

Title: The Effects of Limited Resources and Opportunities on Women's Careers in Physics: Results from the Global Survey of Physicists

Date: Mar 08, 2013 02:00 PM

URL: <http://pirsa.org/13030082>

Abstract: The results of the Global Survey of Physicists draw attention to the need to focus on factors other than representation when discussing the situation of women in physics. Previous studies of women in physics have mostly focused on the lack of women in the field. This study goes beyond the obvious shortage of women and shows that there are much deeper issues. For the first time, a multinational study was conducted with 15000 respondents from 130 countries, showing that problems for women in physics transcend national borders. Across all countries, women have fewer resources and opportunities and are more affected by cultural expectations concerning child care. We show that limited resources and opportunities hurt career progress, and because women have fewer opportunities and resources, their careers progress more slowly. We also show the disproportionate effects of children on women physicists' careers. Cultural expectations about home and family are difficult to change. However, for women to have successful outcomes and advance in physics, they must have equal access to resources and opportunities.

An article based on these findings can be found

at:

http://www.physicstoday.org/resource/1/phtoad/v65/i2/p47_s1

WOMEN'S CAREERS IN PHYSICS: RESULTS FROM THE GLOBAL SURVEY OF PHYSICISTS

Rachel Ivie and Casey Tesfaye

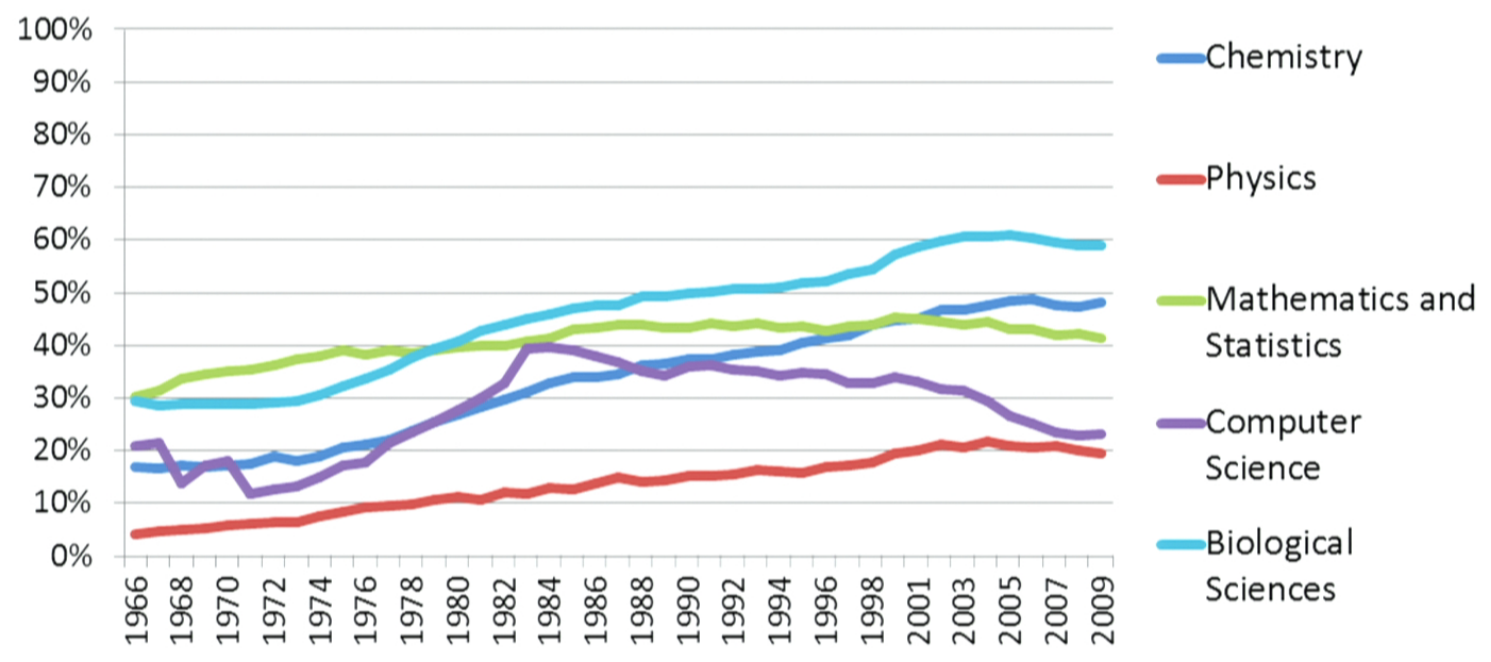
Funded by

Henry Luce Foundation

National Science Foundation, Award 1012148, Beverly
Hartline, Principal Investigator

Why survey women in physics?

Percent of bachelor's degrees earned by women in selected fields



Source: US Department of Education

- (Spain) “It is difficult when you are, as I have been, the only woman in a conference. Or when people interrupt, or do not listen or even laugh at what you are saying, even if it is important. Or when advisors or mentors could not believe that I’d done the work myself.”

Although representation is very low

- We also must have data on other factors that affect women's careers
- In this study, we focus on
 - Education
 - Work and family
 - Opportunities
 - Resources

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The first two global surveys of physicists

- More than 1000 women from more than 50 countries responded to each survey
- Only women were included
- English only

Languages

- English
- French
- Russian
- Arabic
- Chinese
- Spanish
- German
- Japanese

GLOBAL SURVEY OF PHYSICISTS

لإجراء استطلاع الرأي باللغة العربية، انقر هنا. مرحبًا بكم في استطلاع الرأي العالمي بشأن الفيزيائيين

欢迎参与全球物理工作者调查。以中文参与调查，请点击此处

Welcome to the Global Survey of Physicists. [To take the survey in English, click here](#)

Bienvenue à l'étude mondiale à l'intention des physiciens et physiciennes. [Pour participer à cette étude en français, cliquez ici](#)

Wir möchten Sie bei der globalen Umfrage unter Physikerinnen und Physikern begrüßen. [Klicken Sie hier, um die Umfrage in deutscher Sprache auszufüllen](#)

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Le damos la bienvenida a la Encuesta global de profesionales de la física. [Para hacer la encuesta en español, haga clic aquí](#)

How the survey was distributed

- Web survey sent to country leaders from conference
- Survey itself contained instructions to forward to colleagues
- Sample surveys were drawn by APS and German Physical Society, so their results are representative of their membership.
- Survey went to entire membership of Japanese Physical Society.
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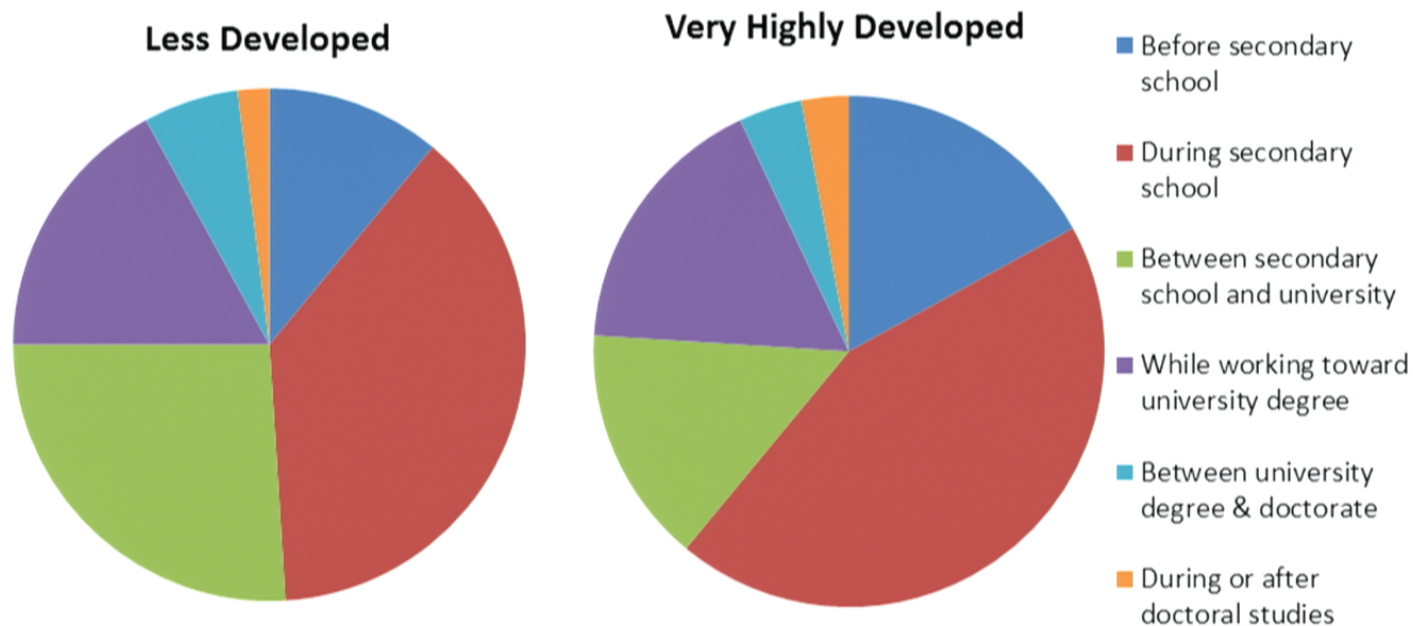
Who Responded?

- 130 countries
- 14,932 respondents
- 75% from Very Highly Developed Countries (21% Female)
- 25% from Less Developed Countries (27% Female)
- Employed in all types of jobs

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When did you first think of choosing physics as your career?



WORK AND FAMILY

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

	Women	Men
My work or career did not change significantly	32	65
I chose a less demanding or more flexible work schedule	39	20
I spent significantly less time at work	35	18
I was more productive and efficient at work	29	15
My career or rate of promotion slowed significantly	34	9
I changed my employer or field of employment	7	4
I became a stay at home parent	6	1

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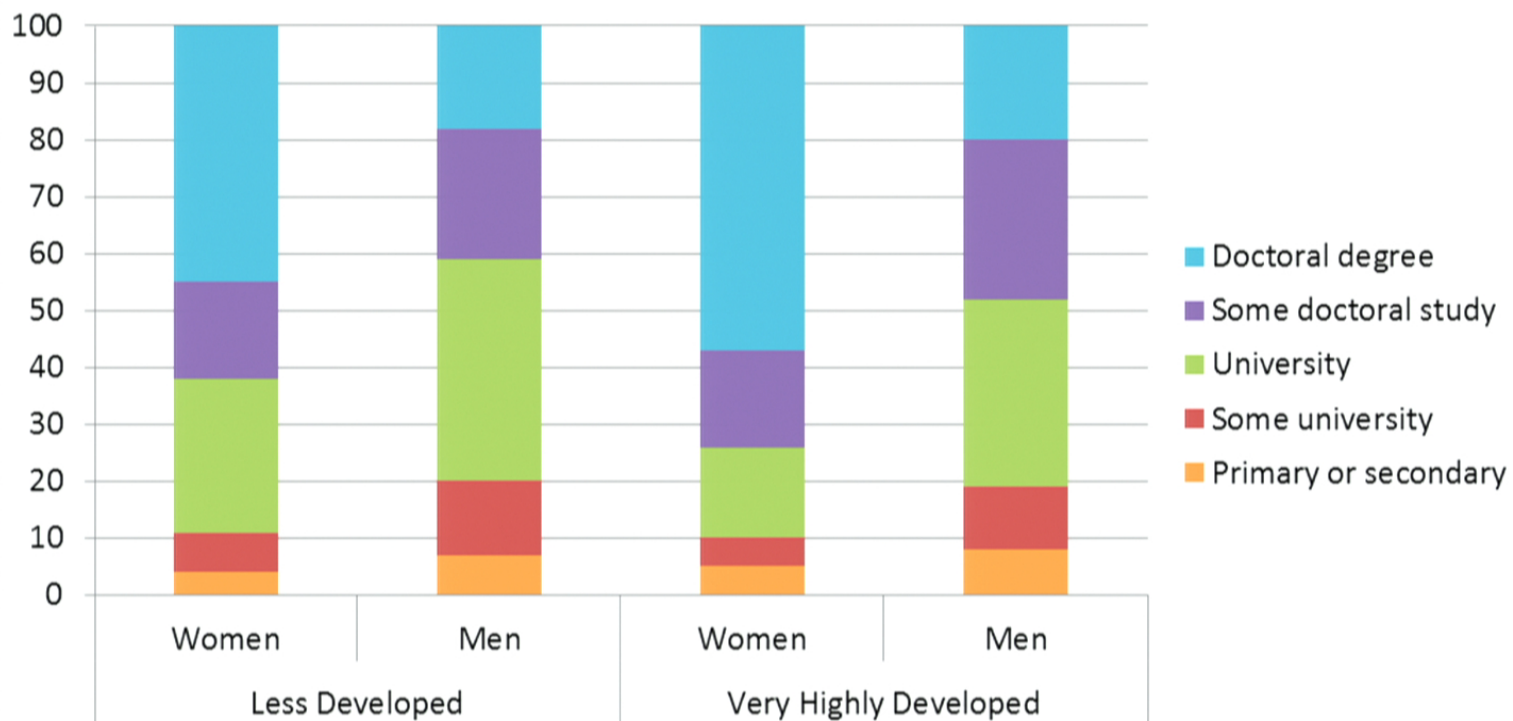
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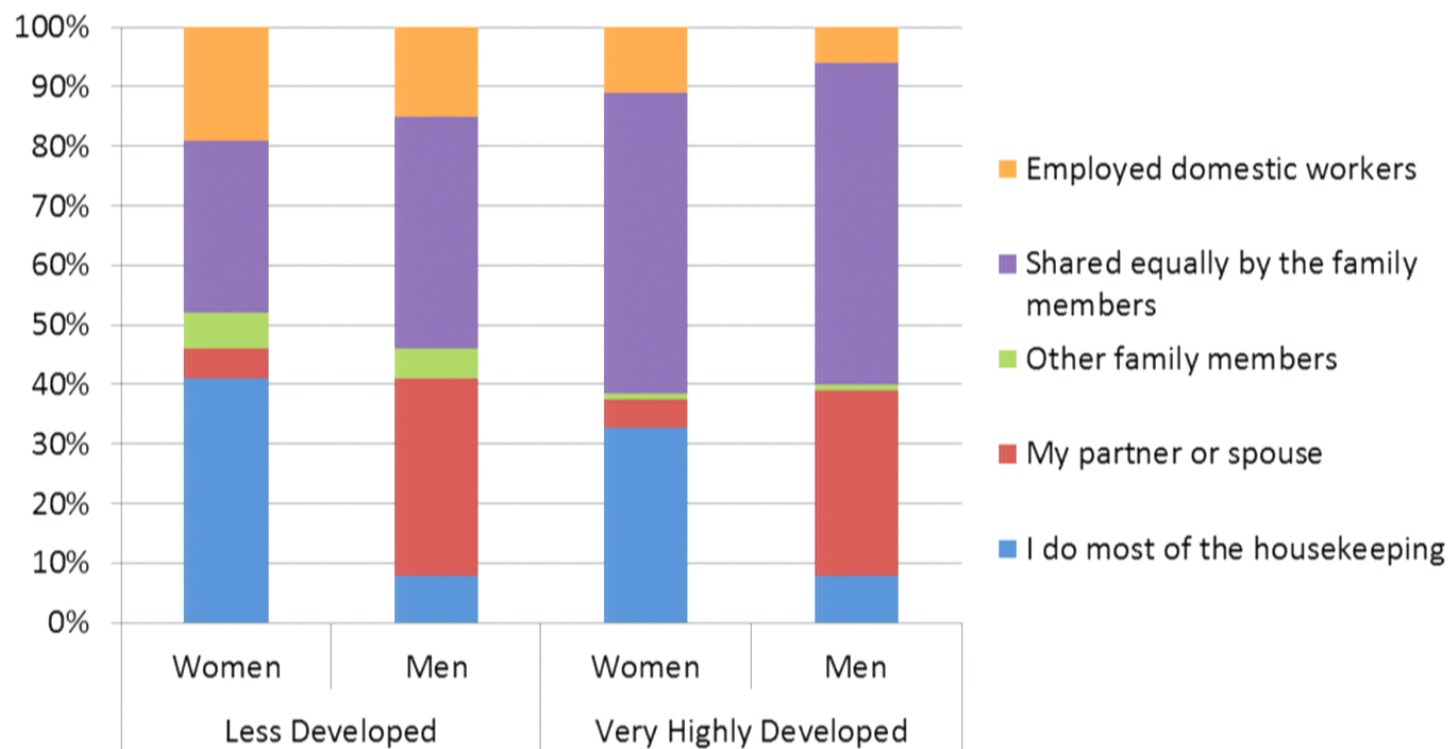
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How much school did your partner or spouse complete?



Responsibility for majority of housework, respondents with employed spouses only



Models tested

RESOURCES AND OPPORTUNITIES

Percentage of respondents with access to key resources

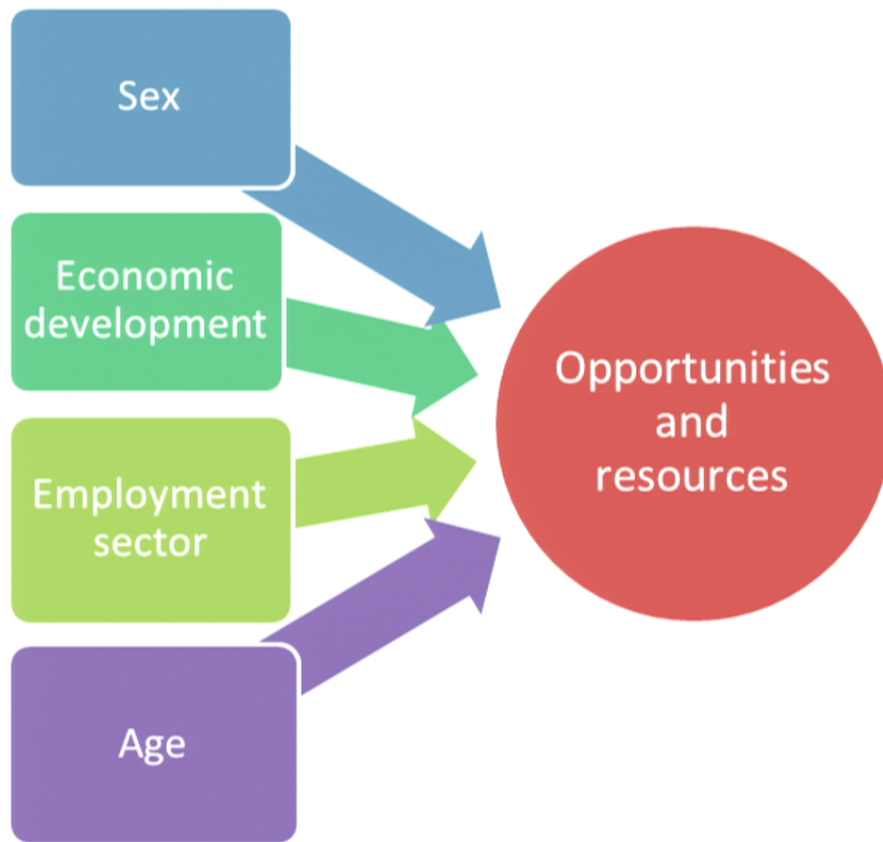
	Less Developed		Very Highly Developed	
	Women	Men	Women	Men
Funding	34	51	52	60
Office space	64	74	72	77
Lab space	42	47	46	52
Equipment	42	49	58	64
Travel money	31	47	57	64
Clerical support	22	38	30	43
Employees or students	42	53	33	43

% of R's w/ career-advancing opportunities

% Yes	Less Developed		Very Highly Developed	
	Women	Men	Women	Men
Given a talk at a conference as an invited speaker	51	67	58	73
Attended a conference abroad	75	81	83	87
Conducted research abroad	54	71	61	69
Acted as a boss or manager	38	53	46	61
Served as editor of a journal	16	24	11	19
Served on committees for grant agencies	22	37	26	36
Served on important committees at your institute or company	50	62	48	60
Served on an organizing committee for a conference in your field	48	59	48	55
Advised undergraduate students	82	84	69	74
Advised graduate students	63	77	58	70
Served on thesis or dissertation committees (not as an advisor)	52	66	37	52

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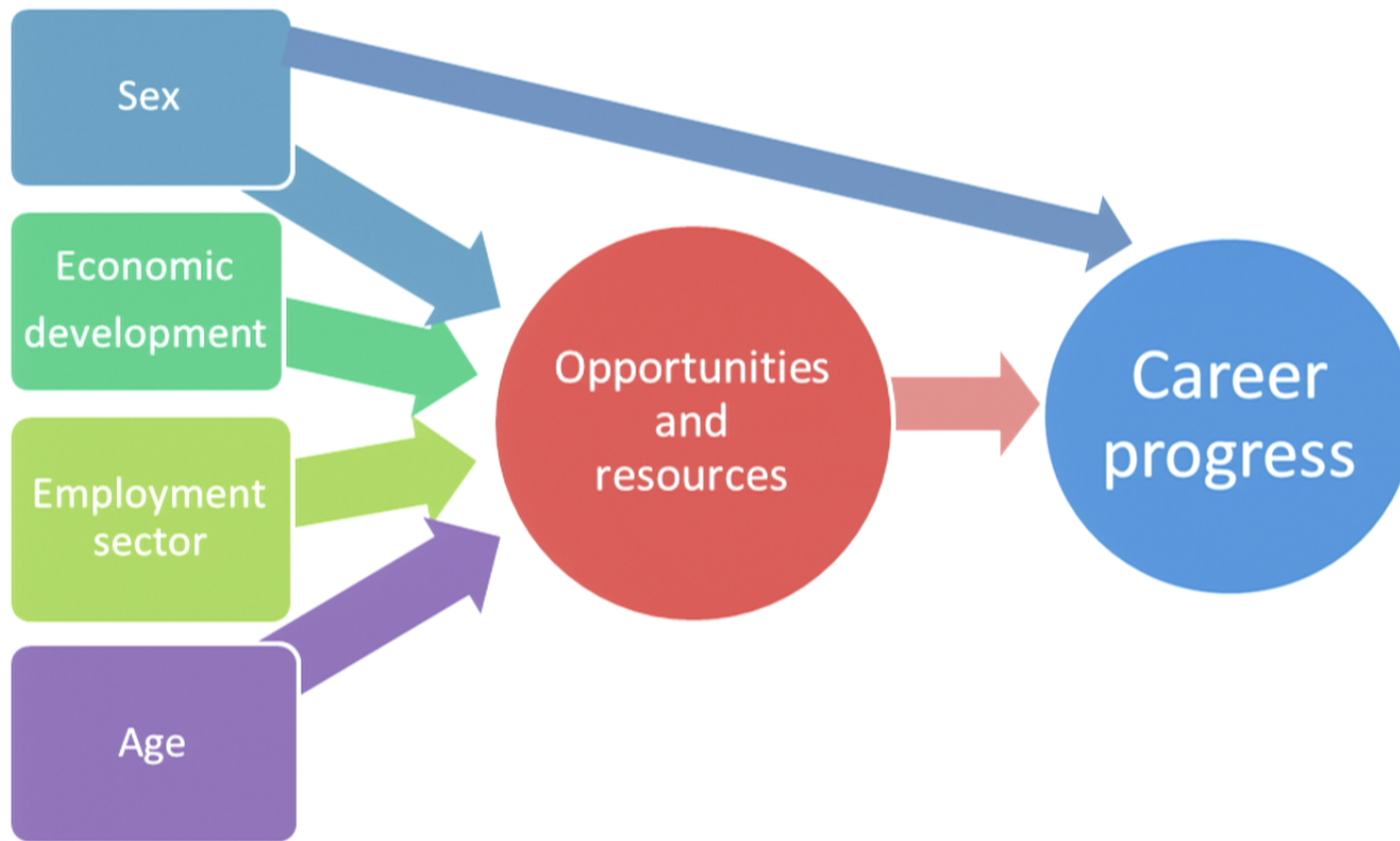
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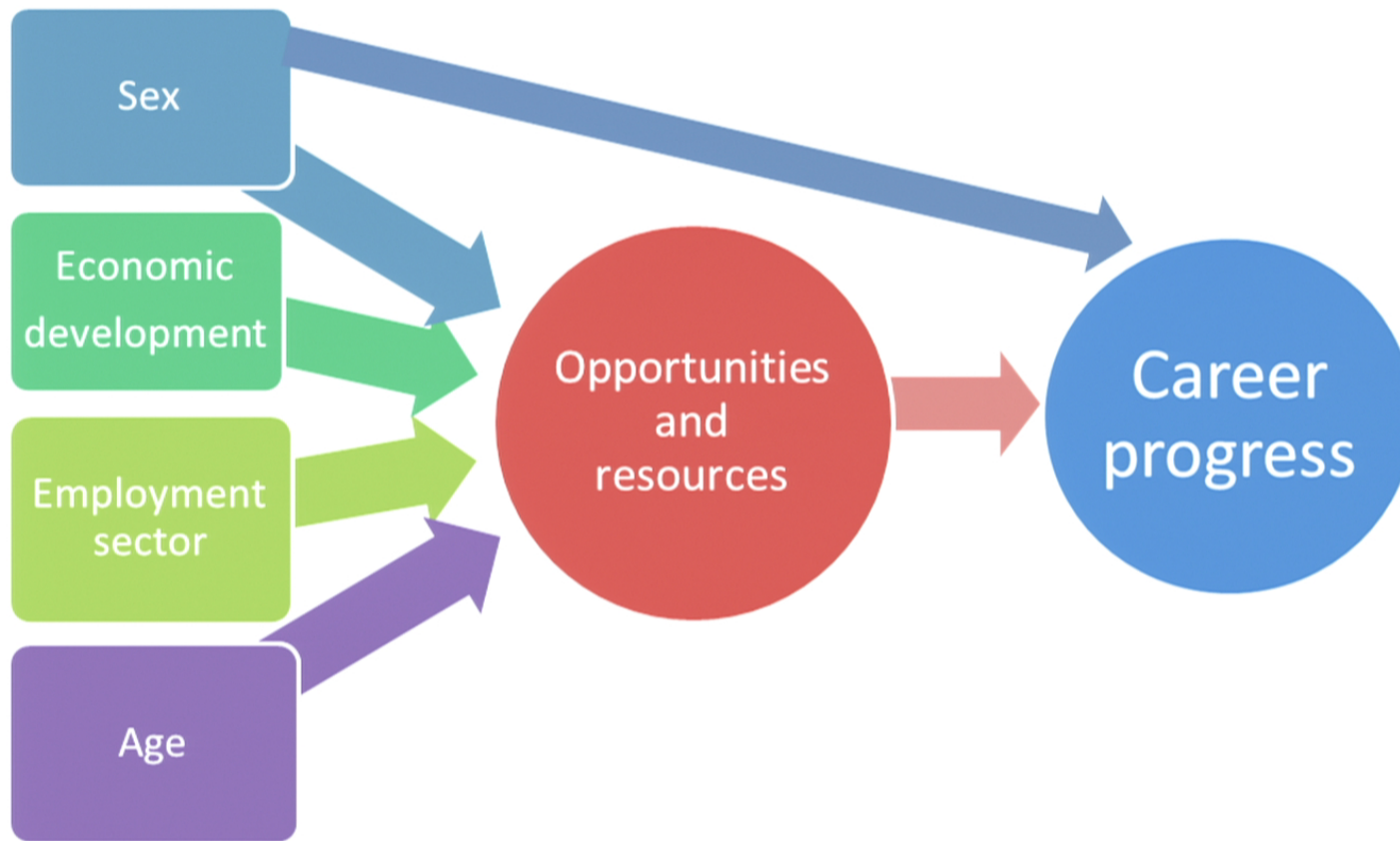
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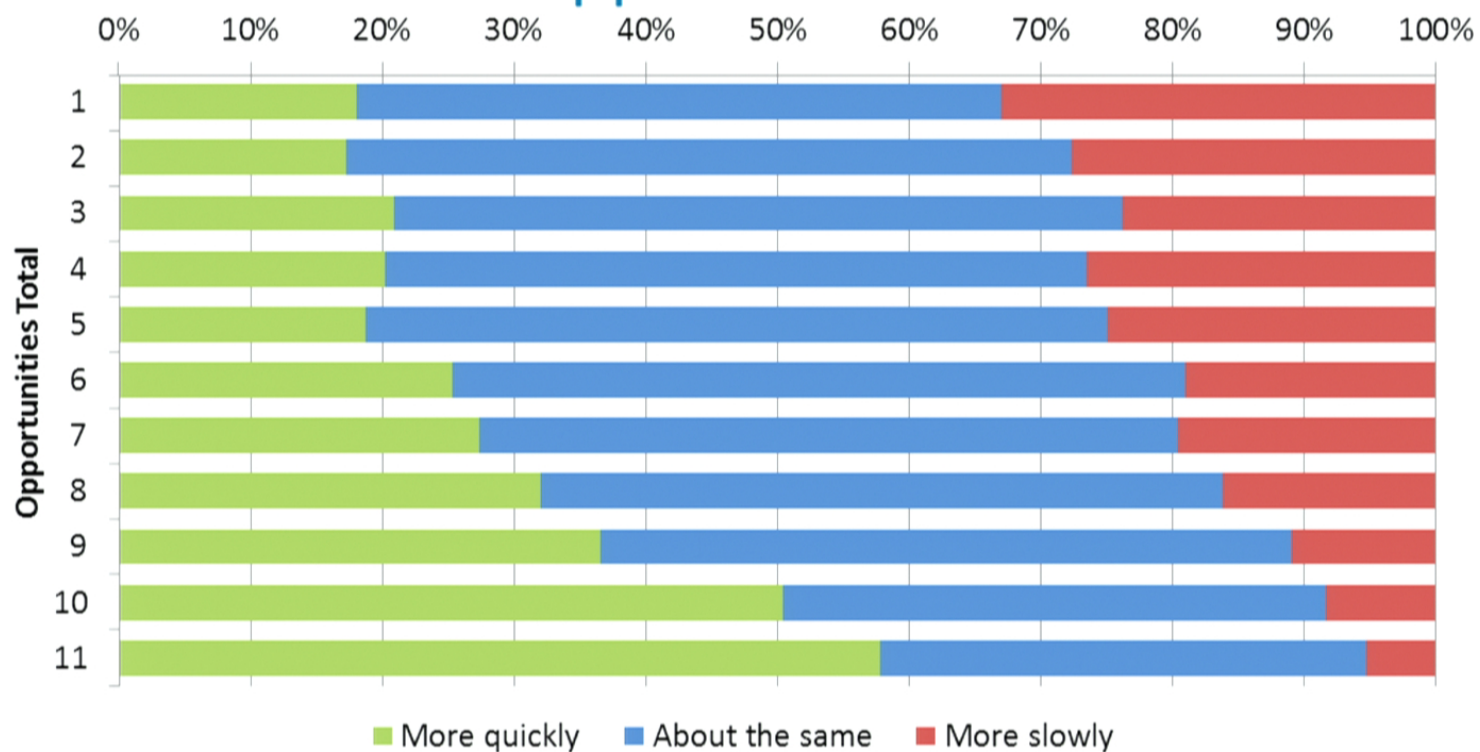
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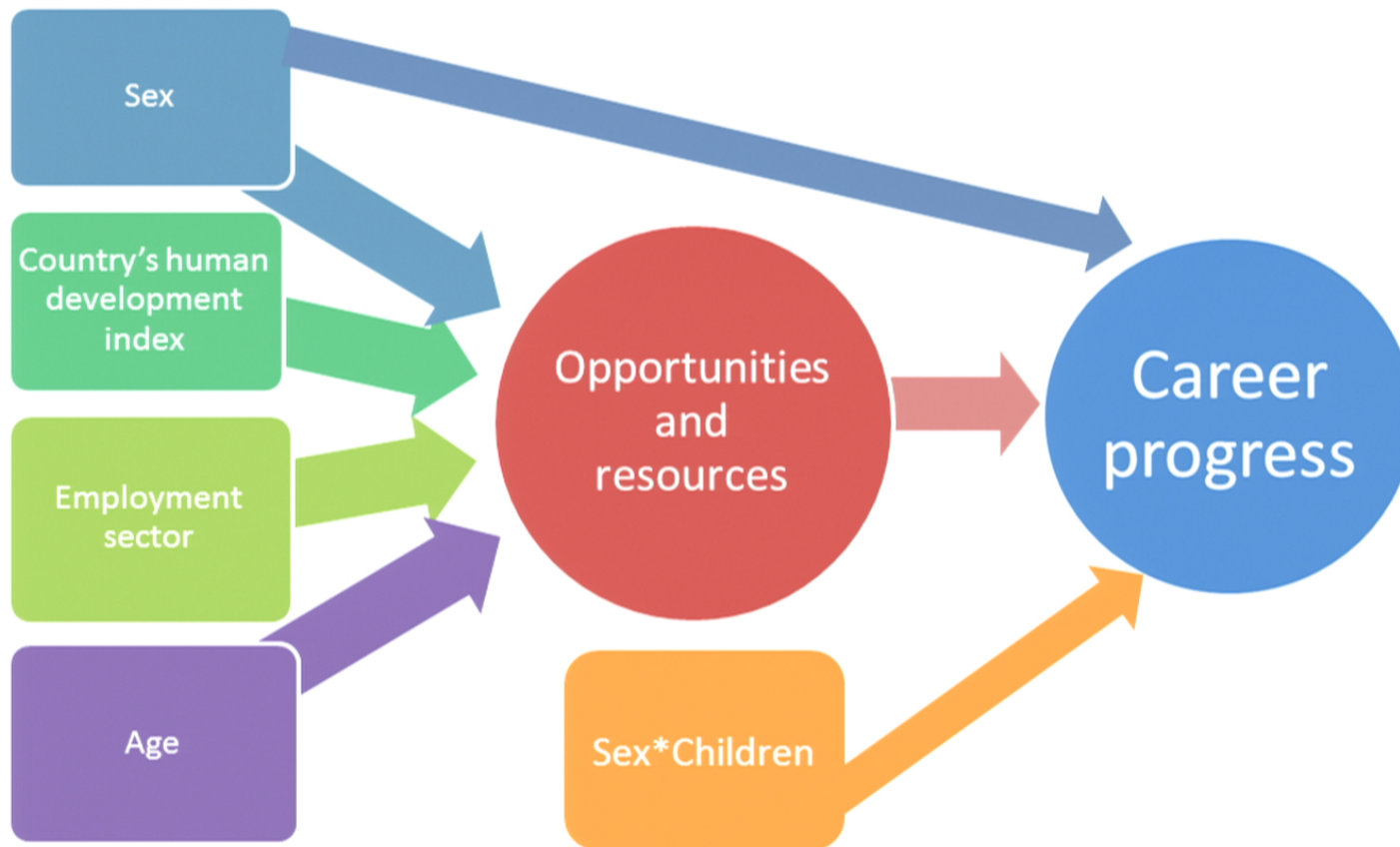
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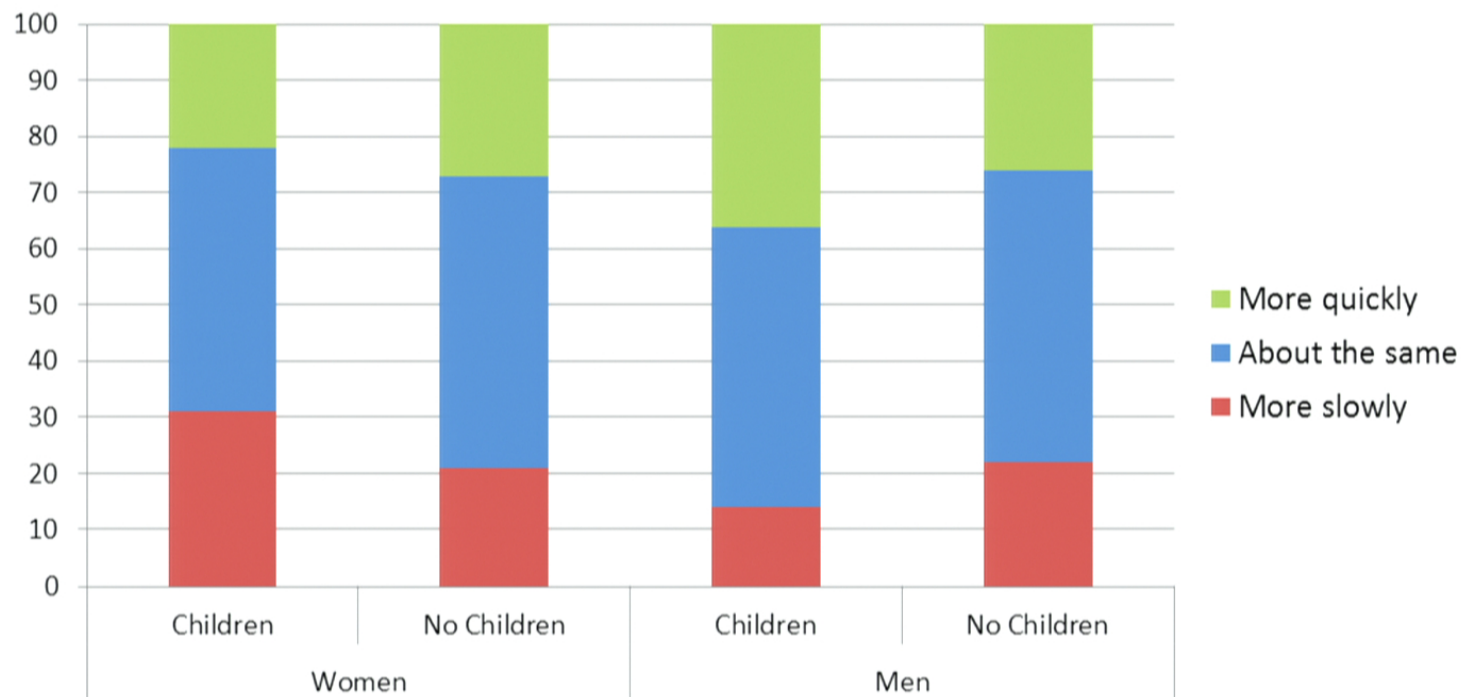


Relationship between career progress and opportunities

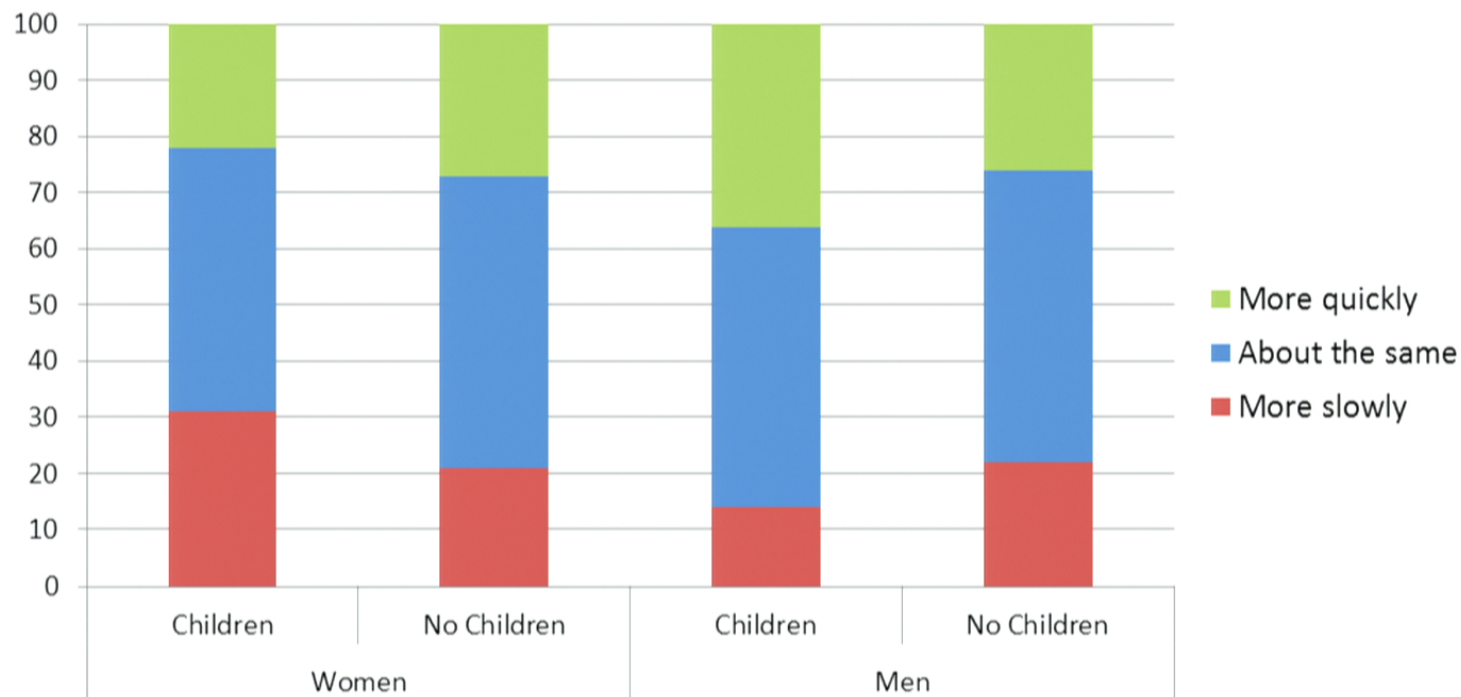




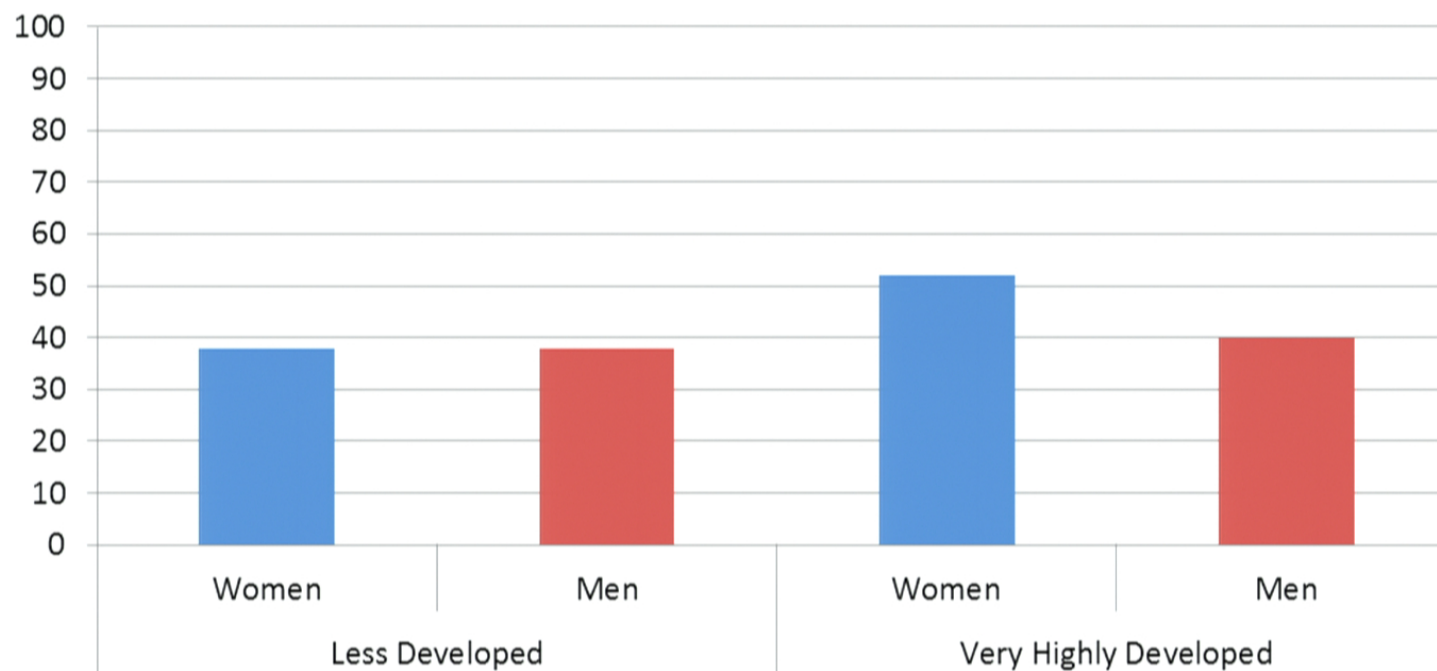
Compared to colleagues, how quickly have you progressed in your career?



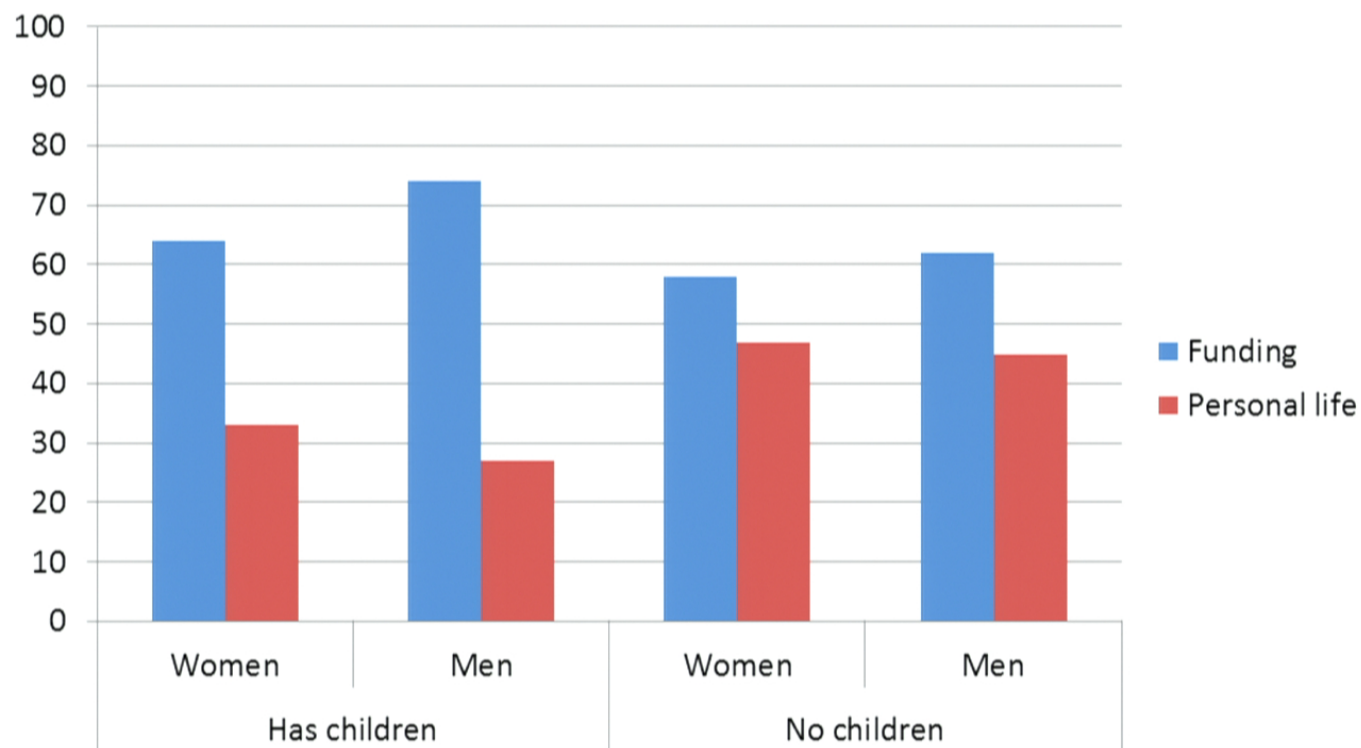
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Percent who felt discouraged because of interaction with colleagues



Percent who felt discouraged about funding and personal life



Conclusions

- Male physicists are more likely to have wives who don't work or make less money.
- Men are more likely to have someone who takes care of home and family than working women physicists.
- Across the world, women report access to fewer career-advancing resources and opportunities than men do.
- Women with children report the slowest career advancement, echoing findings from research literature.
- Representation isn't everything.

Recommendations

- Education: use research-based strategies to encourage girls to stay in physics
- Opportunities and resources:
 - Decision-makers should work to distribute opportunities and resources fairly
 - Professional societies should work to increase awareness of how opportunities and resources are unequally distributed
 - Programs to remedy women's situations should be based on documented differences
- Work and family: personal and cultural

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Want to learn more?

- Visit <http://www.aip.org/statistics> for past reports or to sign up for updates about the Global Survey of Physicists
- Our article available in Feb. 2012 issue of *Physics Today*



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