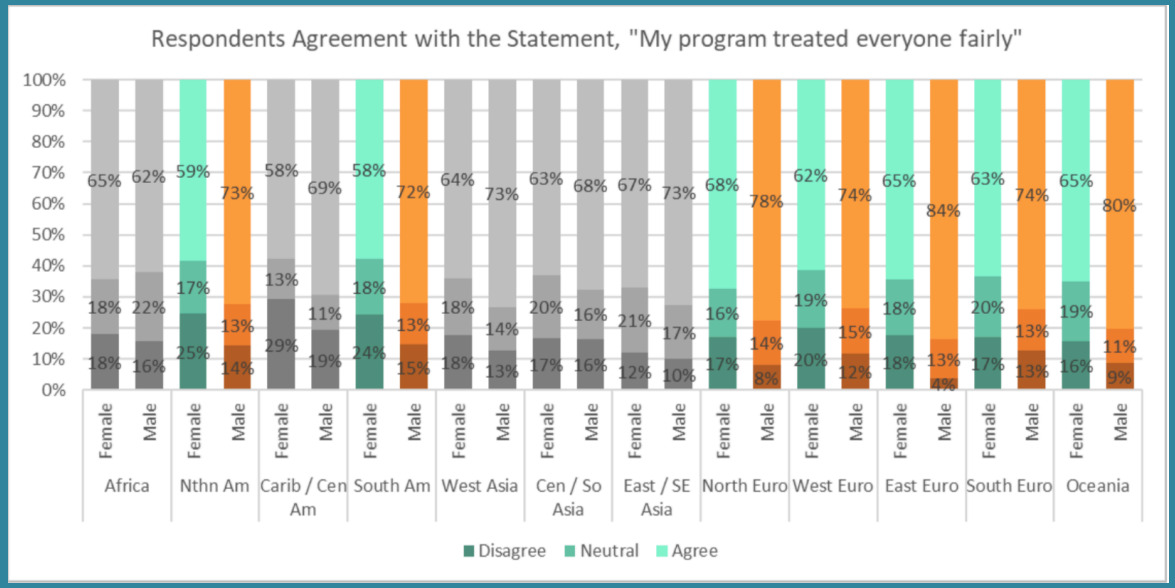
Doctoral studies: Advisors and Program



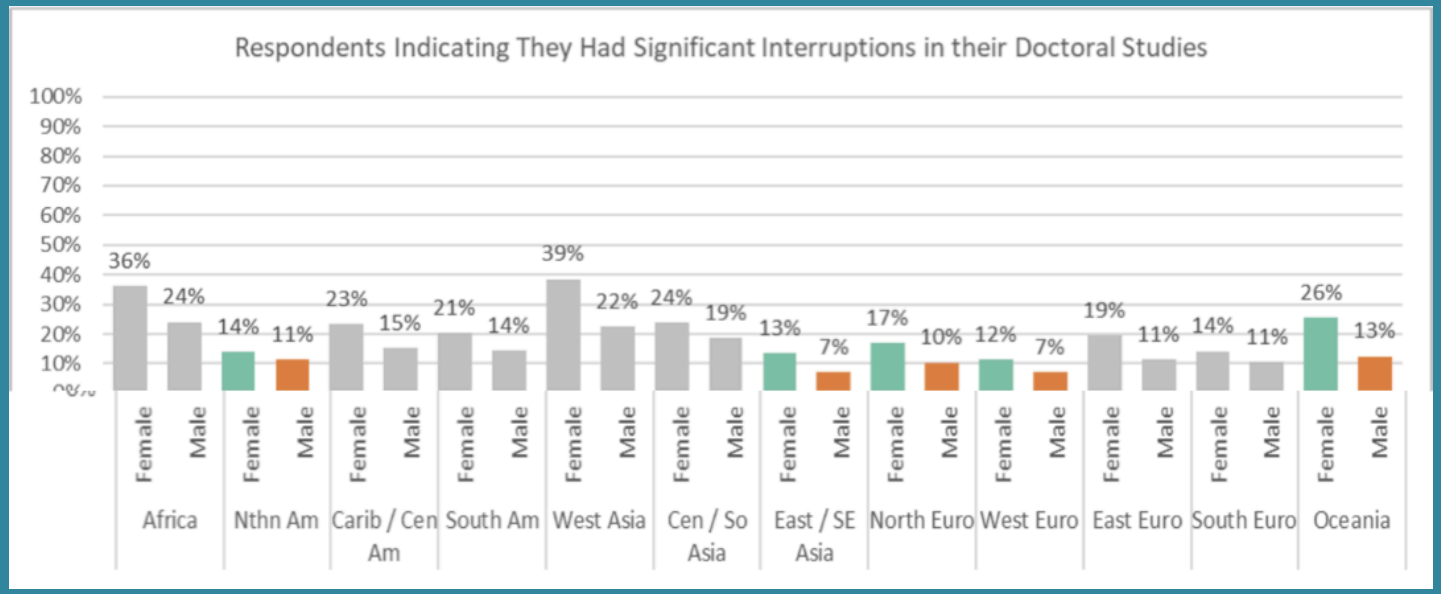
Most F & M indicated positive relationships with advisor. Positive responses lowest for F in Eastern/South-east Asia

No significant difference in positive responses between F & M in Africa and in LAC.

Significant differences were found between women and men in South America. In this region women were less likely to indicate that programs treated everyone fairly.



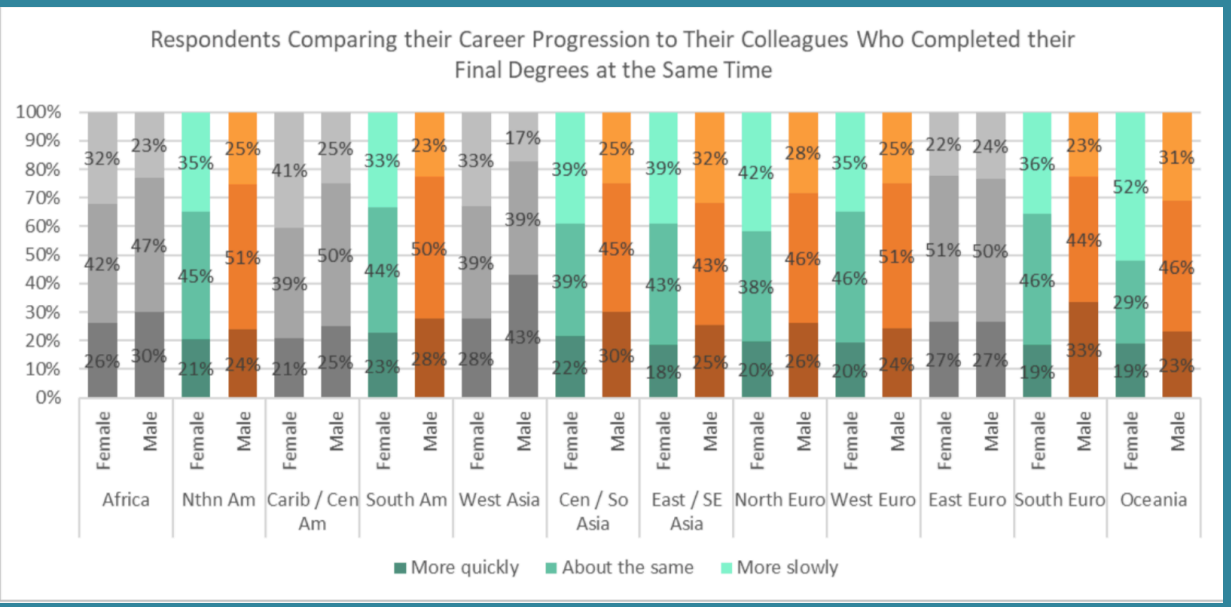
Doctoral studies: Interruptions



There were statistically significant differences between the reports from women and men about significant interruptions in their educational careers in Eastern and South-eastern Asia. While there was not a significant gender difference in responses from Africa or Western Asia, the highest rates of interruptions were reported in these regions.

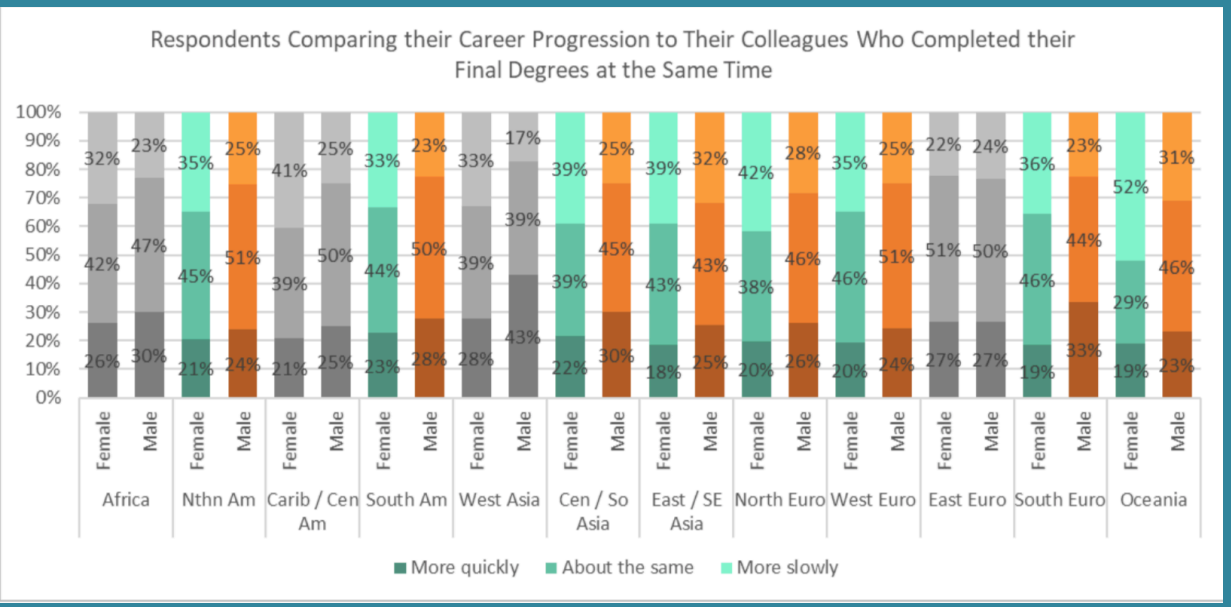
Career progression / career and children

Career progression / career and children



At least 1/3 of the W reported slower career progression compared to colleagues who completed their degrees at the same time in LAC, Central/Southern Asia, Eastern/South East Asia

Career progression / career and children



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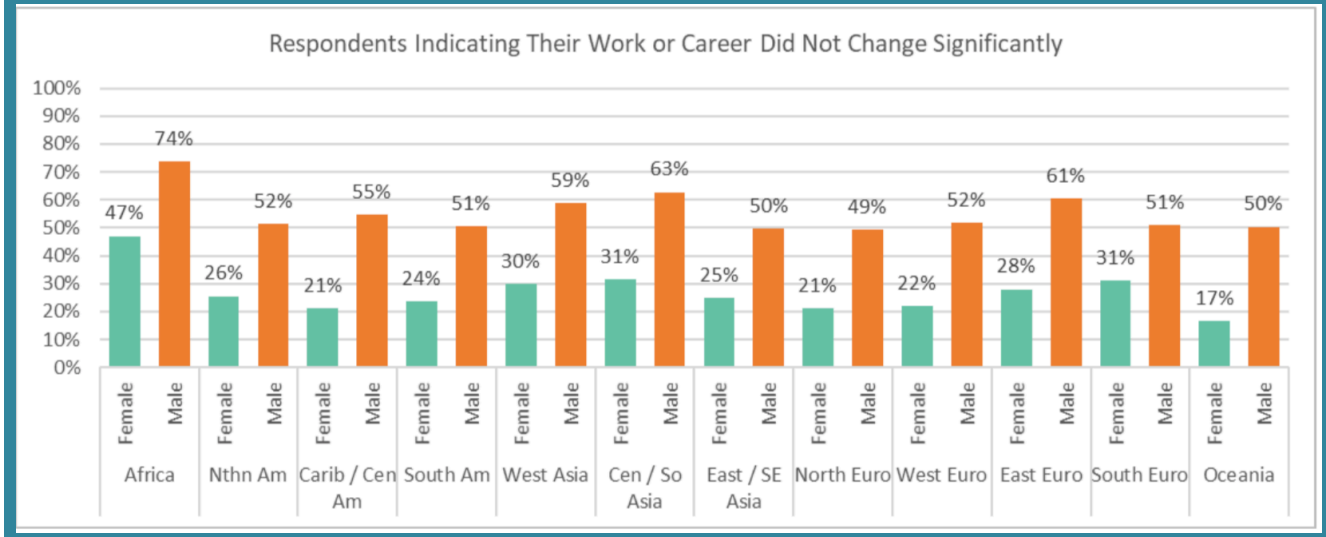
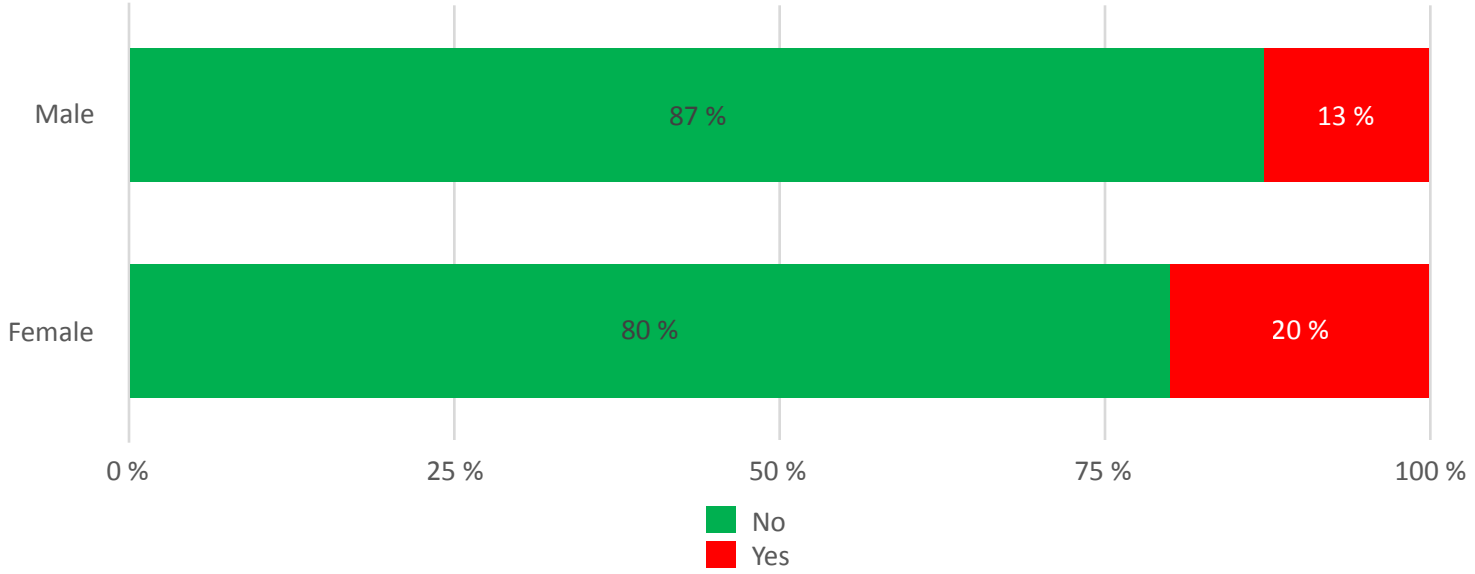
In all regions, men were significantly more likely than women to say their work or career did not change significantly because of having a child.

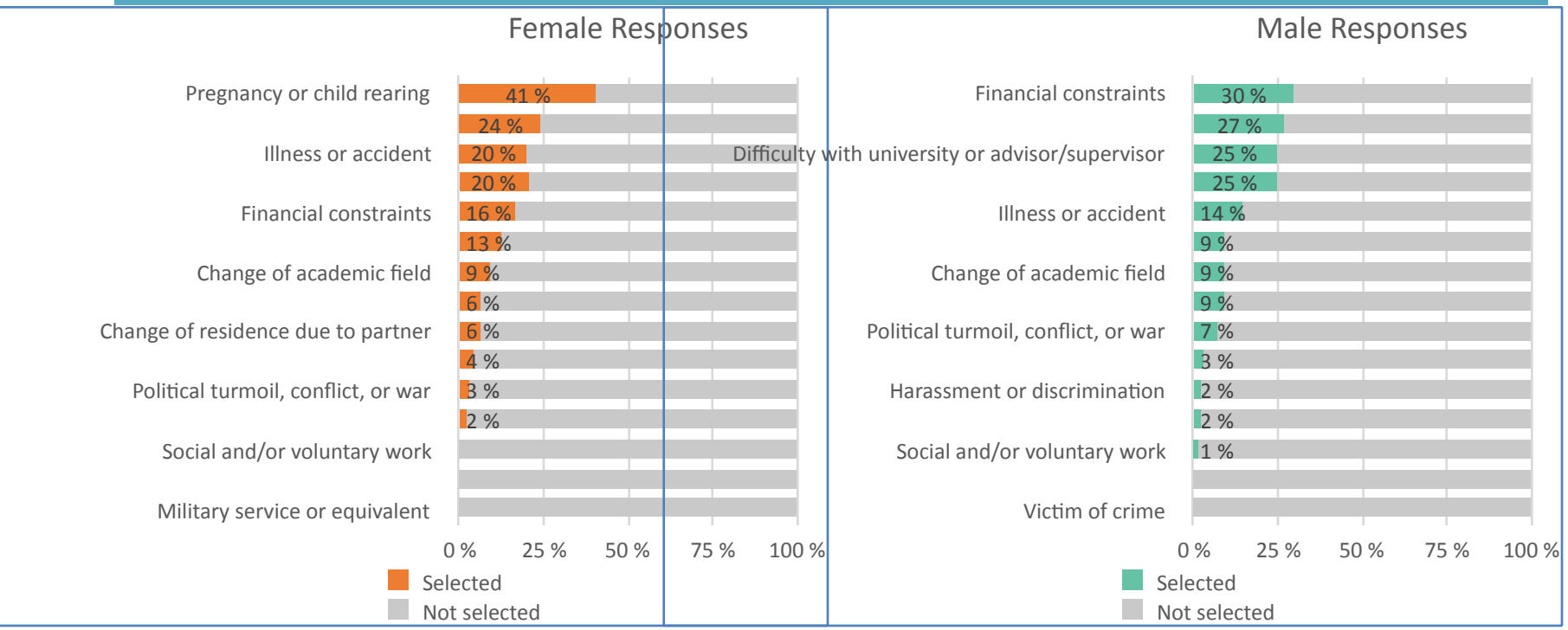


Some more details on LAC (results presented by L. Merner, AIP, at ICTP-SAIFR)

Have there been any significant interruptions in your doctoral studies?

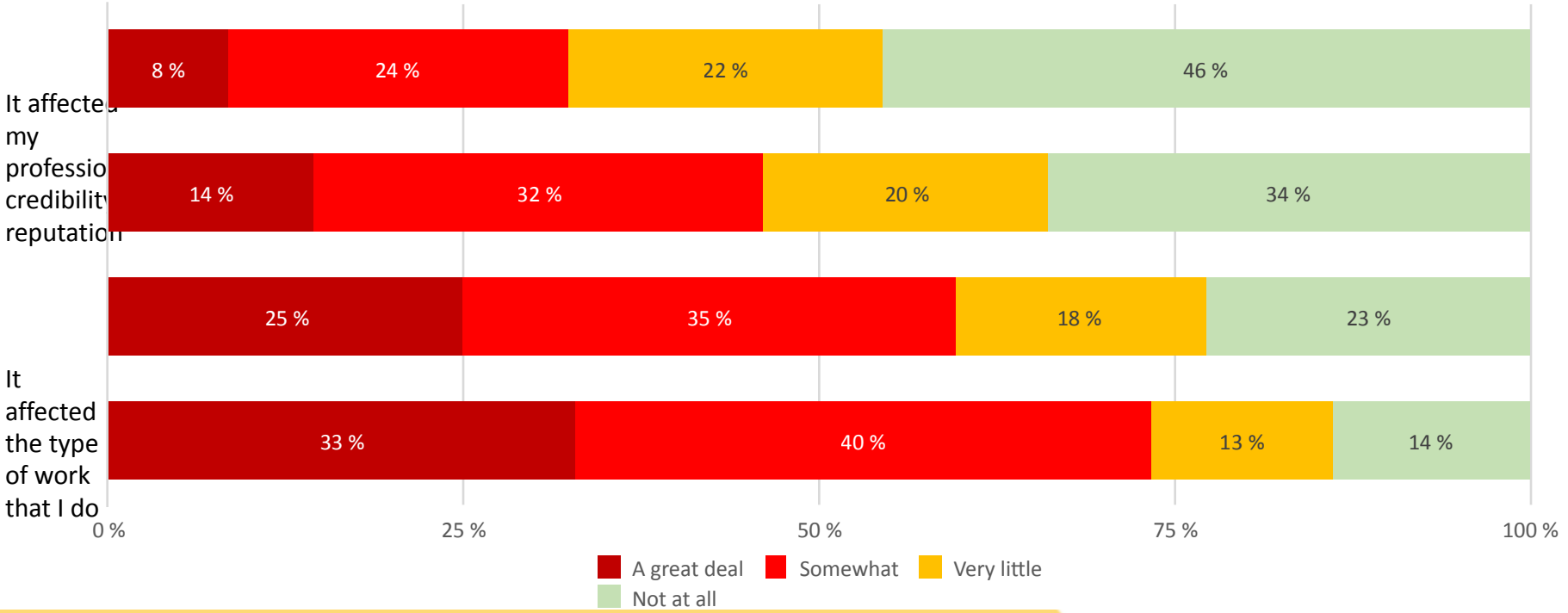


What were the main reasons for the interruption?

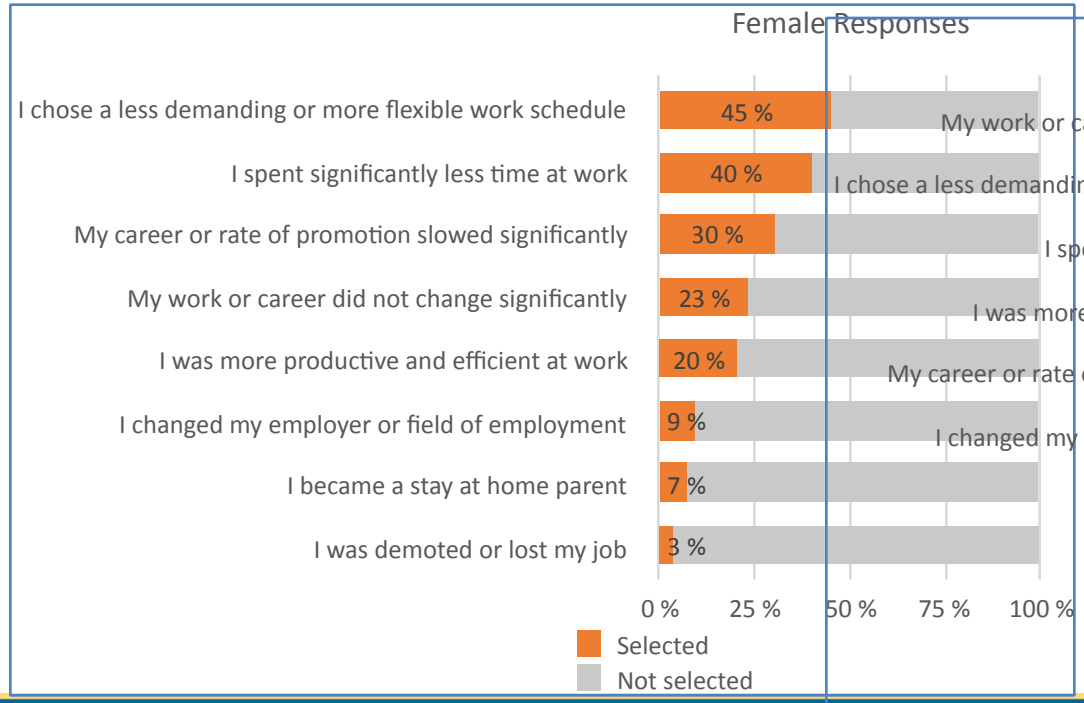


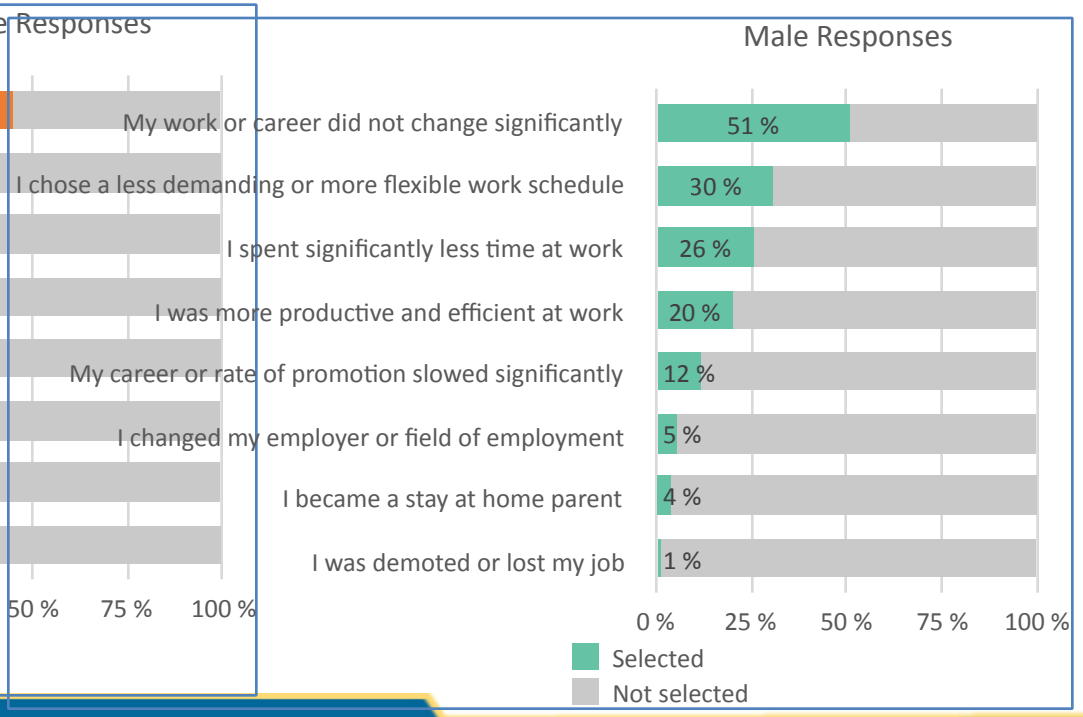
LAC

Did the break or slowdown significantly affect your career?

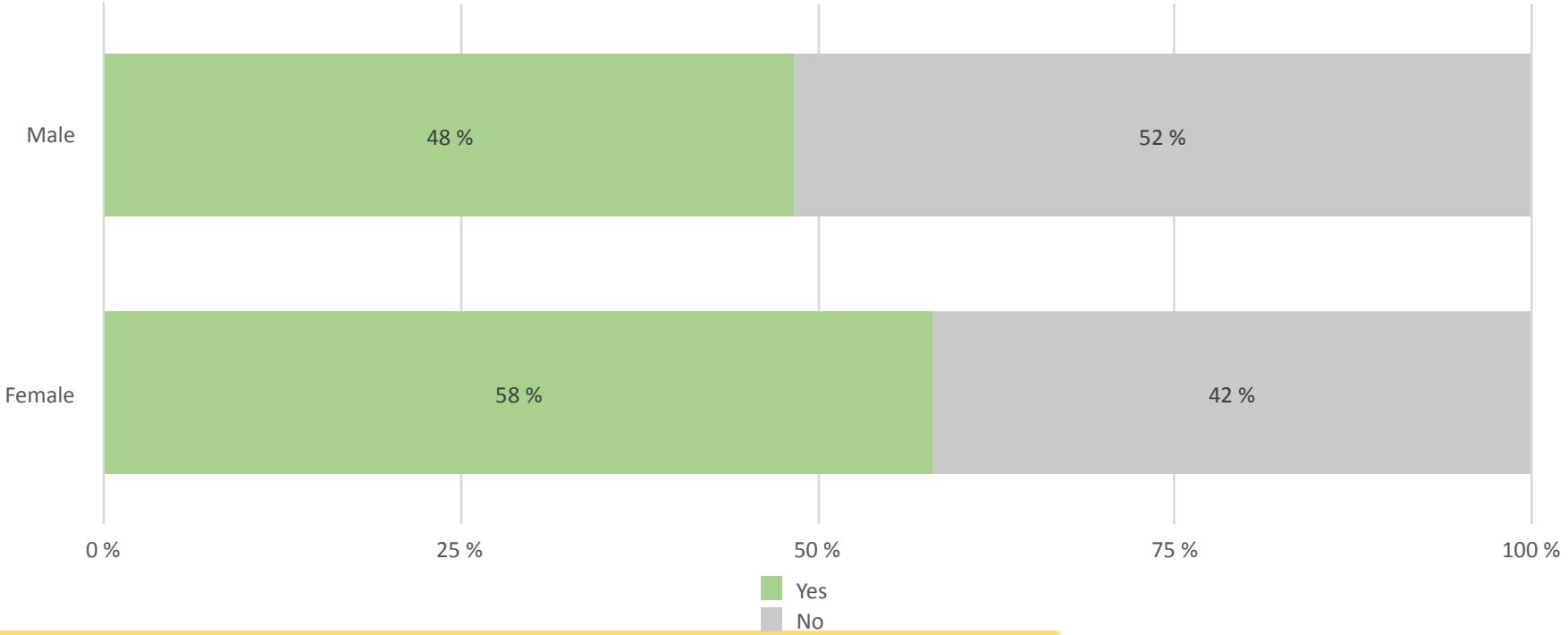


How did your work or career change because you are a parent?

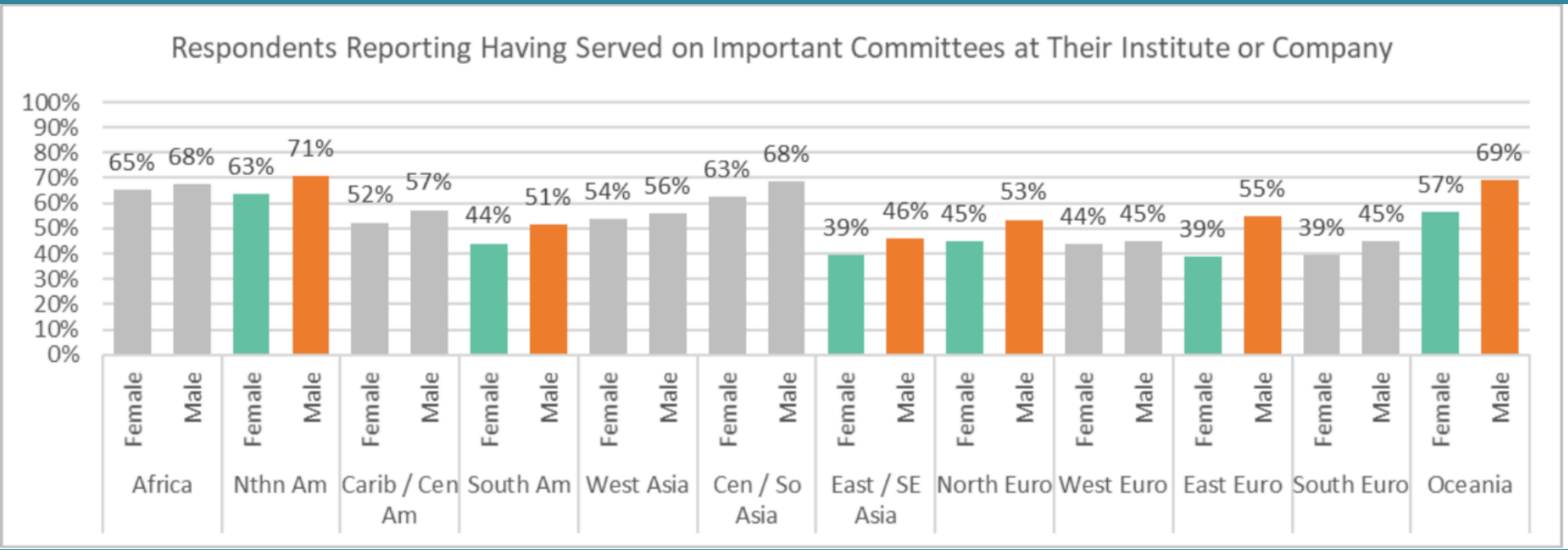




Has your career influenced your decisions about children, marriage, or a similar long-term partnership?



Back to 3 regions: Something else on career progression/prestige



No significant differences between M & F in Africa, West Asia and Cen/ So Asia (+ percents in Africa and Cen/So Asia 63-65-68%).

Workplace: employer and co-workers

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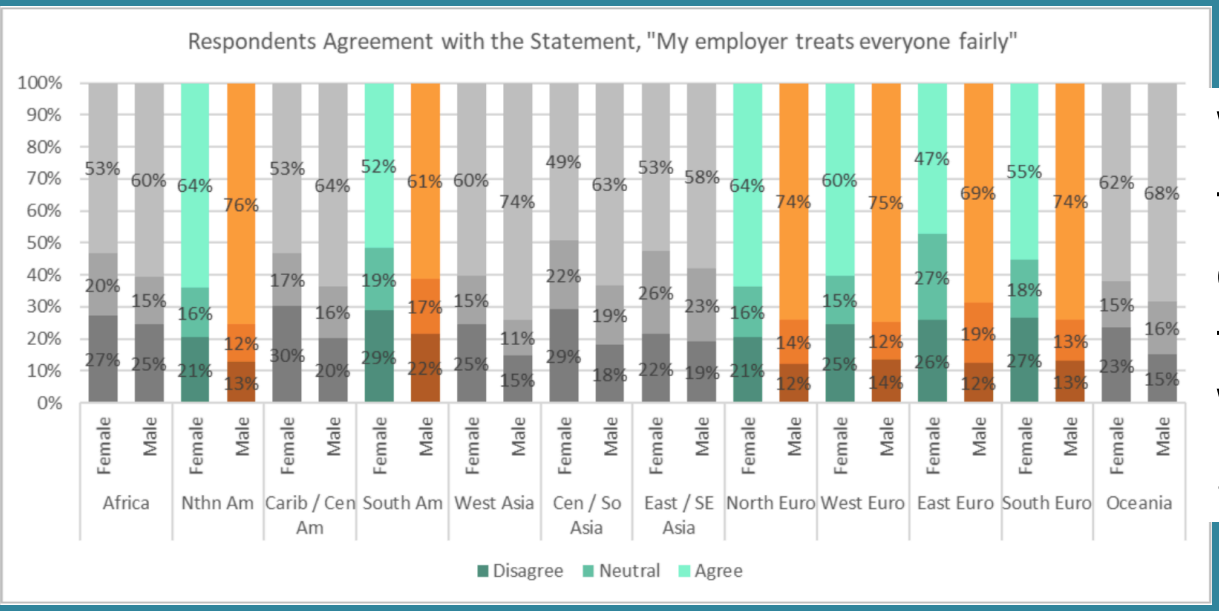

Women did not agree that their employer treated everyone fairly over 25% of the time in Africa, LAC and Western and Central/ Southern Asia.

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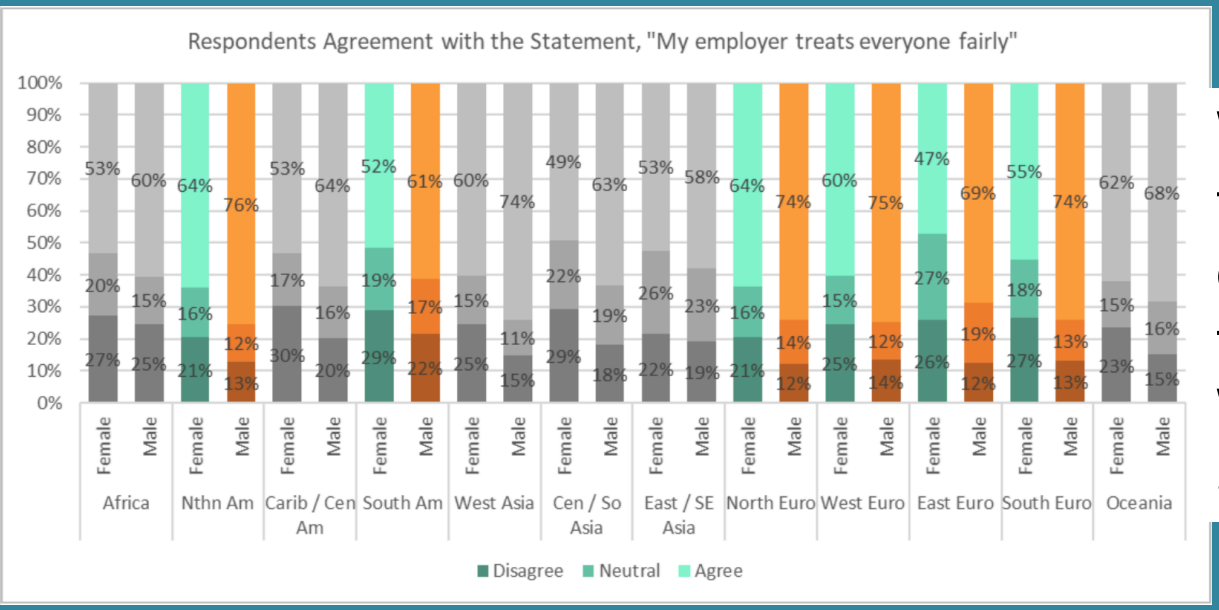
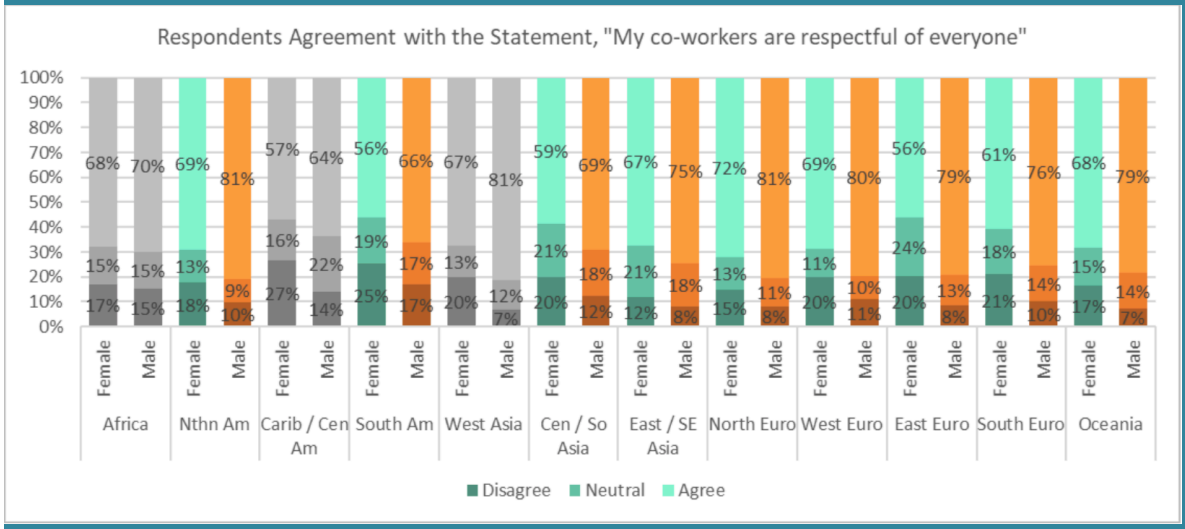


Women did not agree that their employer treated everyone fairly over 25% of the time in Africa, LAC and Western and Central/ Southern Asia.

The majority of women and men in all regions indicated that their co-workers were respectful of everyone. Women agreed that their co-workers were respectful of everyone least frequently in LAC.



Salary

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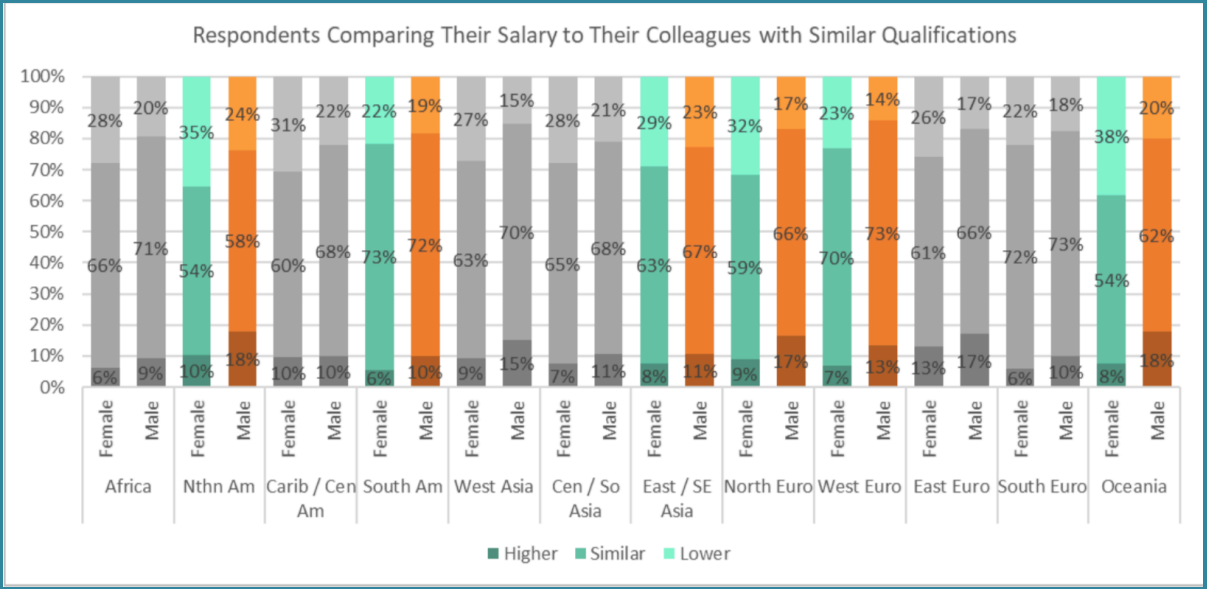
Over 27% of the W reported lower pay than colleagues with similar qualifications in Africa, Asia and CA and Caribbean (22% in South America).



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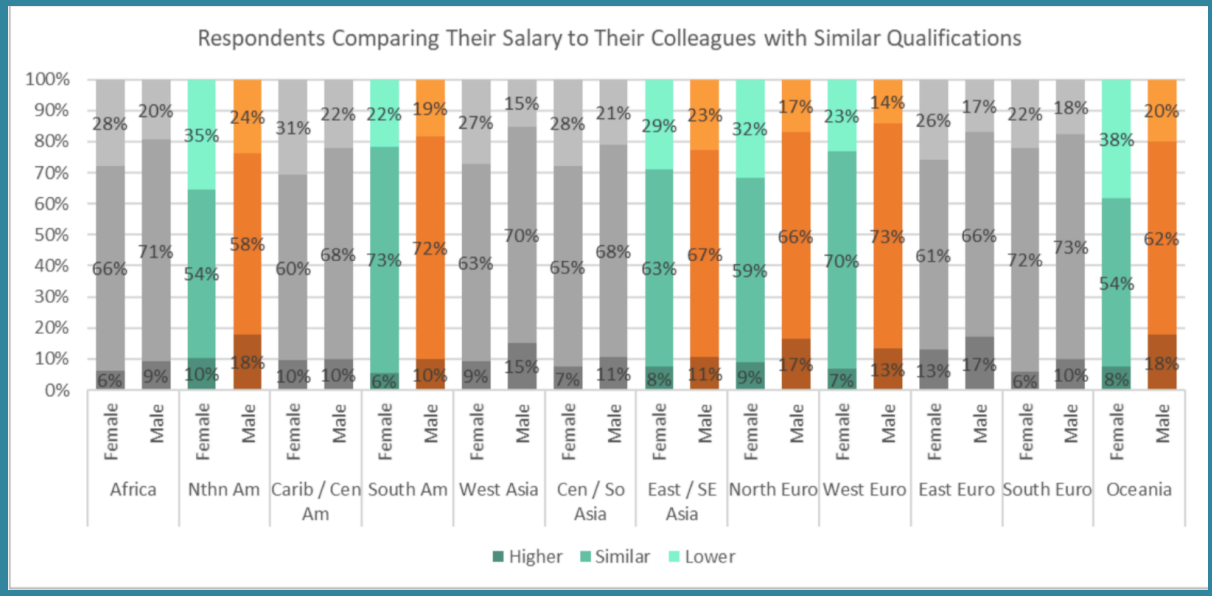
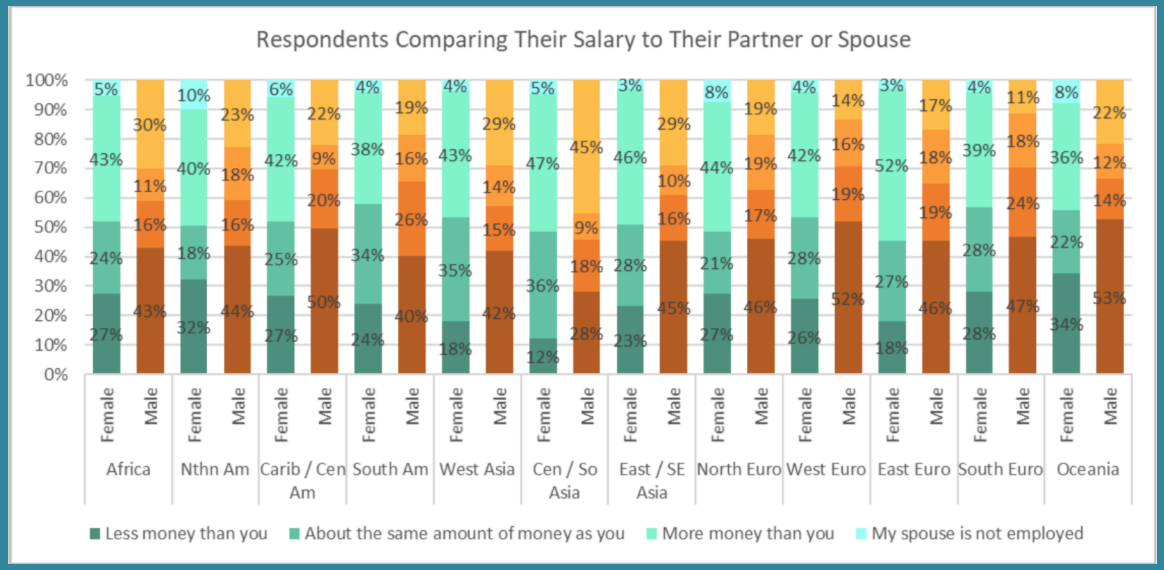
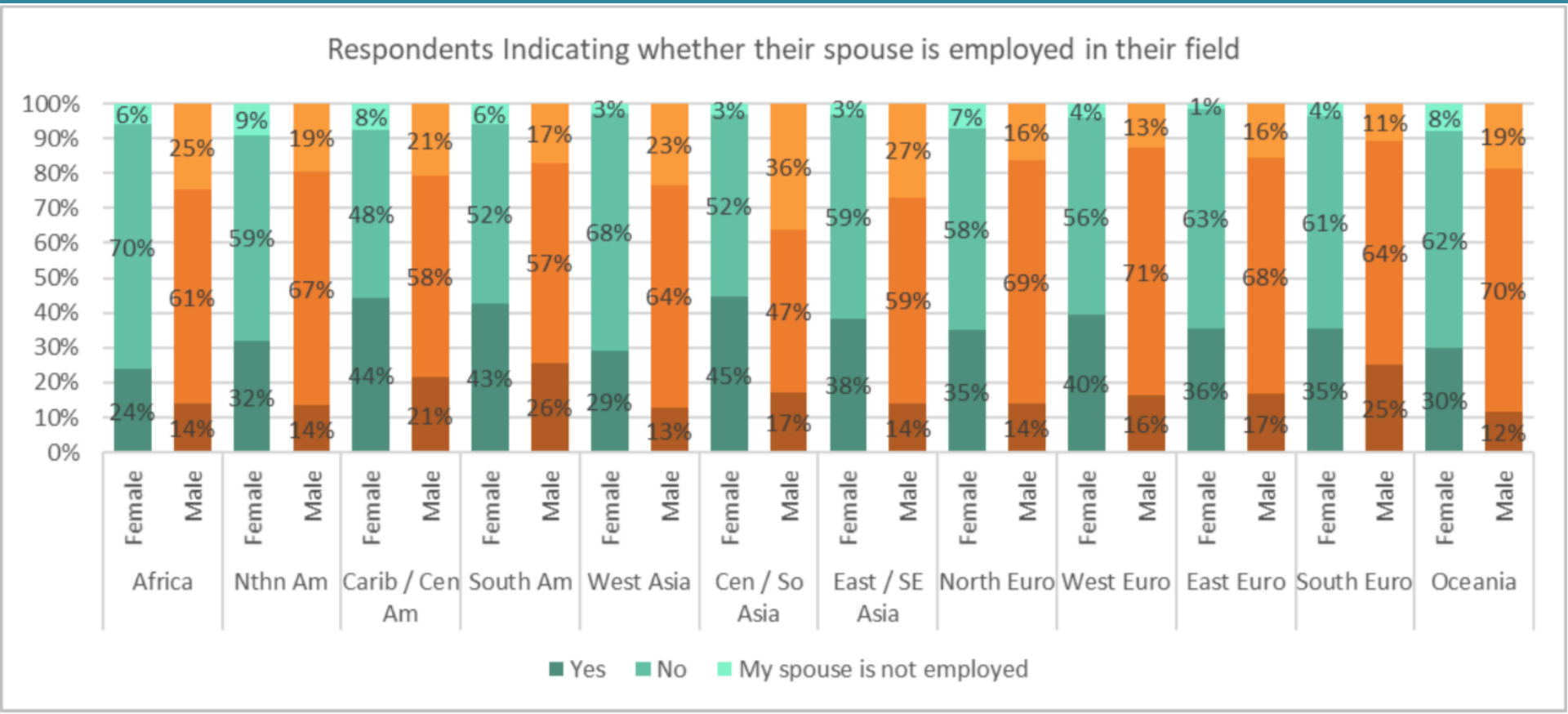




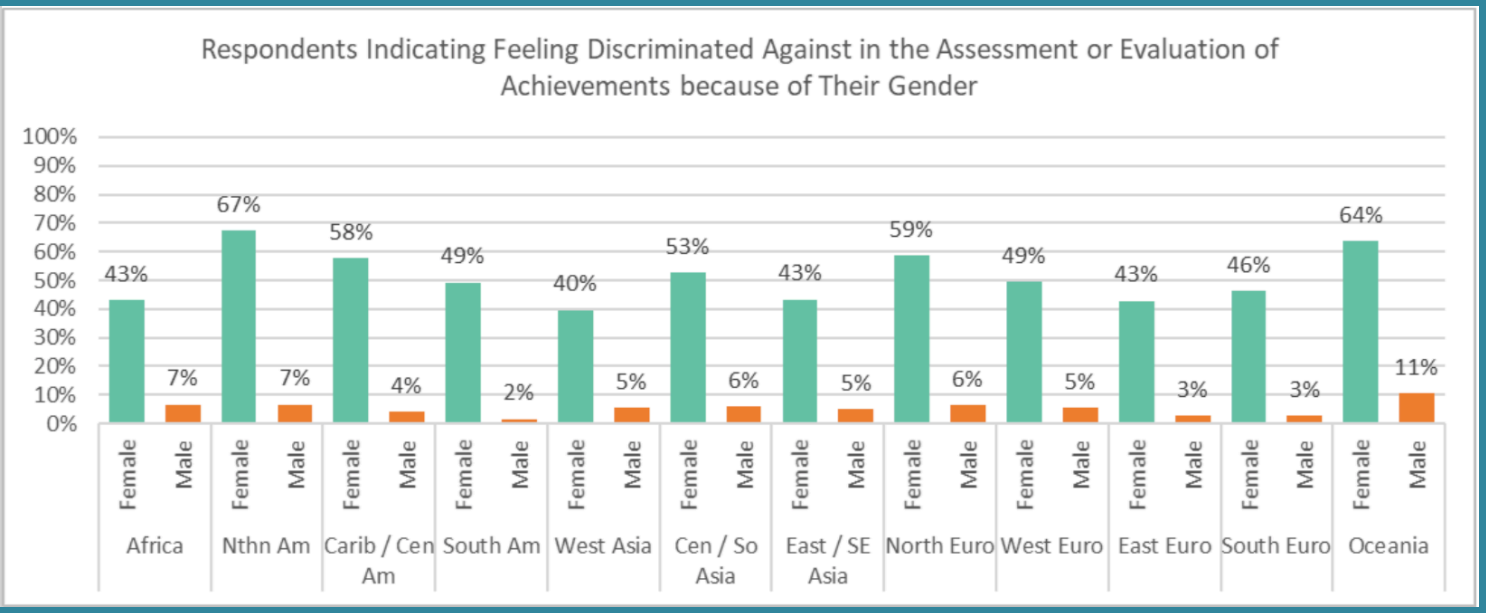
Across all regions, women were more likely than men to say that their partner or spouse earned more money than they did. 36% of M and 3% of W had unemployed spouses in C/S Asia.



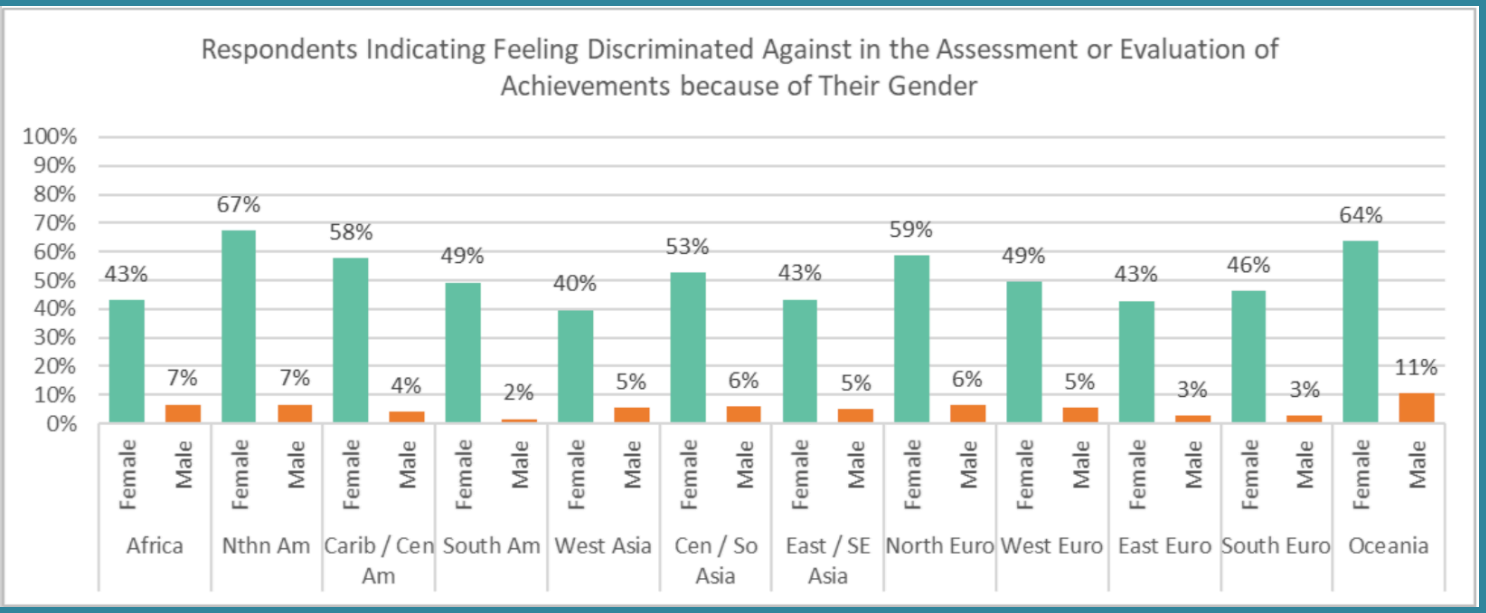
43-44% of W in LAC and 45% of W in Cen/So Asia have spouses that are employed in their field. Largest percent of M with spouses employed in their fields is 26% (South America).

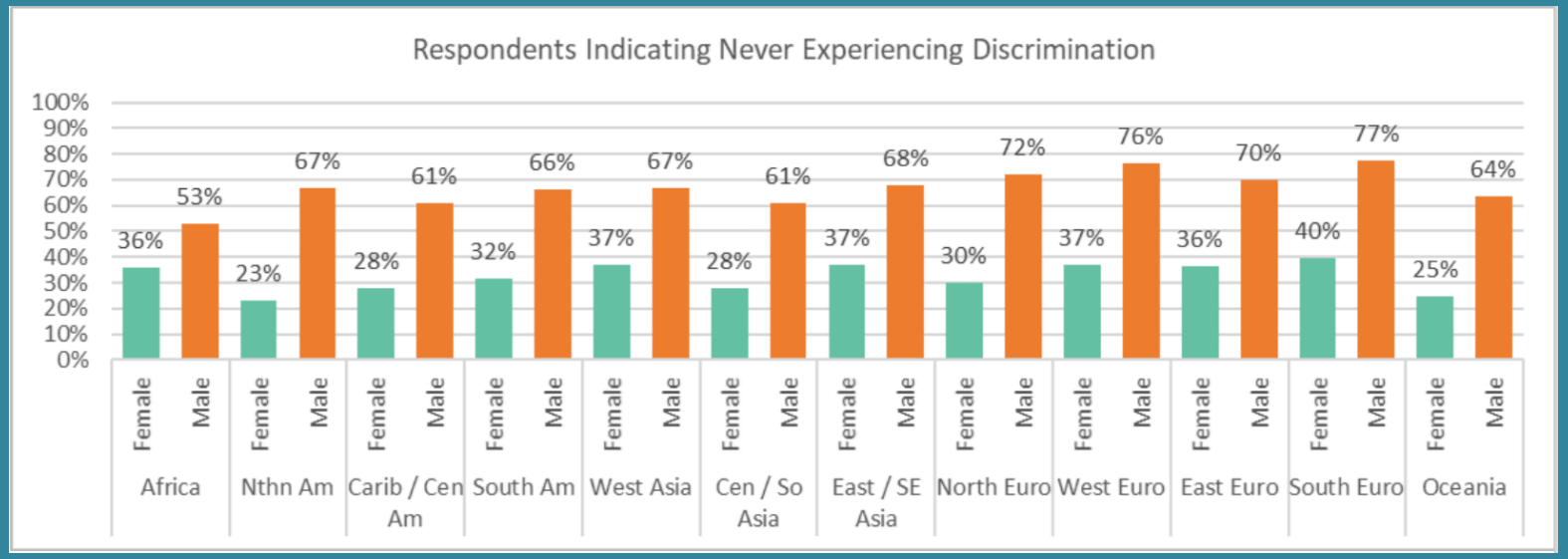
Discrimination

Discrimination



Discrimination





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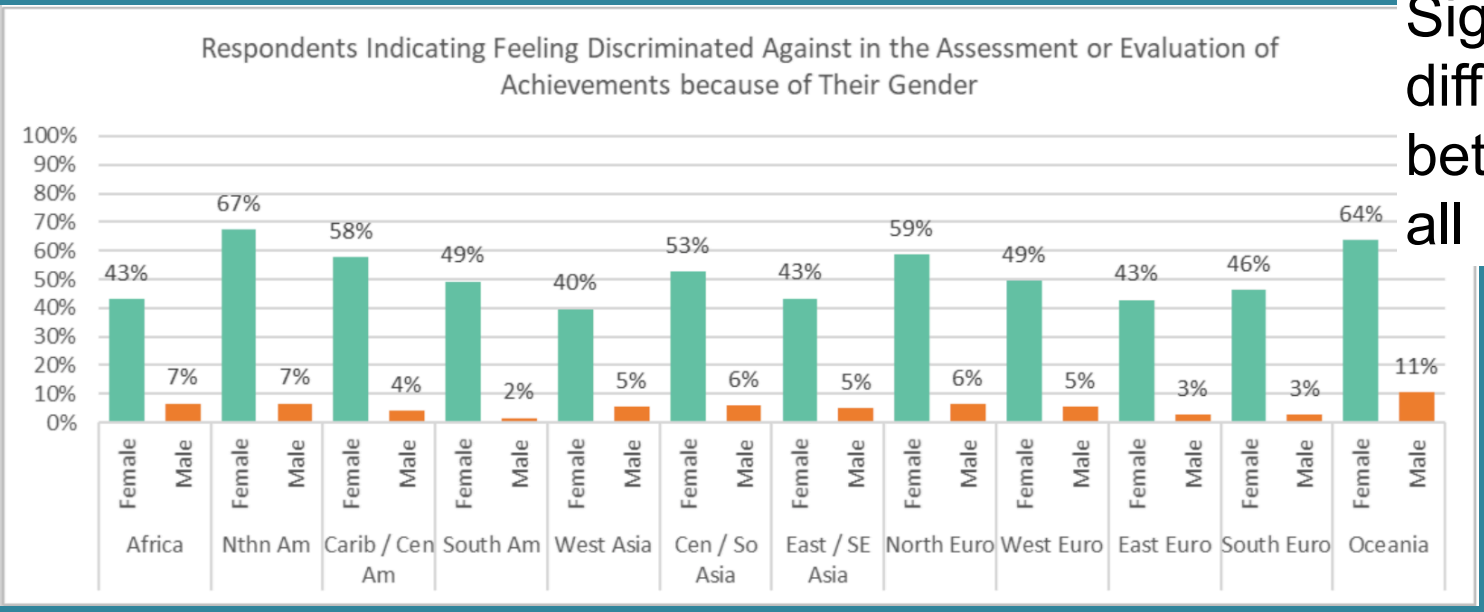
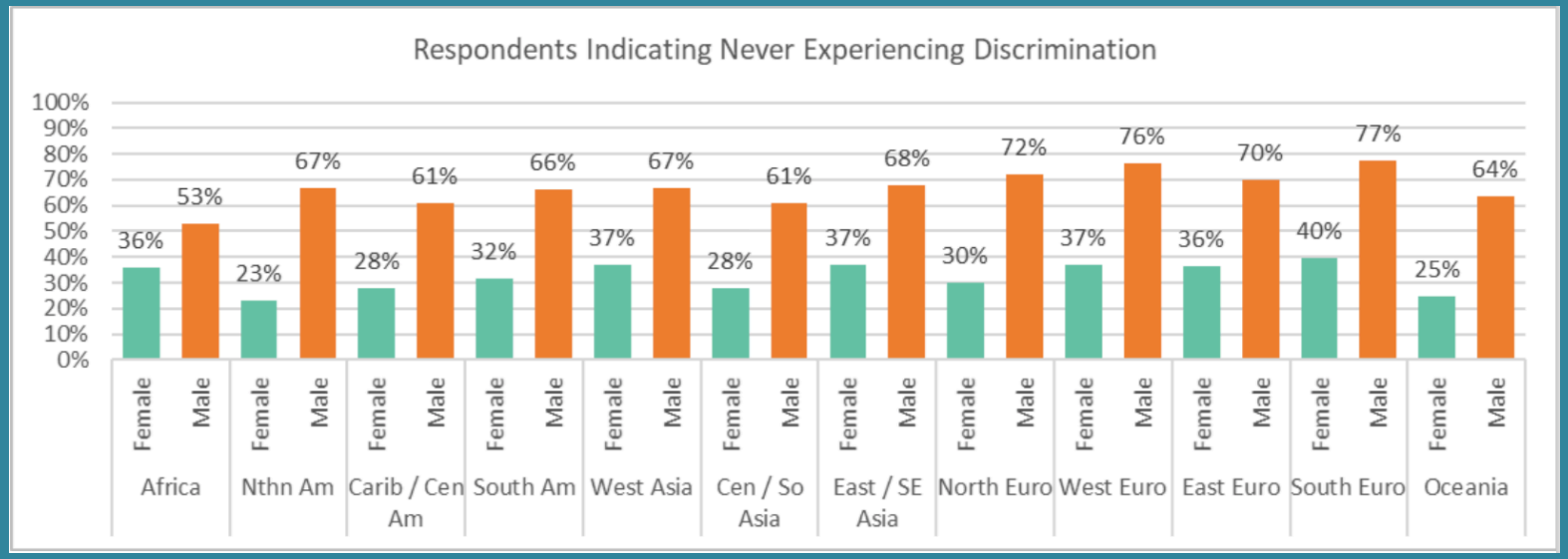
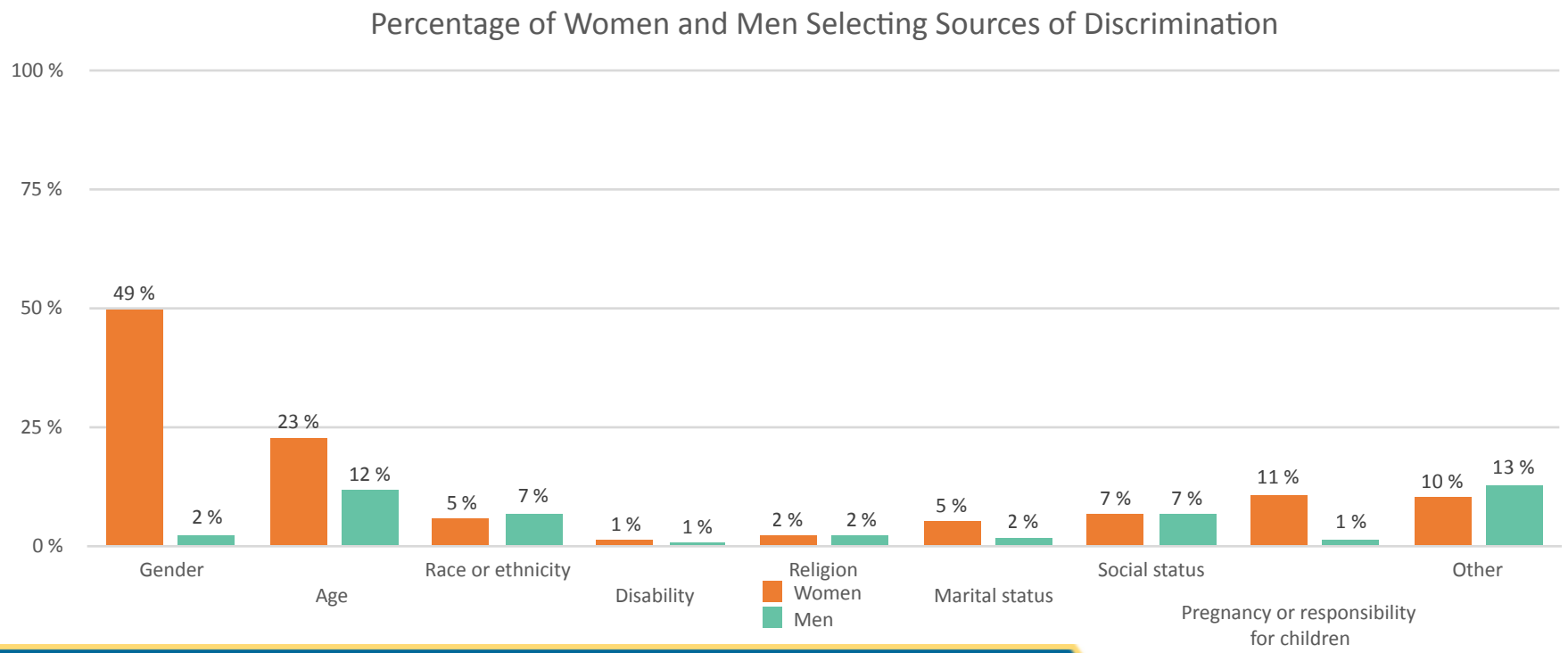


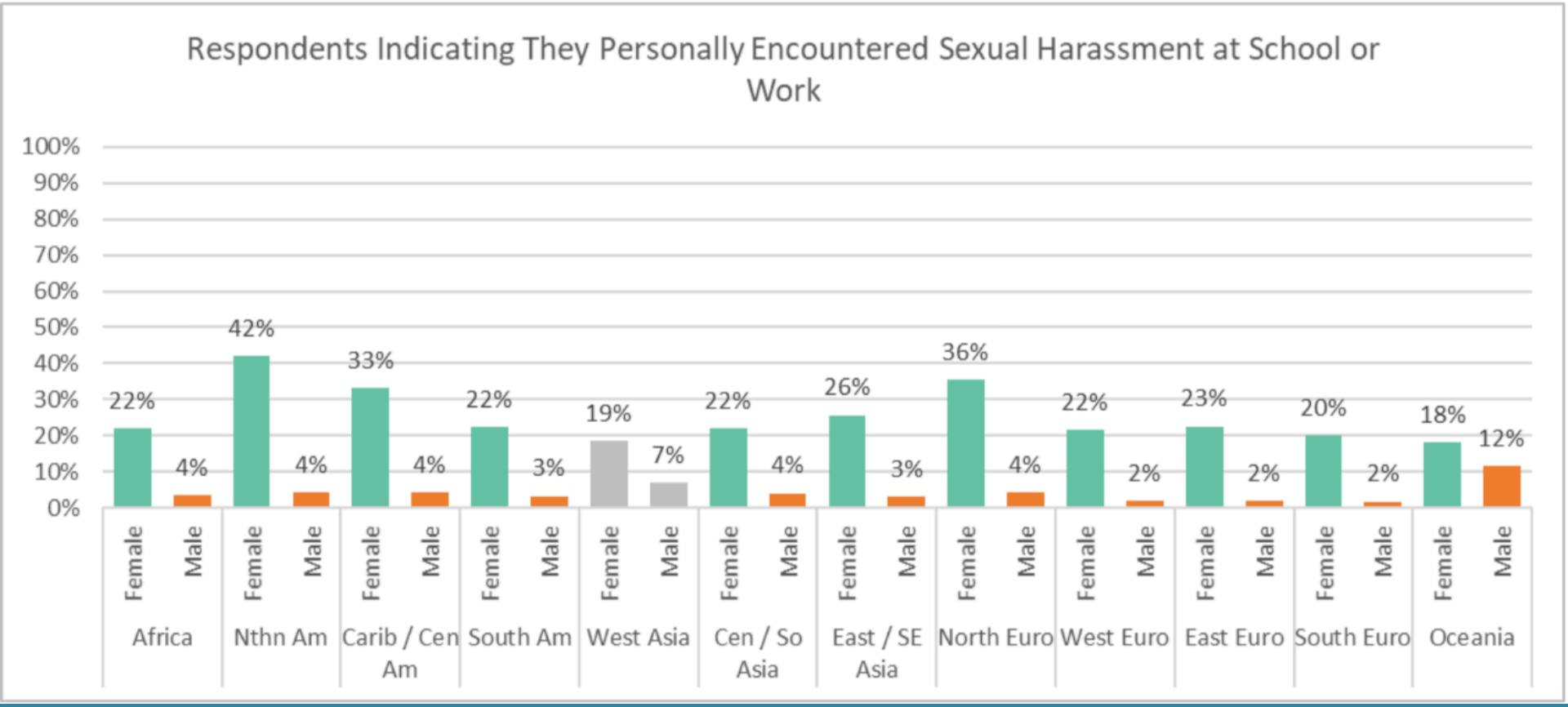
Significantly different responses between M & F in all regions



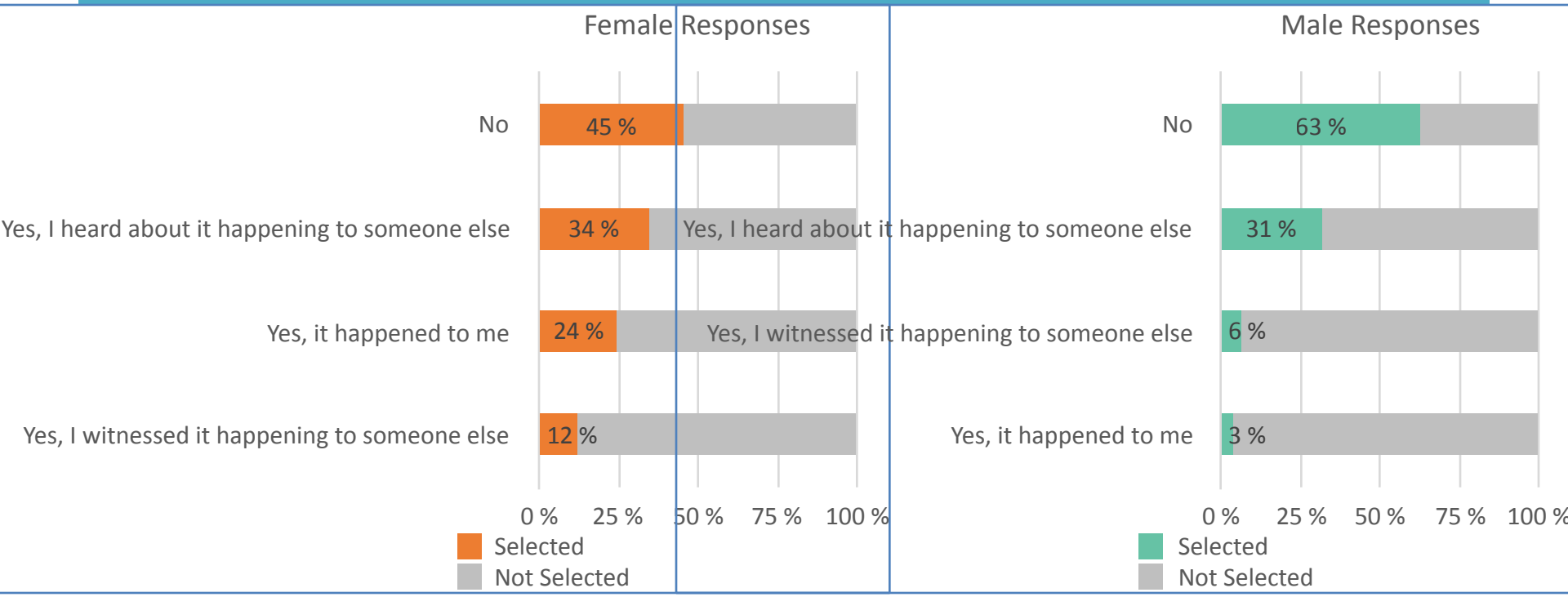
Percentage of Women and Men Selecting Sources of Discrimination



Back to 3 regions: Harassment

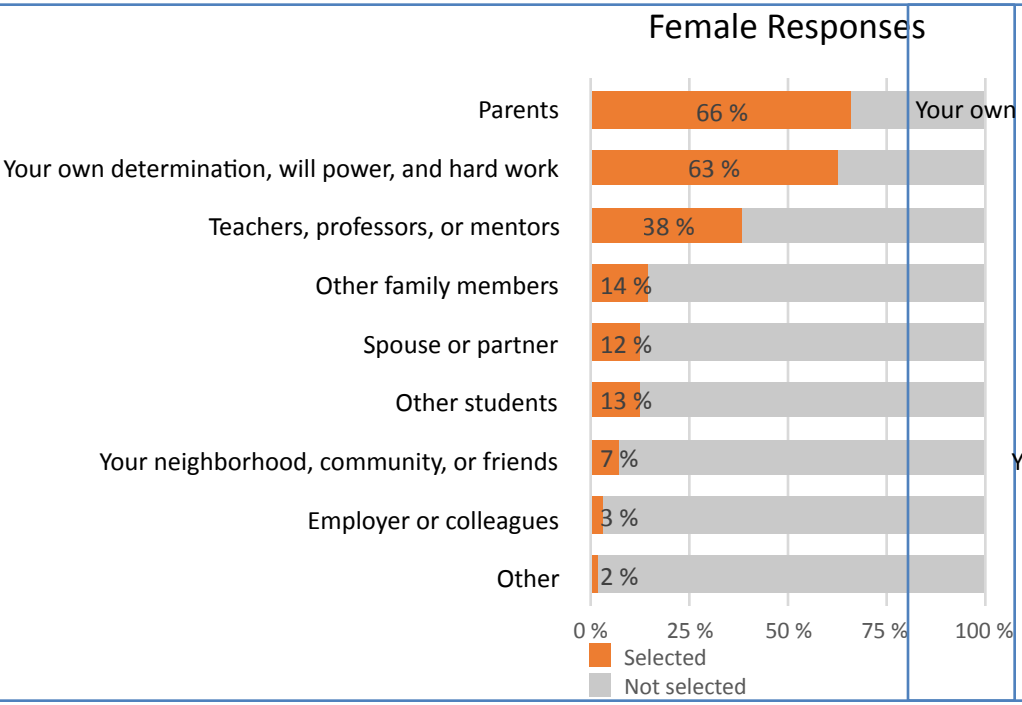


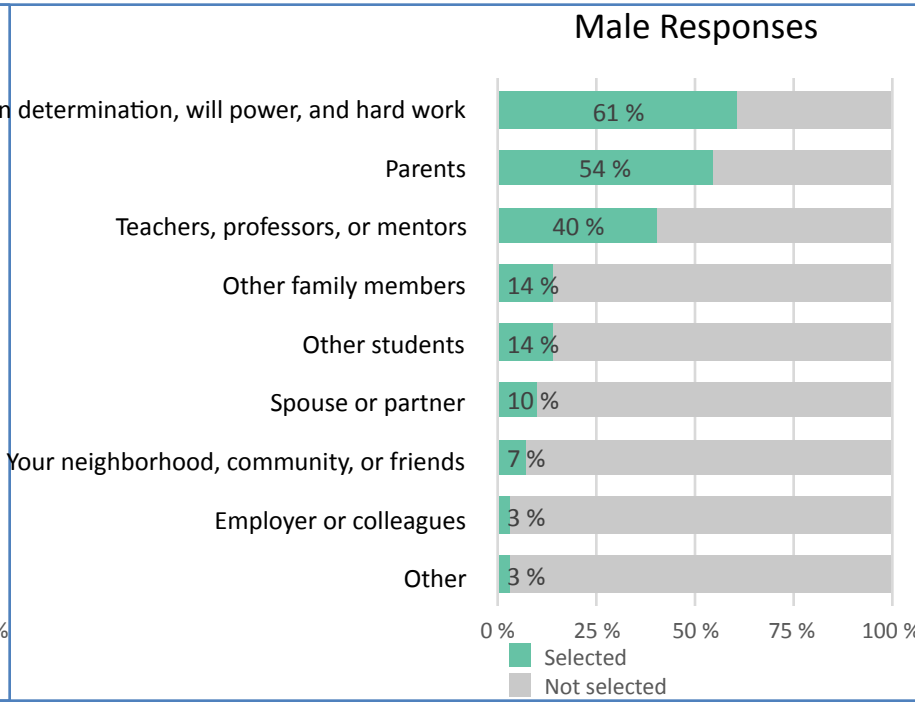
Have you ever encountered sexual harassment at school or work?



LAC

Who most encouraged you in your studies? Please select all that apply.





Success: Mom

"My family has a incredibly tough background when I started... We've become very poor at some point, so without the government support… I could not have access to basics needs, as simply food to eat. General support from others members of family to buy clothes and school material was necessary as well. And I've always had a very believer mother who pushed me to move on to my dreams. " - BRA Physics

"Financial and emotional support delivered by my mother, encouragement from friends and access to therapy." BRA Mathematics

Success: Mom

“Support from my mother and the benefit of having gotten a scholarship for my doctoral studies.” COL Mathematics

"To be honest, in my country there is very little financial support for low-income youth. My mother was the one who supported me to pay the costs of my program, since I attended a public university, where tuition costs are affordable. Thanks to the support of my mother, family and the part-time work I did, I was able to graduate from the National University of Colombia.”

Success: Mom

"Financial and emotional support delivered by my mother, encouragement from friends and access to therapy.“ BRA Mathematics

"My mother's dedication and effort to get ahead with her children was a motivation to finish my degree. Then when I saw at the university where I studied that several professors were doing master's and doctorate degrees outside of the country, it motivated me to try to do the same thing.“ COL Mathematics

Task 2. Study of publication patterns

Discipline	Region	# Answers	Effect size
Physics	Northern Europe	319	0.127
Mathematics	South America	575	0.127
Astronomy	Northern America Northern Europe	431 162	0.14 0.153
Computer Science	South America Northern Europe	184 189	0.164 0.243
Biological and Related Sciences	South America Western Europe	244 503	0.151 0.192
Chemistry	Eastern and South-eastern Asia Western Europe Northern America	460 159 299	0.104 0.17 0.128

Table 1: List of academic disciplines and geographical regions where differences in self-reported submission numbers to top journals from men and women are found to be statistically significant, with men submitting significantly more articles.

A little bit on Math publication patterns

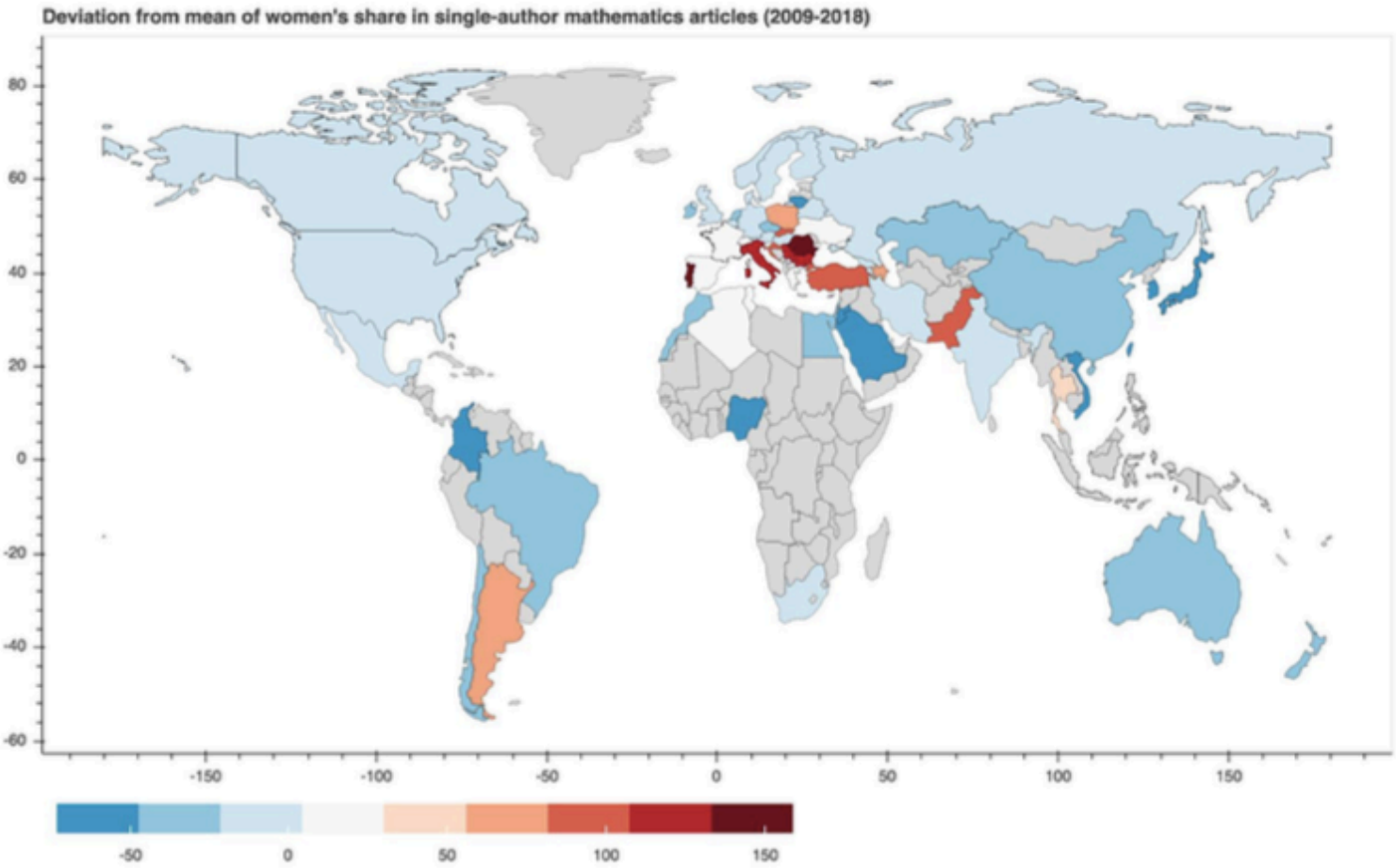


Figure 22: Deviation from the average proportion of women in single-author mathematics publications from zbMATH's Core Math data set in 2009-2018 broken down by the authors' countries of work.

Task 3. Database of good practices

Regions and countries	Number of initiatives identified
Africa: South Africa, Nigeria, Kenya, Ethiopia, Namibia	5
Asia-Pacific: Japan, India, China, Philippines, United Arab Emirates	7
Latin American and Caribbean group: Brazil, Mexico, Chile, Colombia	5

Techno Girl	South Africa	STEM	Grade 9-12
Promote sustainable organic kitchen gardening and dairy goat Keeping	Kenya	S	Girls, Women
WiSci Girls STEAM Camp	Ethiopia, Kenya, Namibia, eSwantini,	STEAM	Girls
Visiola Foundation	Nigeria	STEM	African girls from disadvantaged areas
Working to advance STEM Education for African women	11 African countries	STEM	secondary girls, college female
Million Women Mentors	USA, Mexico, Canada	STEM	mentors (M&F), mentees (female)
Joshikai II for Future Scientists	Japan	ST	High school Females
Indian Girls Code	India	T	Underprivileged girls
Samsung STEM Girls	China	STEM	Girls
#STEMPower Our Girls	Philippines	STEM	Middle school girls
Women in STEM Hackathon	United Arab Emirates	T	Women
Code to Inspire	Afghanistan	T	Girls
Girls Choose Science TV Series	Israel	S	girls
Pataphysical Mail	Colombia	ST	girls (6 - 11)
Girls in Science	Brazil	ST	girls
Gender Equality Admissions Program	Chile	SE	UG Entrants
Mexican Network of Science, Technology and Gender	Mexico	ST	Academic/ research groups

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Working to Advance STEM Education for African Women

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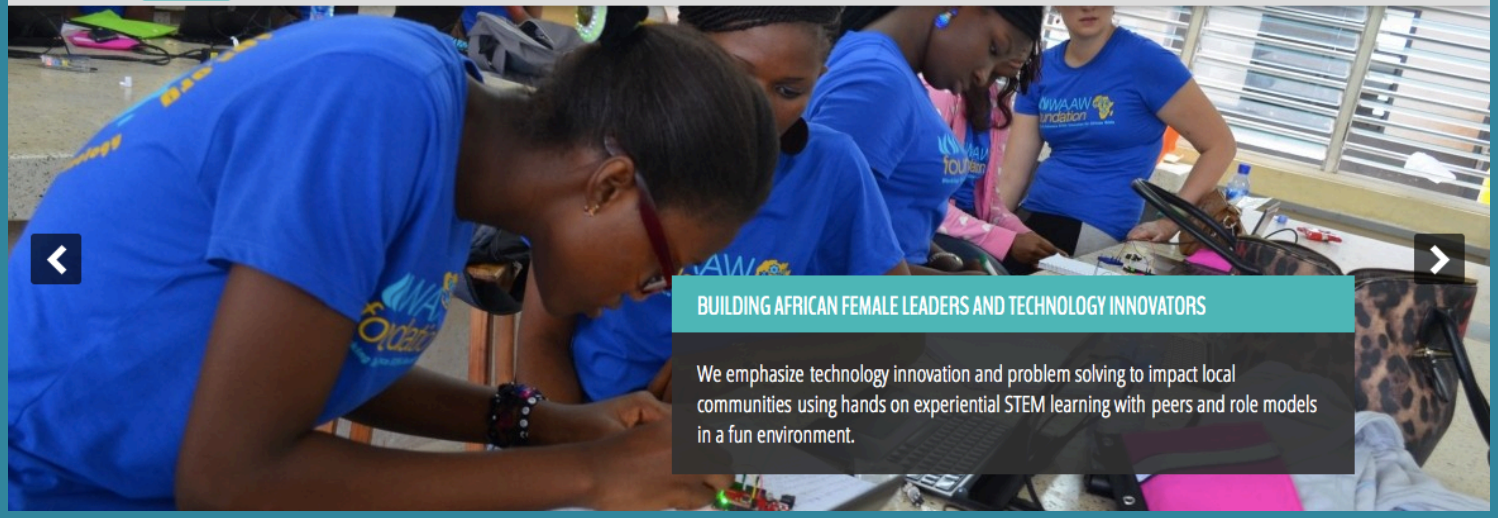
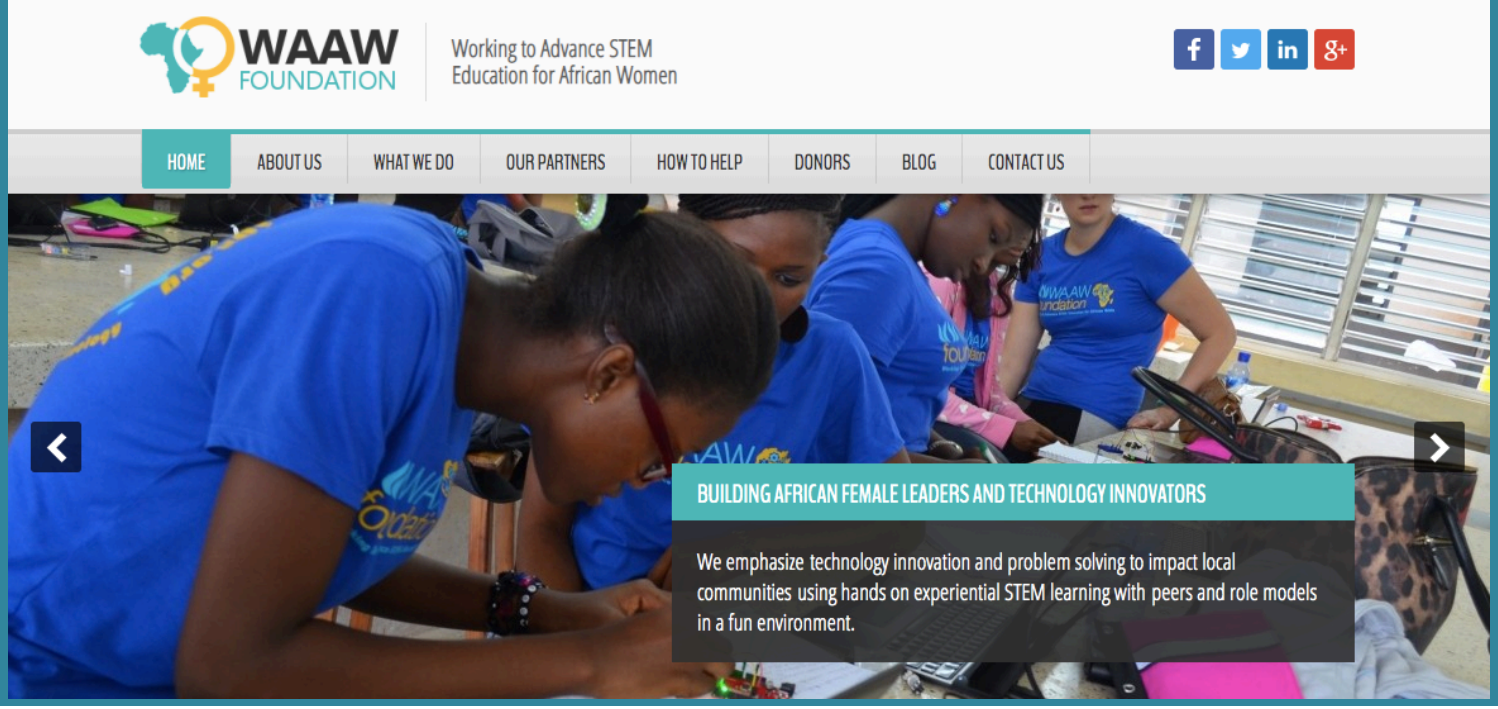


BUILDING AFRICAN FEMALE LEADERS AND TECHNOLOGY INNOVATORS

We emphasize technology innovation and problem solving to impact local communities using hands on experiential STEM learning with peers and role models in a fun environment.



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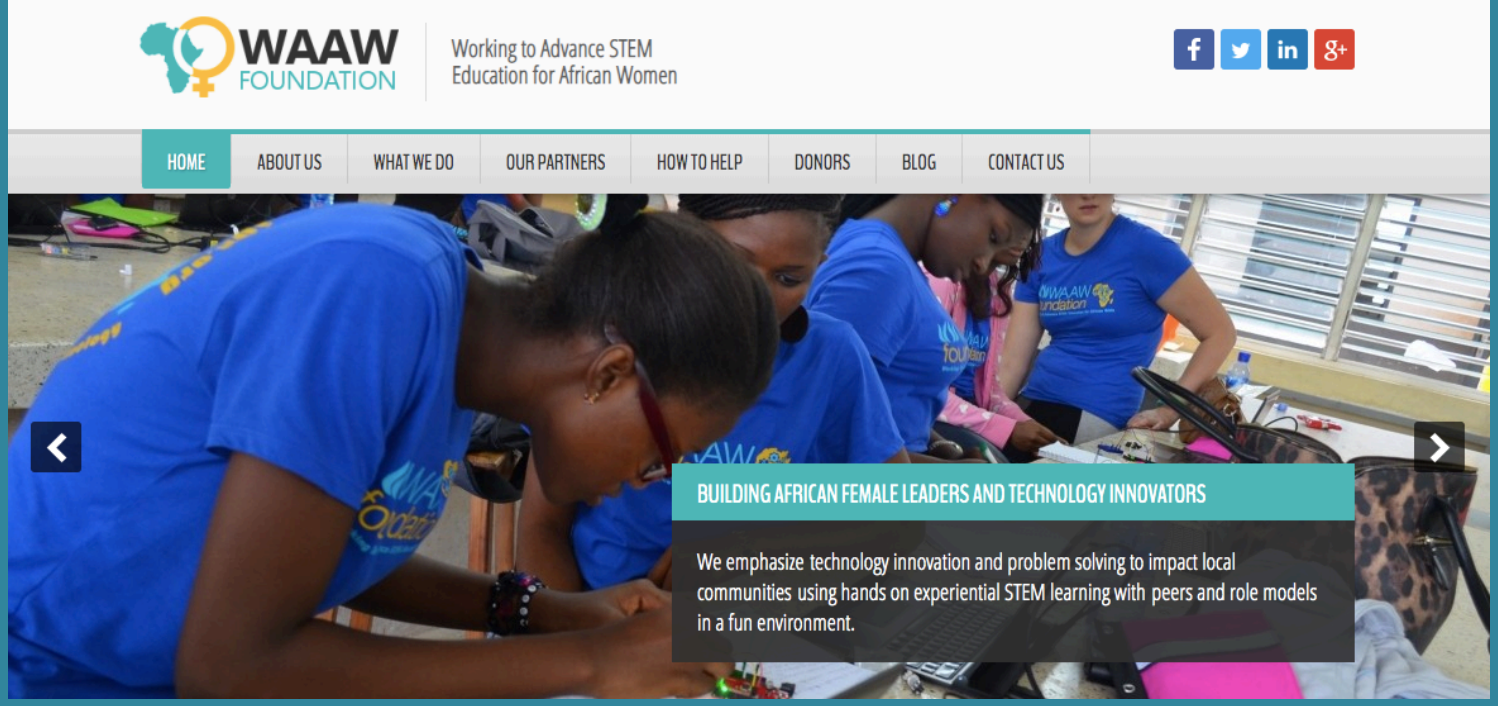

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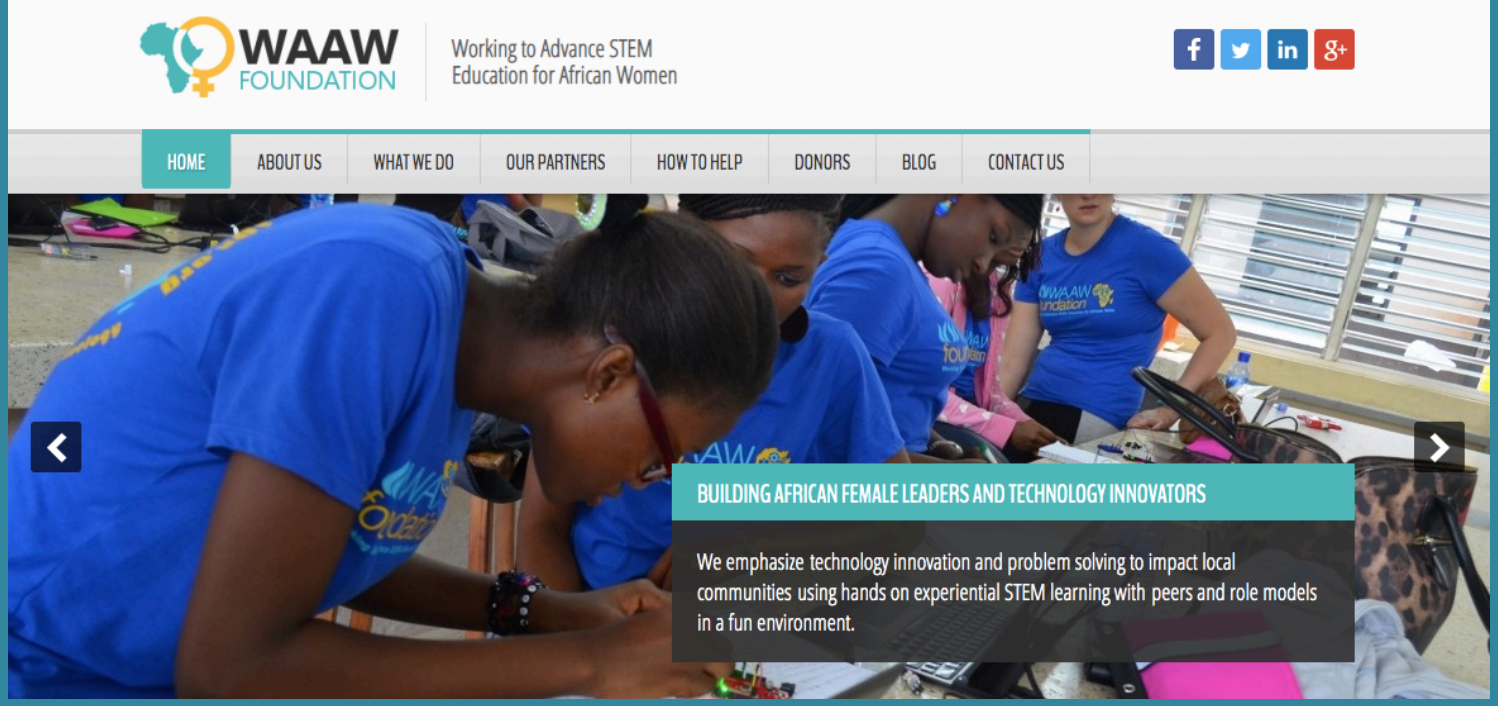

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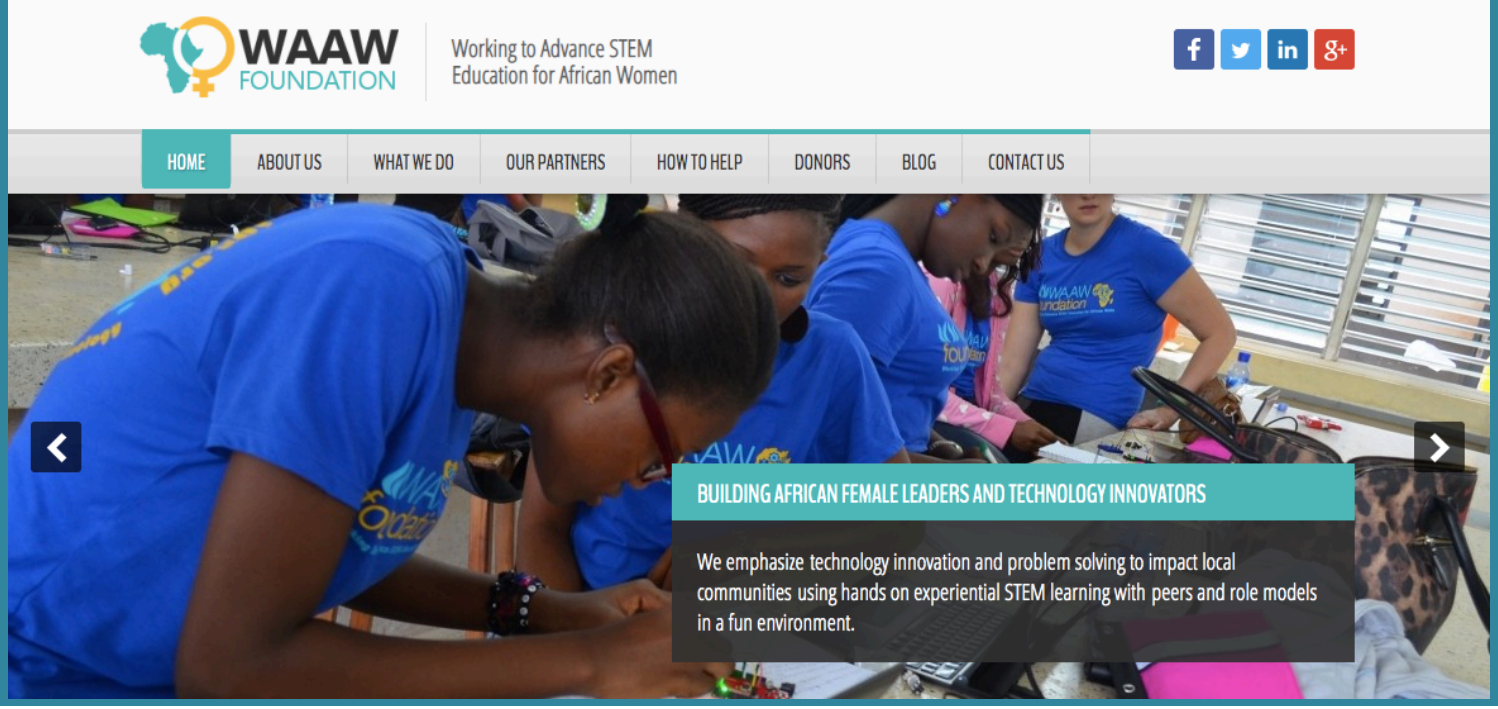
STEM CELL COLLEGE TO SECONDARY OUTREACH PROGRAM



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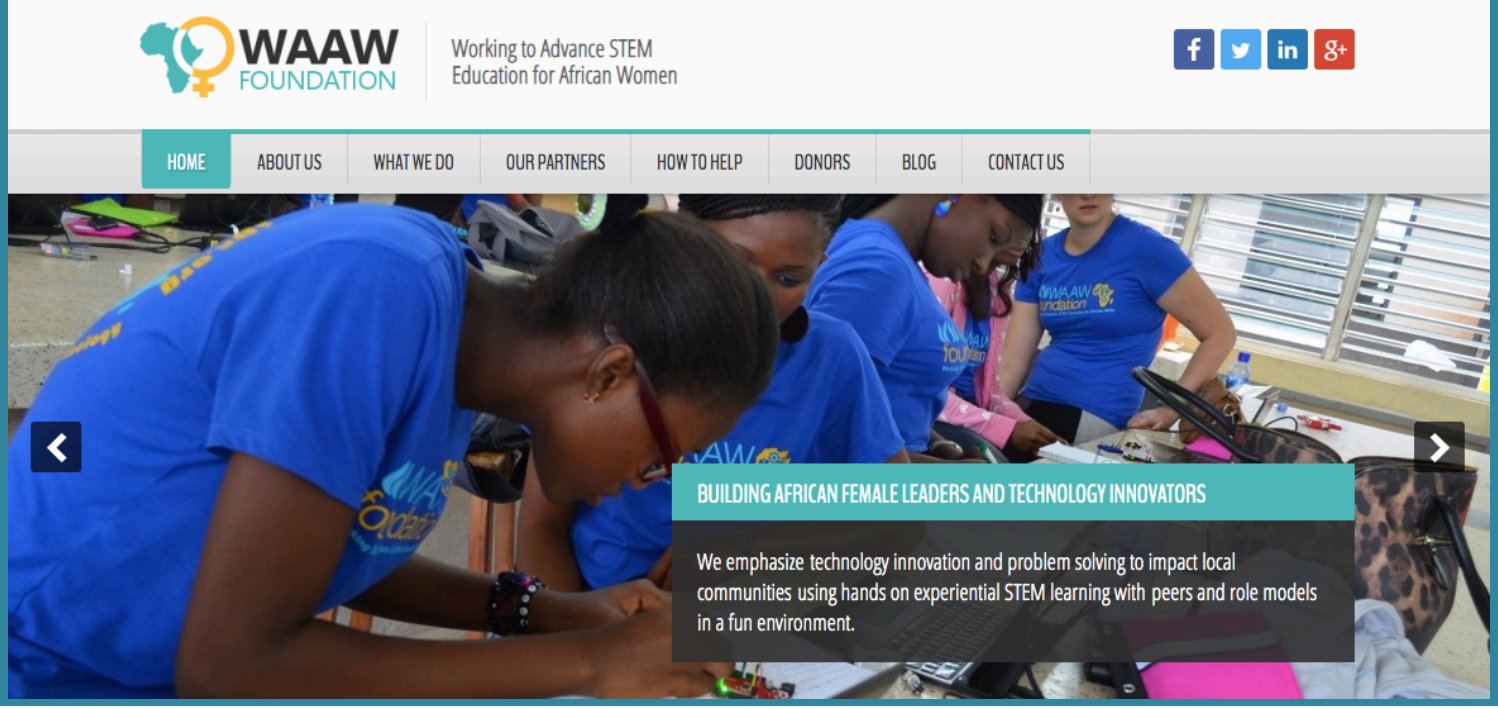

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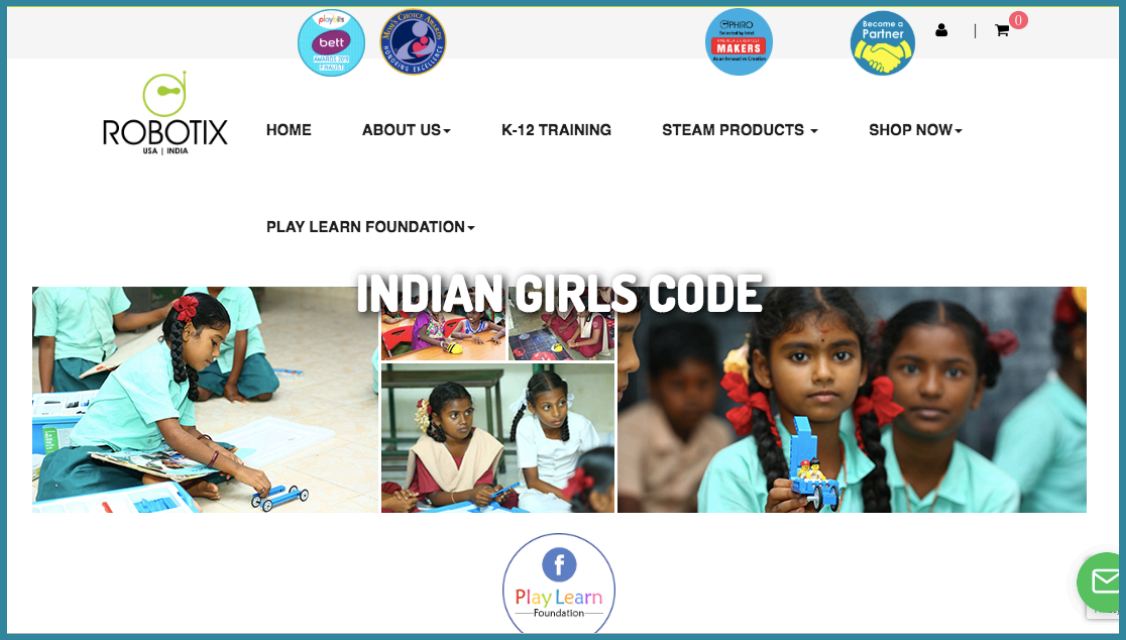
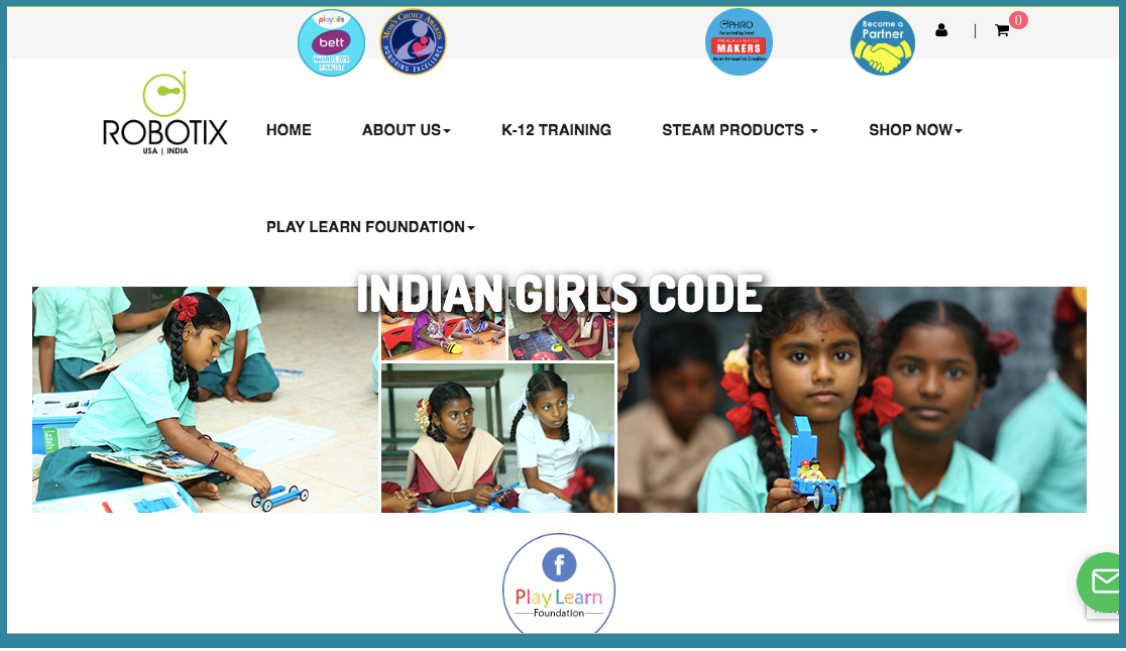


A free hands-on coding and robotics education program for underprivileged girls.



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Red mexicana de ciencia, tecnología y género

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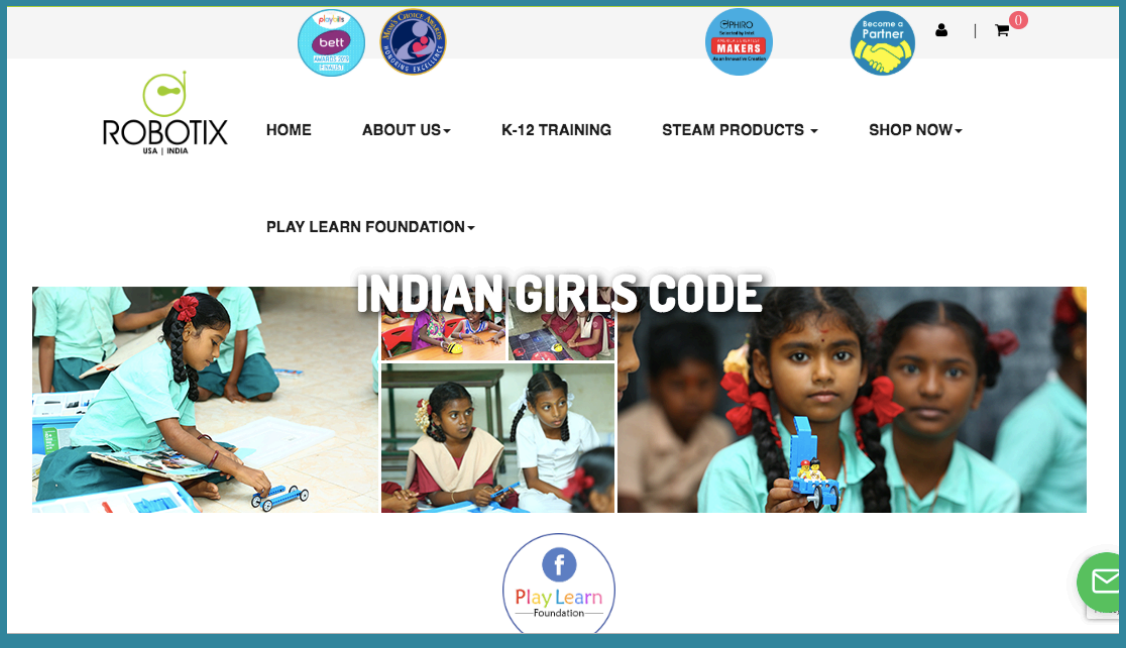

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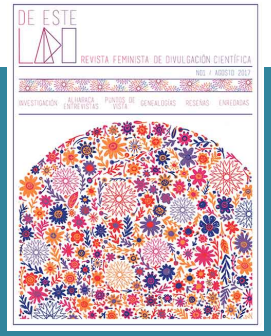

Meetings, magazines, books, projects

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More details: please see poster

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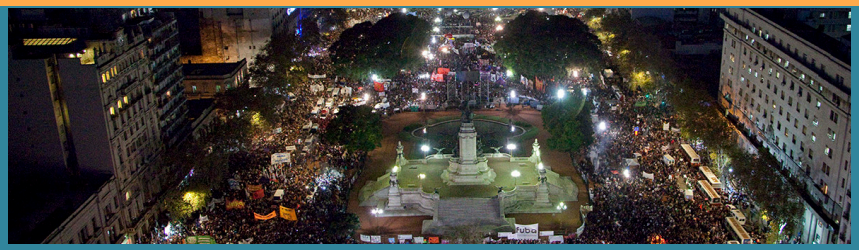

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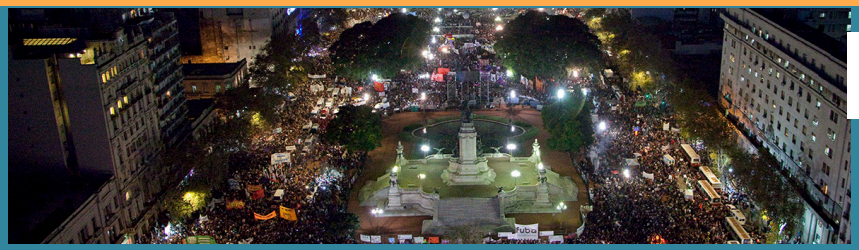
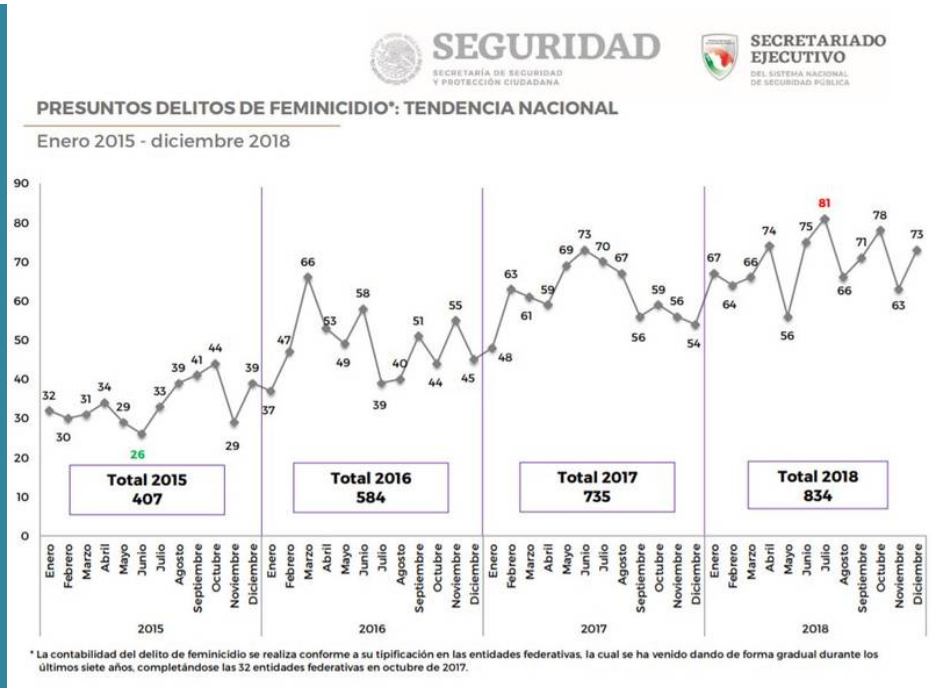


Number of femicides in Mexico.



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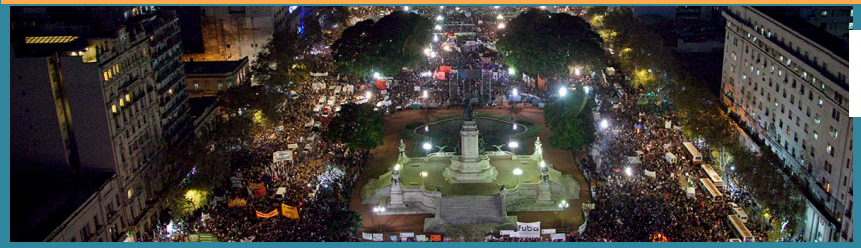

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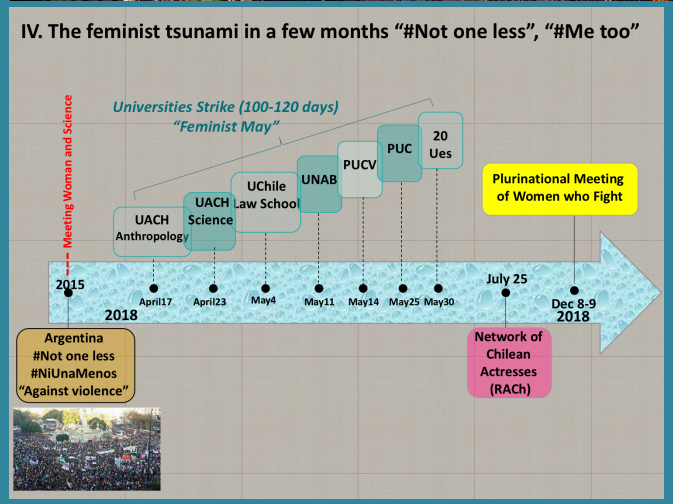
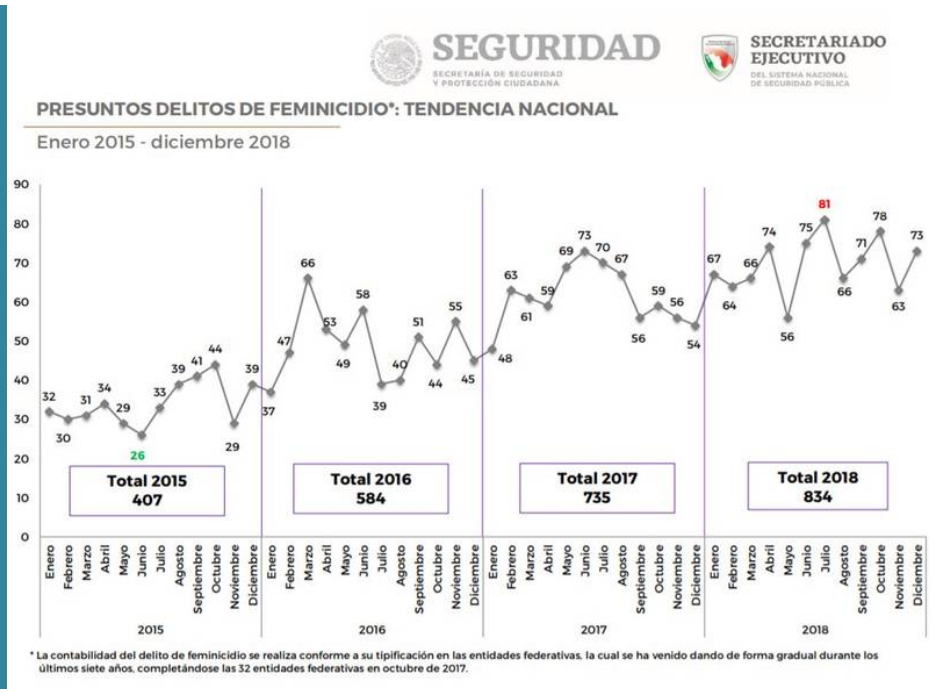


Harassment case at University in Chile led to 100 days of a women’s strike (slide: Alejandra Vazquez)



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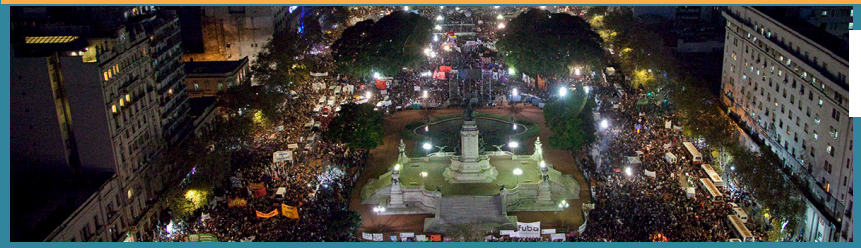

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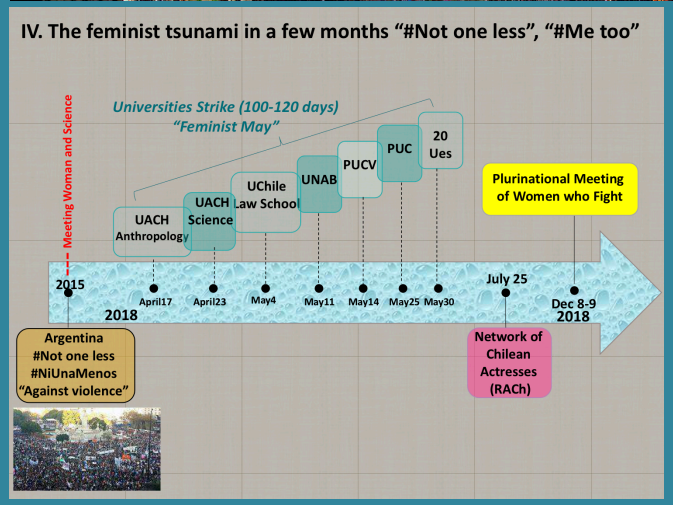

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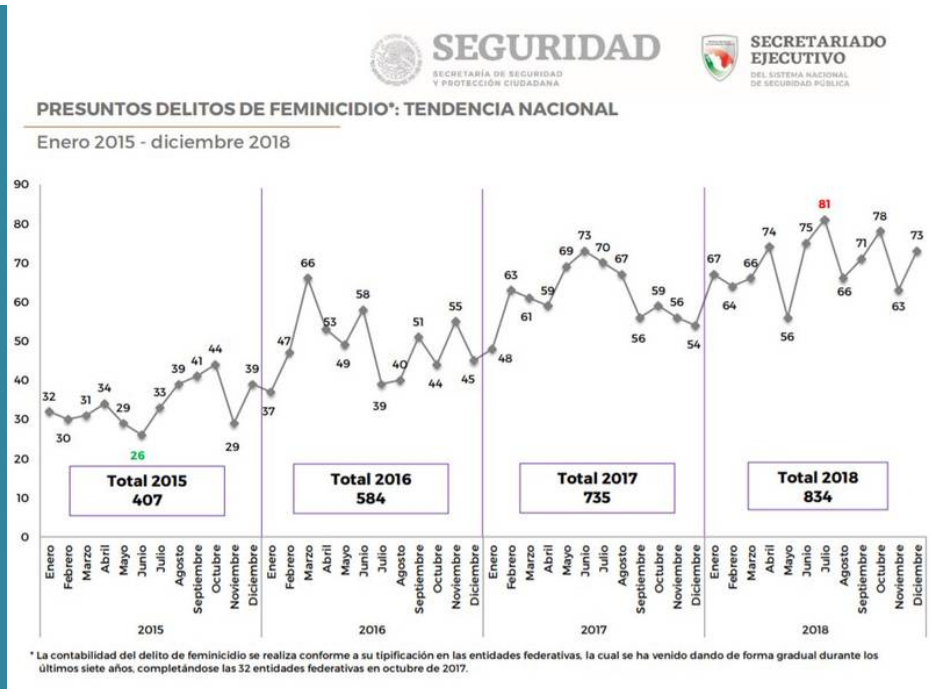

Most universities elaborated and approved protocols to handle cases of gender violence and harassment

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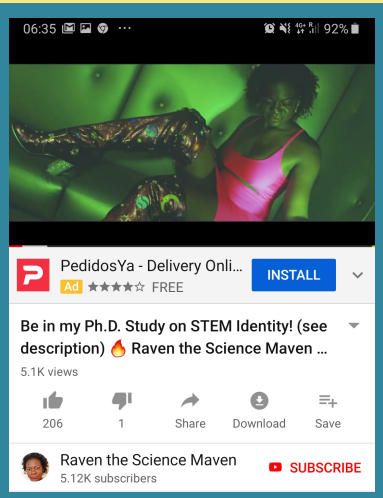

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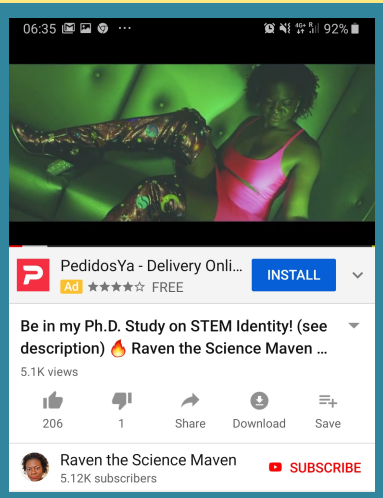

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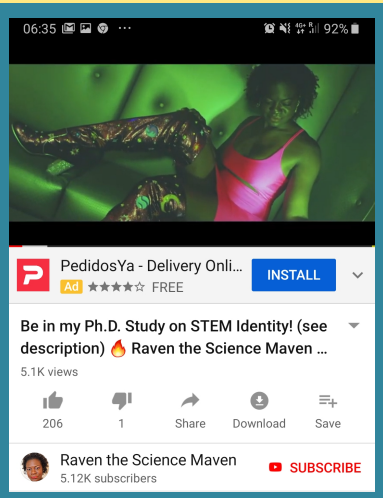

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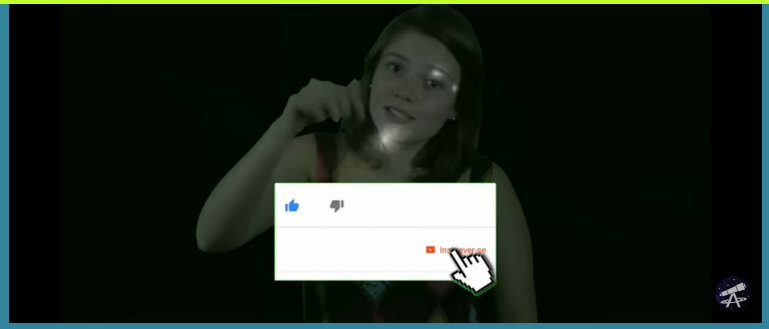

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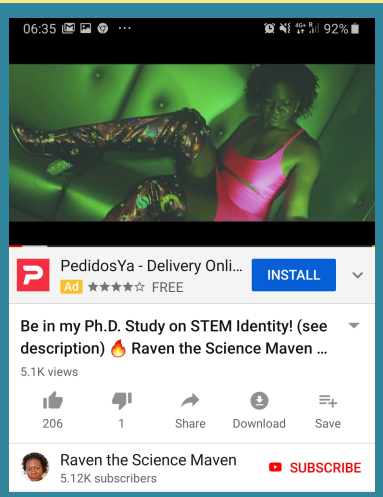

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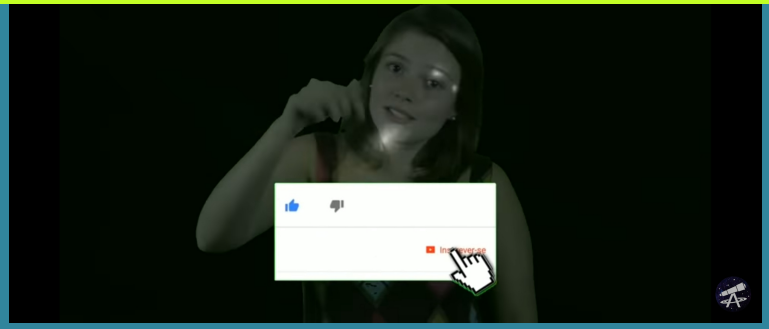

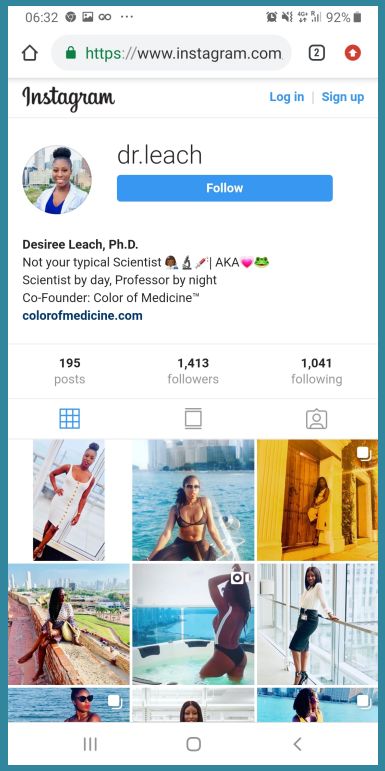

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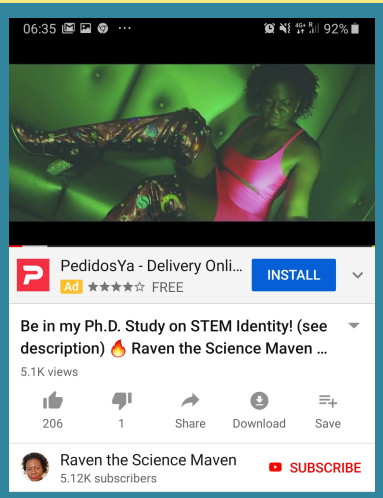

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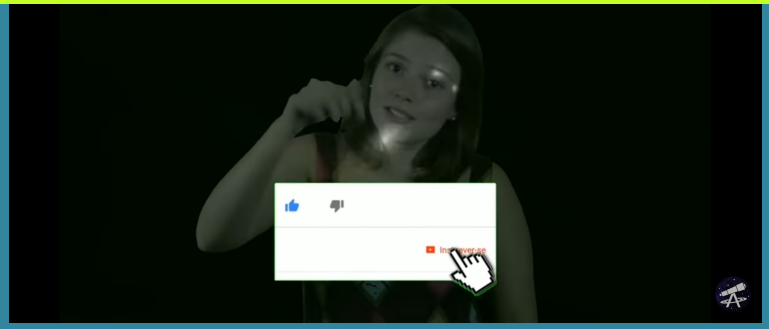

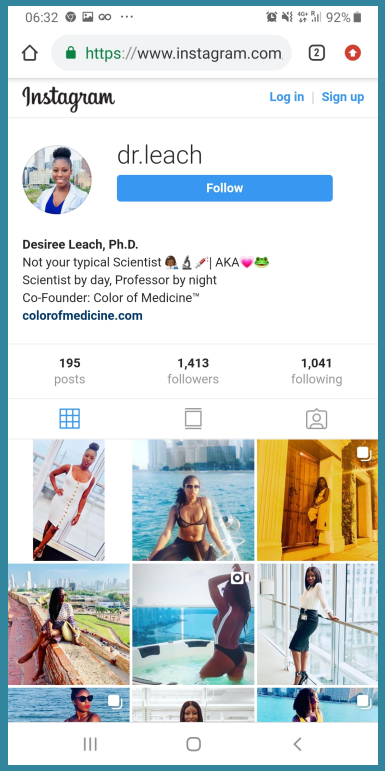

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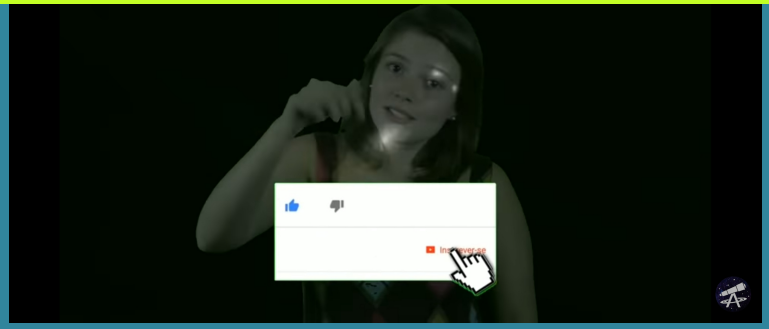

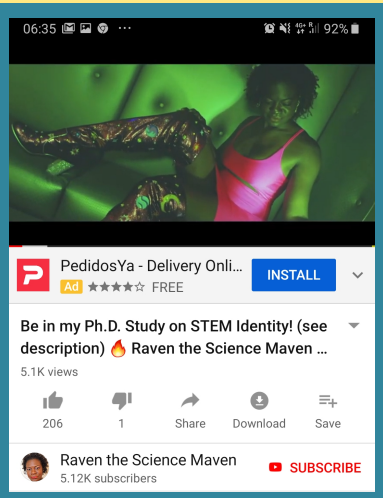

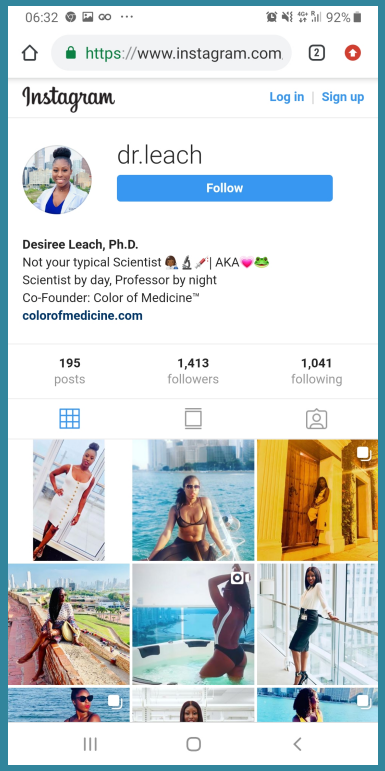

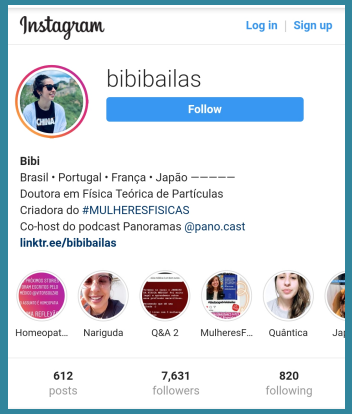

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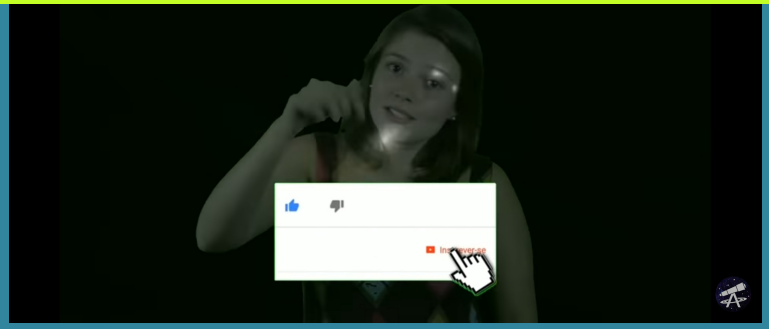

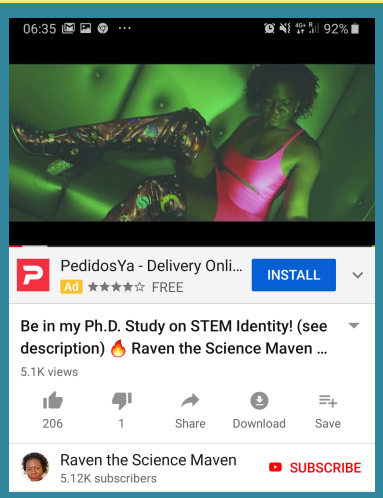

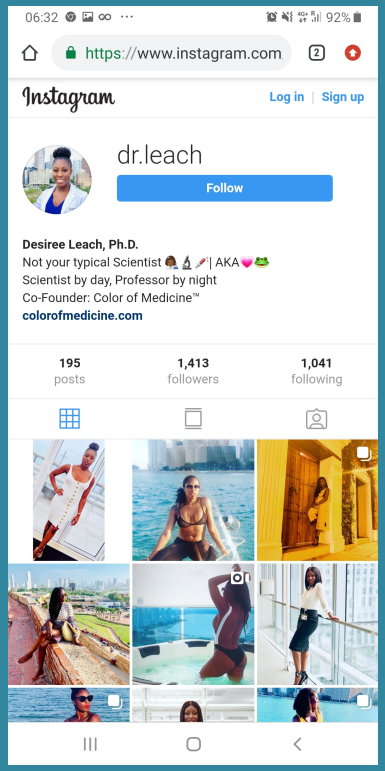

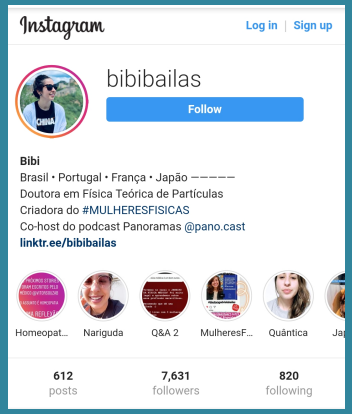

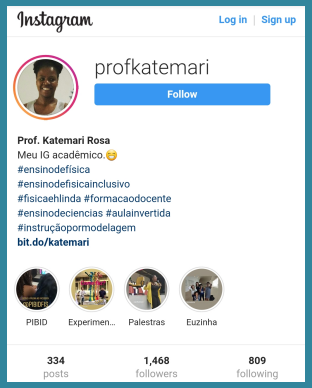

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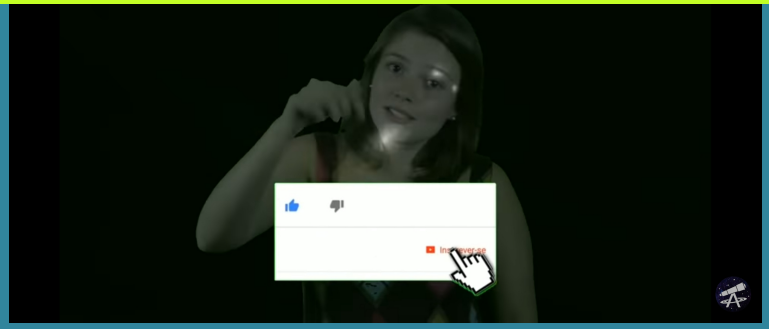
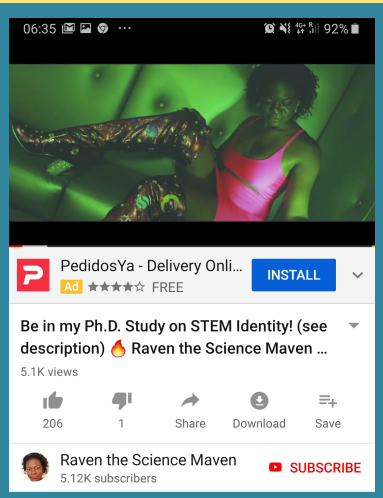
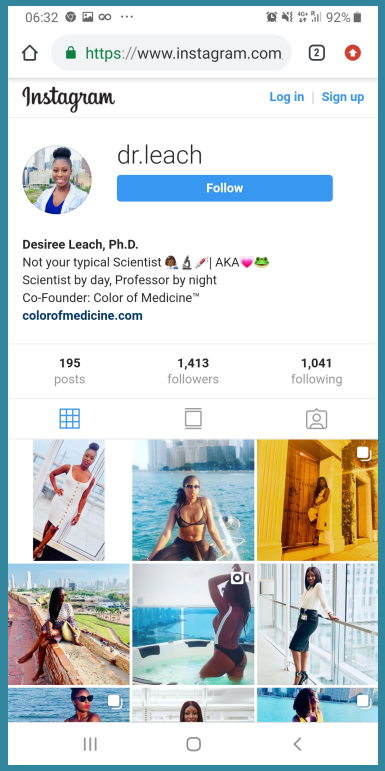
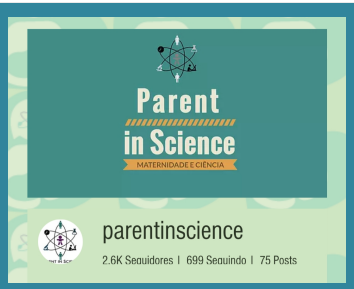
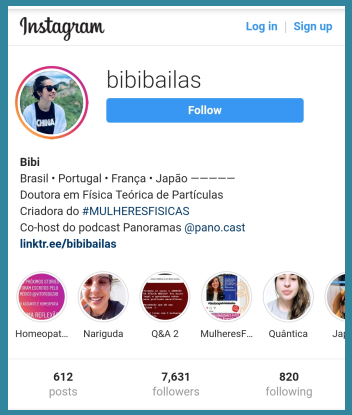
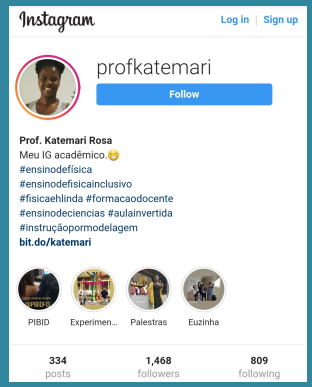






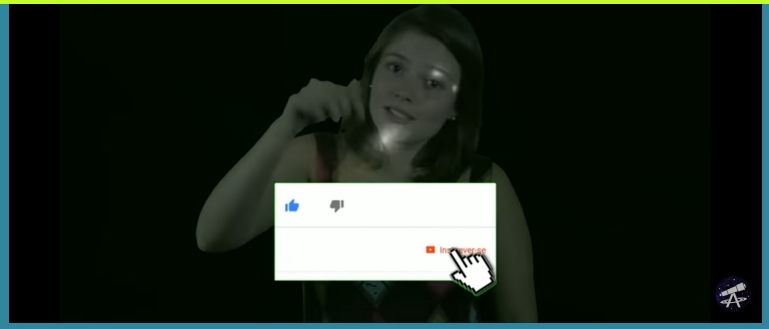


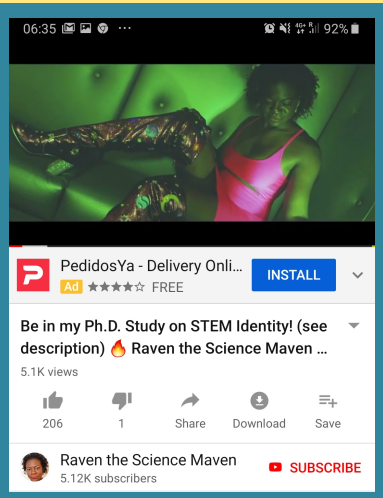


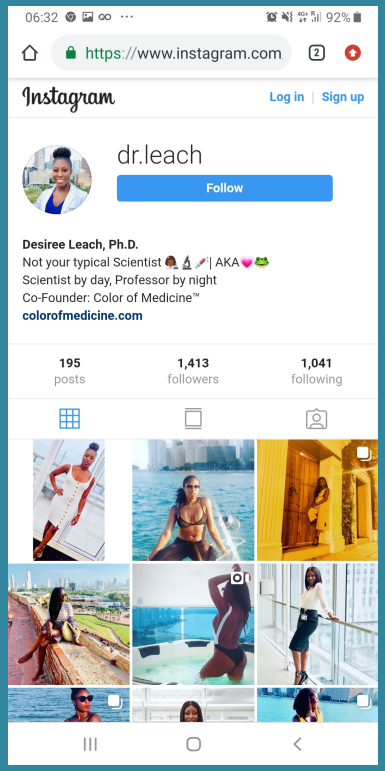


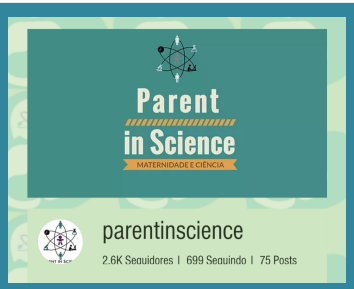
Networks to change stereotypes (examples we learned from our young participants of the SP workshop)

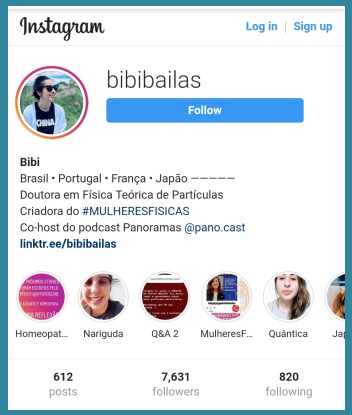
Astro Tubers

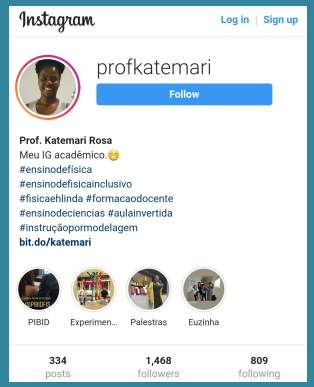












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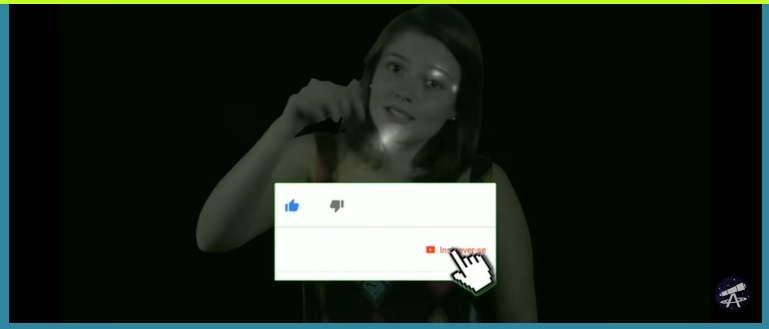

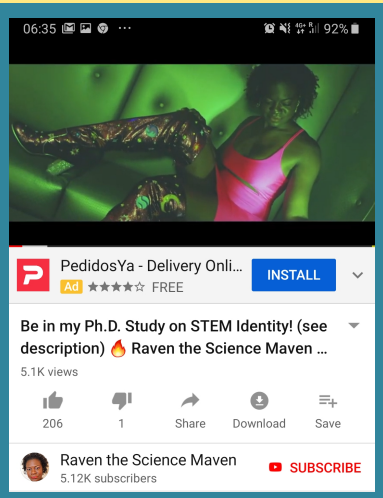

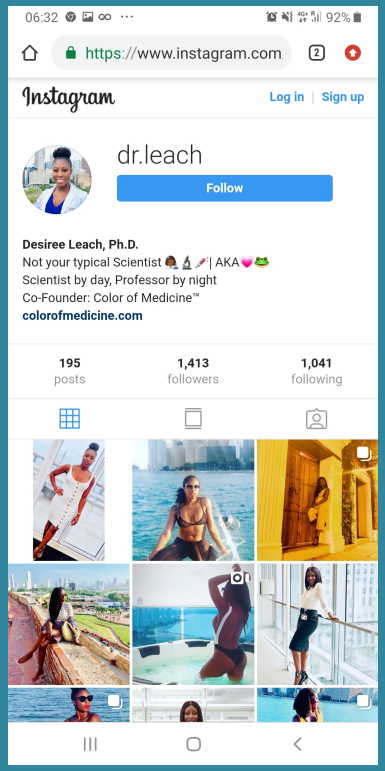

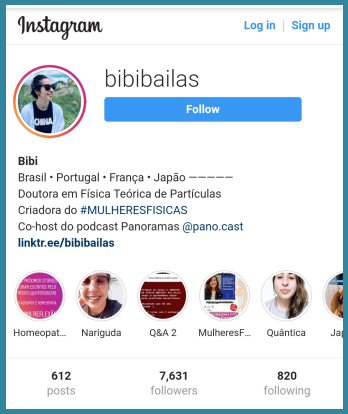

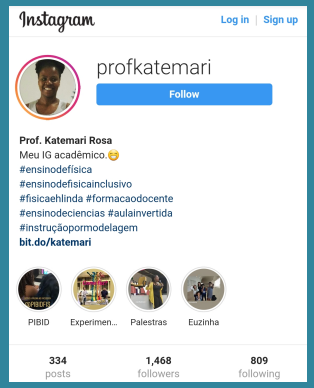

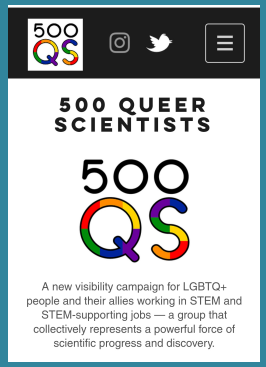

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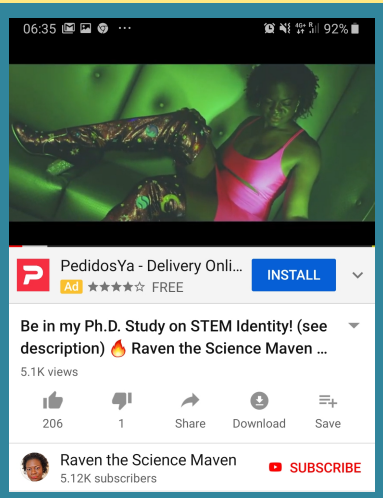

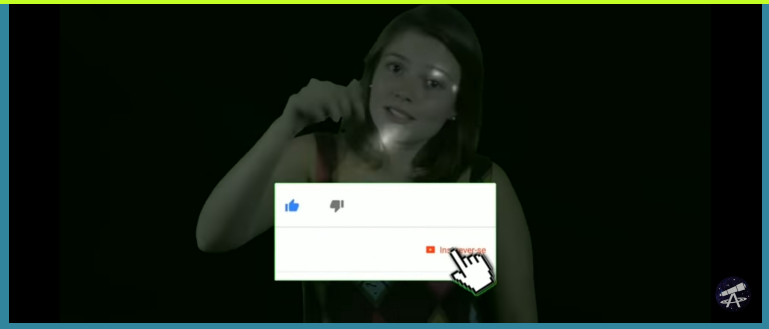

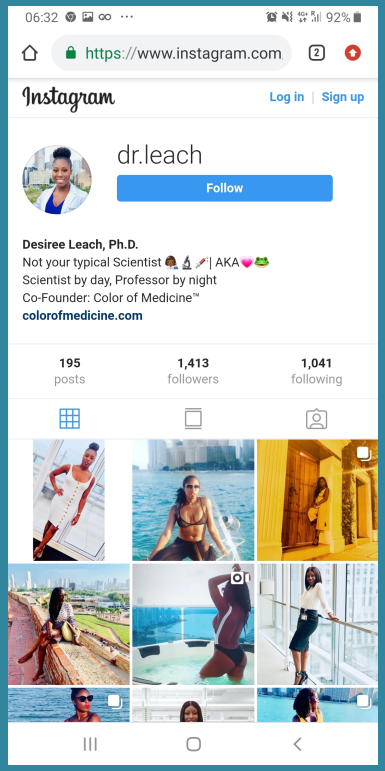

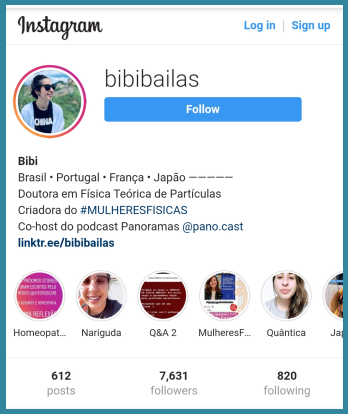

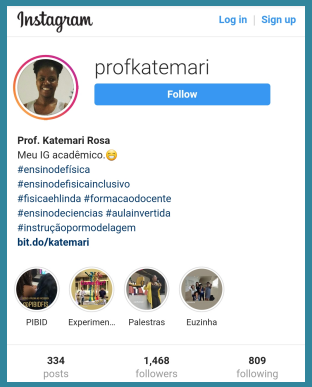

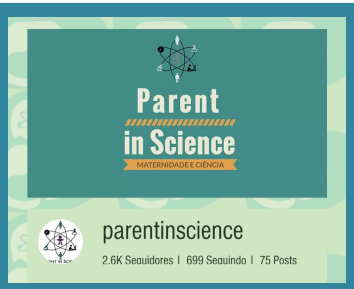

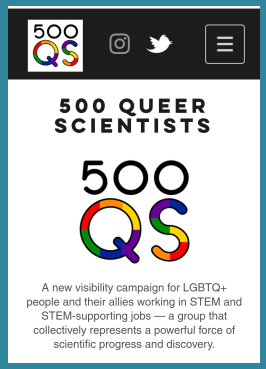

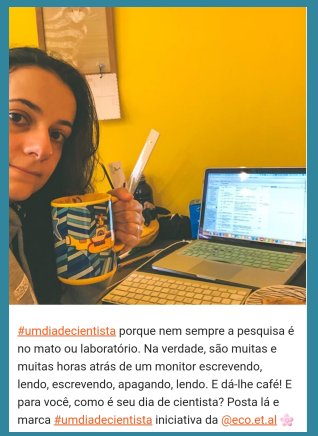

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Thank you!