



## HIGHER IMPACT

# *Addressing Obstacles for Women in Science Will Accelerate Humanity's Progress*

Findings and implications from  
a survey of women in science

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ACKNOWLEDGEMENTS AND BIBLIOGRAPHY

# *Foreword — Progress for women in science: forward strides but miles to go*

The world has seen steady improvements in female literacy, childbirth mortality rates, women in leadership positions and life expectancy. Likewise, there has been gradual progress for women in science. Across a range of metrics, and across different geographies, the number of women in senior positions in academic and other scientific institutions is rising. Efforts are being made to address critical gendered issues amongst student and staff at universities, particularly of sexual harassment and consent.

Yet this advancement, while welcome, risks obscuring systemic issues. There is a perception in some parts of the scientific community that institutions have recognised the extent of the problem, that the battle for gender equality has

been fought and won, and that the remaining issues are just a matter of fine-tuning a policy here or an institutional culture there.

This view is risky. Many challenges and barriers for women in science remain. The numbers of women in some fields is faltering, and sexism and harassment persist. From work-life challenges to harassment to women's increased care responsibilities, these obstacles are deep-rooted and widespread.

To pinpoint and redress the extent and impact of the barriers that women face today more clearly, the Fondation L'Oréal conducted a survey of the L'Oréal-UNESCO *For Women in Science* programme alumnae — high-achieving women who have been recognised for their excellence in

life and environmental sciences, physical sciences, mathematics, computer and information sciences, engineering sciences and technological sciences.

If I could highlight one result of this research that struck me, it would be the need for greater recognition of the problems that remain. When asked if they agreed with the statement 'On the whole, academic institutions have recognised the extent of problems regarding gender in their institutions', fewer than half (45%) of respondents agreed to any extent. This held true for all age groups, and the number of senior alumnae who agreed completely with the statement was zero. Younger respondents were more likely to strongly disagree with the statement.



Alexandra Palt

Executive Vice President of  
the Fondation L'Oréal.

Only when institutions recognise and acknowledge women's challenges as systemic ones, can they begin to creatively manage them. Organisations now need to move from fractional changes to broader structural and cultural change; to double down on the examples of men advocating for women, of family-friendly shared leave and childcare policies within certain institutions; and to make these changes the norm.

For more than two decades, L'Oréal and the Fondation L'Oréal have supported women in science and efforts to advance their standing. We believe the world needs science, and science needs women. Science needs women's diverse perspectives, innovation and creativity to tackle the world's existential challenges, including

climate change, disease, and resource scarcity.

With this research, we hope to help leaders of institutions, men and women, to advance women in science for the good of our society. Clearly, organisations which aim to lead on advancing the frontiers of human knowledge should lead in the fight for gender equality too. Those that succeed will accelerate the progress of science and their impact on humanity.



# Introduction

*The state of play  
for women in science,  
by the numbers*

While women are entering academia in greater proportions than ever before, the number of women graduating and pursuing academic careers in science is faltering. Though women held 40.6% of academic positions in European Union countries in 2014, the share of university graduates in Natural Sciences, Maths and Statistics globally has stuttered, dropping from 5.2% in 1999 to 4.5% in 2017.<sup>1</sup> In OECD countries, fewer than one in three engineering graduates and fewer than one in five computer science graduates is a woman.<sup>2</sup>

Despite over half of all PhDs being awarded to women, the percentage of female tenured faculty lies between 20% to 33% in the EU and US and falls to as low as 5% in fields like engineering.<sup>3</sup> In the EU-28, only 15% of Grade A positions in Science, Technology, Engineering and Mathematics (STEM) fields are occupied by women.<sup>4</sup> Other regions may be further behind: one study of

Mexico's scientists found women at universities and research centres even had higher-quality publications with longer-term impact on their fields, but were less likely to be promoted to senior ranks.<sup>5</sup>

Whilst the #MeToo movement has provoked widespread changes in university policies and the seriousness with which issues of sexual harassment and consent are treated, instances of sexual assault and inappropriate behaviour remain high. A range of studies from European countries found that 47% to 68% of women students were sexually harassed verbally or with threatening unwanted advances during their higher education studies.<sup>6</sup> Some of the perpetrators are academic staff: for example, a BBC investigation recently exposed extensive abuses of power by male university staff in Nigeria and Ghana.<sup>7</sup>

There has been growing recognition of the achievements and value of women in science.

Of the 600 Nobel prizes awarded for sciences, just 20 have gone to women. However, the pace of change is quickening: four of twelve women Nobel laureates in physiology and medicine, two of the five in chemistry, and one of the three in physics were awarded in the last decade.

The numbers are clear: while growing numbers of women advance and excel in science, at a systemic level, equality is not yet a reality. Universities and other scientific research institutions must continue to work hard to become true meritocracies.

This research provides unique insight into the views of some of the leading women in science today. The results indicate overwhelming agreement among *For Women in Science* alumnae that women are still held back from advancing in science because of their gender.

1. Tartar, A. & Sam, C. (2019). How Big Is the Global Gender Gap? Depends Which Number You Look At. Bloomberg, 27 March 2019.  
 2. Where are tomorrow's female scientists? OECD. Accessed at: <http://www.oecd.org/gender/data/wherearetomorrowfemalescientists.htm>  
 3. Yoder, B. L. (2018), 'Engineering by the numbers.', American Society for Engineering Education.  
 4. European Commission (2019) 'SHE Figures 2018'. Accessed at: <https://op.europa.eu/en/publication-detail/-/publication/9540ffa1-4478-11e9-a8ed-01aa75ed71a1/language-en>  
 5. Leeming, J. (2017) 'Women aren't failing at science, science is failing women' Nature. Accessed at: <http://blogs.nature.com/naturejobs/2017/03/20/women-arent-failing-at-science-science-is-failing-women/>  
 6. ESHTE (2017). Ending Sexual Harassment and Violence in Third Level Education: A Review of Data on Prevalence of Sexual Violence and Harassment of Women Students in Higher Education in the European Union. European Union, 22 November 2017  
 7. BBC News Africa (2019) 'Sex for Grades: undercover inside Nigerian and Ghanaian universities - BBC Africa Eye documentary'

## *About the study*

This study set out to chart the individual experiences of women in science as they progressed through their careers, the challenges to their advancement, and how those challenges have been overcome. In the survey, women were asked to share their experiences and interactions with the cultures and structures of their institutions. In particular, science has for years grappled with the issues of parenthood and of sexual harassment, and these are priority areas for the Fondation L'Oréal to understand and help address to support women in science. The survey delved deeper into these

two issues to investigate how alumnae experience and have been affected by them.

The survey was answered by 327 out of 668 recipients (49%), a much higher response rate than is typical. Women from over 65 countries wrote over 49,000 words of vivid, deeply felt, answers. Their insights and anecdotes suggest there is still much work to be done. They paint a picture of women paddling upstream against a current of entrenched unconscious and conscious biases, borne of social attitudes and institutional structures. At the same

time, they capture many positive stories of women succeeding and flourishing with the support of colleagues, institutions and through their own dedication to their missions and disciplines.

These results cannot claim to represent the experience of all women in science. After all, the alumnae of the L'Oréal-UNESCO For Women in Science programme are a uniquely accomplished group. Despite the particularities of these experiences, it is likely that many women and men working in academic science will recognise what they read here.

## *About the survey*

*This study was commissioned by the Fondation L'Oréal and carried out by Kite Insights. This research combined an online survey and telephone interviews of alumnae of the For Women in Science programme of the Fondation L'Oréal and UNESCO. An invitation to the online survey was sent to 668 alumnae, receiving 327 responses. The survey ran from January 29<sup>th</sup> to February 11<sup>th</sup>, 2019. Five qualitative interviews were carried out during this same time period.*

*The questionnaire was informed by an extensive review of professional and academic literature on the subject of women's advancement in academic science and other professional disciplines and designed in consultation with the Fondation L'Oréal. The work is also informed by the Fondation L'Oréal's previous publication Tectonic Movements.*

## *About L'Oréal-UNESCO For Women in Science*

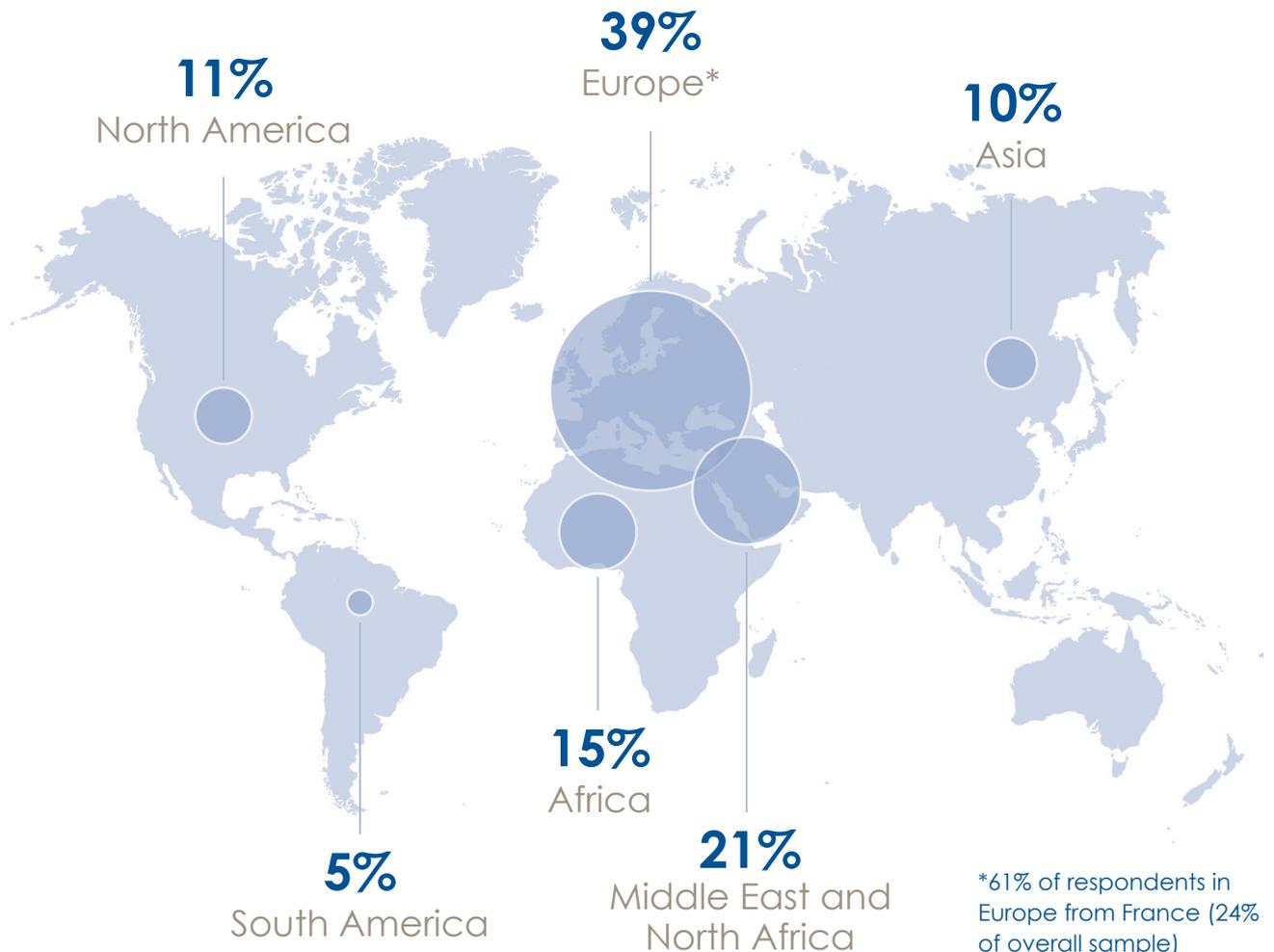
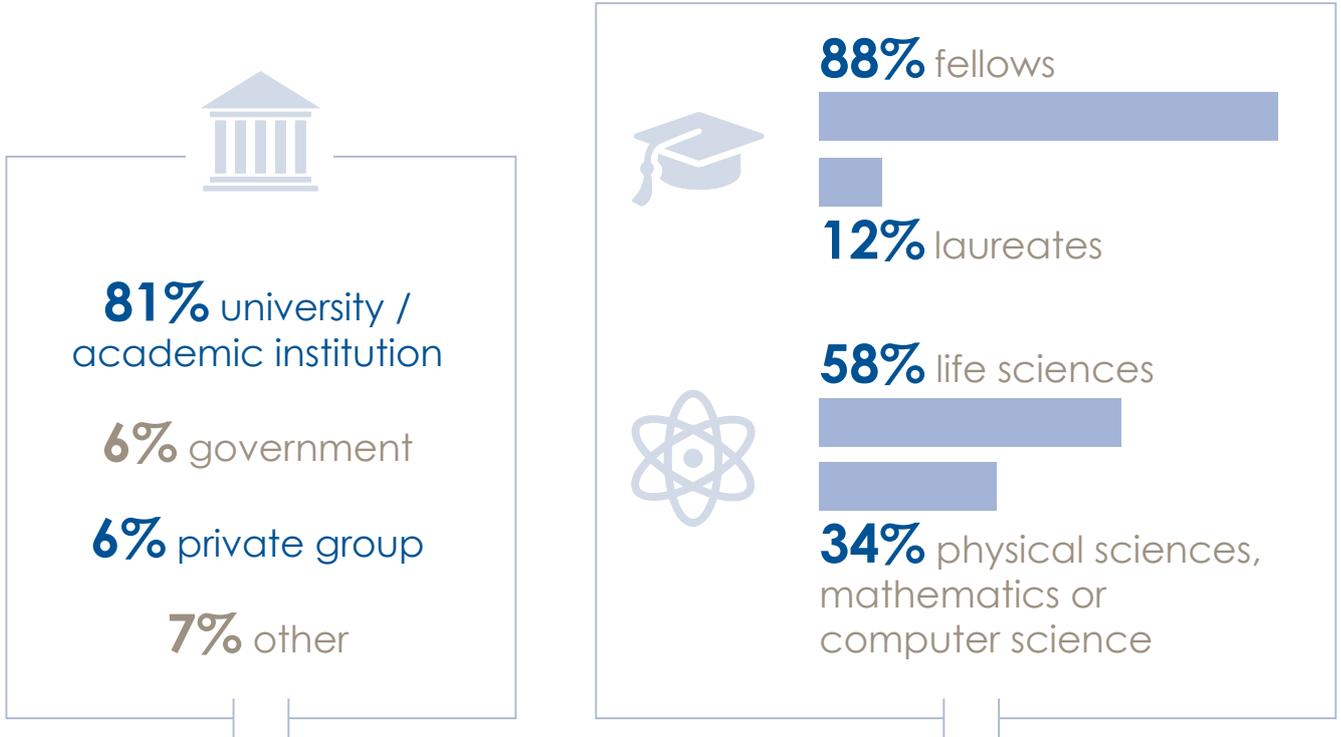
*Since 1998, L'Oréal-UNESCO For Women in Science programme has celebrated eminent women in science throughout the world. Each year five Laureates from five different regions around the world are rewarded for their contributions to their field. This International Awards are given out in alternate years to women in life & environmental sciences and physical sciences, mathematics and computer science. The L'Oréal-UNESCO For Women in Science programme also supports more than 250 talented, young scientists through its fellowship programmes every year.*

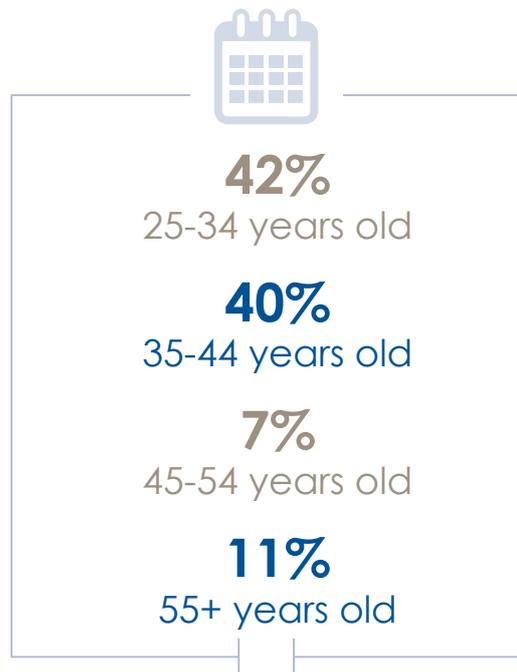
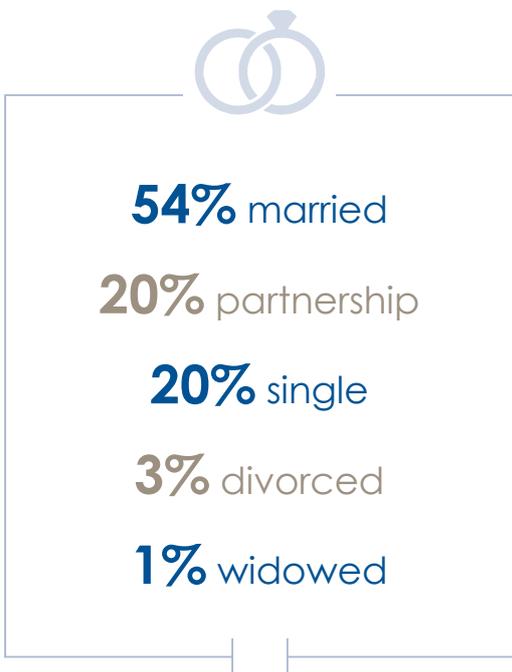
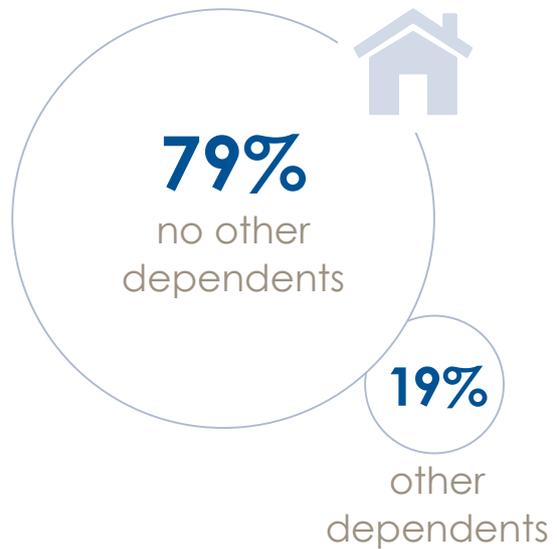
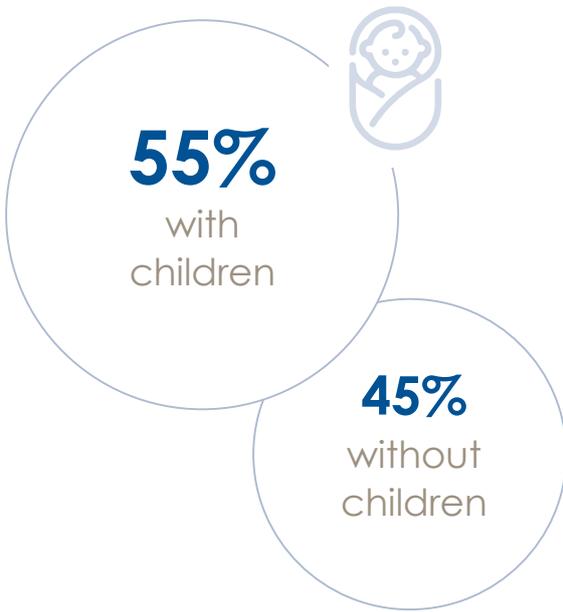
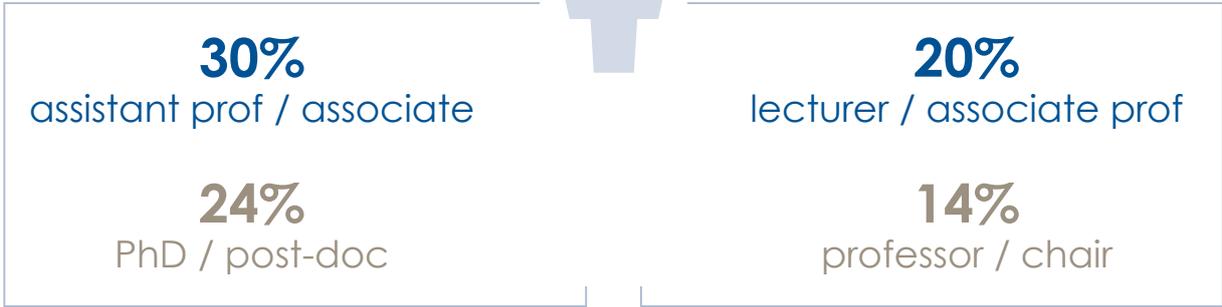
*The respondents to this survey comprised both L'Oréal-UNESCO For Women in Science Laureates and Young Talents. Laureates made up 12% of respondents to this survey. The remaining 88% of respondents were the fellows.*

*Thus, the respondents of this research consisted of women across a spectrum of scientific disciplines, at all ages and stages of their scientific careers, from the final years of doctoral studies to the most senior positions of universities and other institutions.*

*For further information about this study and the work of the Fondation L'Oréal, please contact: [ForWomeninScience.info@loreal.com](mailto:ForWomeninScience.info@loreal.com)*

# Our respondents







# Results

*Women in science,  
in their own words*

The empirical evidence is mounting for a widespread range of gender biases throughout science, including ways in which male and female job candidates are described, stereotypes of what the 'ideal' scientist looks like, to other inequalities in hiring, funding and promotion.<sup>8</sup> Bias operates at multiple levels: when presented with experimental evidence of gender biases in STEM, men are more likely than women to think the quality of the underlying research is poor.<sup>9</sup>

Likewise, *For Women in Science* alumnae survey respondents observed that gendered expectations are held by colleagues, folded into the culture of organisations, formalised by the structure of careers and institutions, and implicit in the ordinary interactions which make up a normal workday. Leaders and employees of scientific research organisations may genuinely believe that sexism is a thing of the past. However, these biases and their very invisibility present very real career challenges, even for women who have risen to or look set to reach the very highest levels within science.

The survey began by asking respondents about their experience in their careers in science. The questions explored both cultural and structural bias, whether respondents had experienced such biases and how those experiences had affected them. The survey dived deeper into two issues of parenthood and sexual harassment; areas identified as particularly critical to advancing women in science.



Professor Kristi Anseth, 2020 *For Women In Science* Laureate for North America

8. Asplund, M., Welle, C.G. (2018) Advancing science: How bias holds us back. *Neuron* 99:635–639.

9. Handley, I.M., Brown, E.R., Moss-Racusin, C.A., Smith, J.L. (2015) Gender-biased evaluations of gender-bias evidence. *Proceedings of the National Academy of Sciences* Oct 2015, 112 (43) 13201-13206; DOI: 10.1073/pnas.1510649112

## *Biased workplace cultures are commonplace, hindering success*

Respondents were asked about the range and examples of gender-related experiences they encountered, from unfair treatment to harassment.

Close to two-thirds (62%) said they had experienced prejudice from colleagues because of their gender. Over half of the women in the survey (55%) said they faced gender bias in hiring, promoting, and funding decisions.

Such biases can manifest in small interactions. For instance,

one woman with two decades' experience as an adjunct was told "I liked your talk; you think like a man" by a male professor after a talk at a prestigious European institute. Even when such remarks are meant positively, they reinforce the idea that the default reference for scientific thinking is male.

Another respondent described a brief conversation with a male professor who suggested she go by her initials on a paper rather than use her full name,

for the paper to have a higher chance of acceptance. "This was unacceptable for me and, of course, I signed using my full name," she wrote. "The paper was finally accepted. But the prejudice was installed."

Of course, women are caught in a bind. The reality is that identical papers or job applications with a woman's name attached are less likely to be accepted than those with a man's, while papers authored by women are less likely to be cited after publication.<sup>10,11,12</sup> This lack of authorship or visibility affects women's access to awards, jobs and promotions, with repercussions that echo throughout a scientist's career. Indeed, 54% of respondents reported difficulty attaining opportunities for visibility in their career, such as becoming a jury member, joining a journal editorial board, or contributing at major events; 61% had experienced issues with ownership or authorship position on their projects and publications.

Respondents were then asked how their experiences and environments affected their success.

Sixty-two percent of respondents agreed to at least some extent that a biased workplace culture was a barrier to success. In the mildest form, women are not explicitly shut out, yet at the same

# 62%

**of respondents agree that the workplace culture in many academic institutions is a barrier to women's advancement.**

**Q: To what extent do you agree with the statement "The workplace culture in many academic institutions is a barrier to women's advancement"?**

Completely agree = 14%  
 Strongly agree = 18%  
 Somewhat agree = 30%  
 Neither agree nor disagree = 8%  
 Somewhat disagree = 12%  
 Strongly disagree = 7%  
 Completely disagree = 3%  
 No opinion = 8%  
 (N=318, 3% no answer)

10. Fox, C.W., Paine, C.E.T. (2019) Gender differences in peer review outcomes and manuscript impact at six journals of ecology and evolution. *Ecol Evol.* 2019; 9: 3599–3619. <https://doi.org/10.1002/ece3.4993>

11. Moss-Racusin, C.A., Dovidio, J.F., Brescoll, V.L., Graham, M.J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences*, 109(41), 16474-16479.

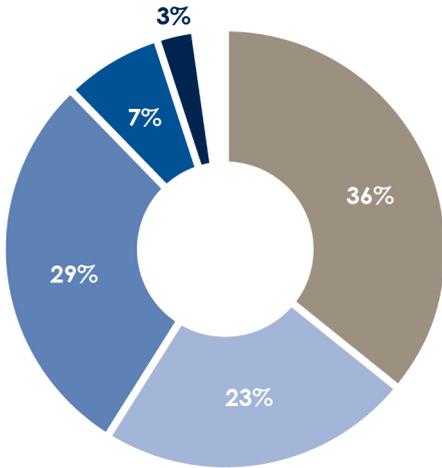
12. West, J. D., Jacquet, J., King, M. M., Correll, S. J., & Bergstrom, C. T. (2013). The role of gender in scholarly authorship. *PLoS one*, 8(7), e66212

**Figure 2:** Respondents say their gender has been a career roadblock in hiring and promotion, visibility, authorship and how they are treated.

Very frequently   Quite frequently   On occasion  
At least once   Never

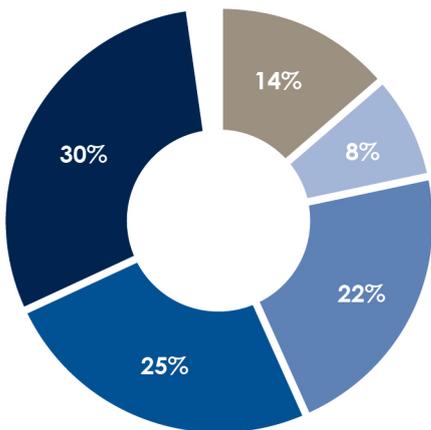
**I have been treated with a lack of respect or with prejudice by colleagues because of my gender**

(N= 325, No opinion = 2%)



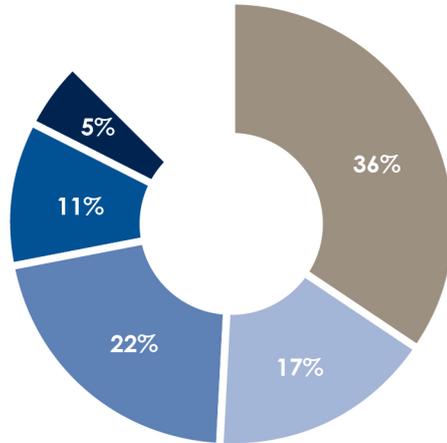
**My self-confidence has impacted decisions in my career (e.g. applying for a position or grant)**

(N= 325, No opinion = 2%)



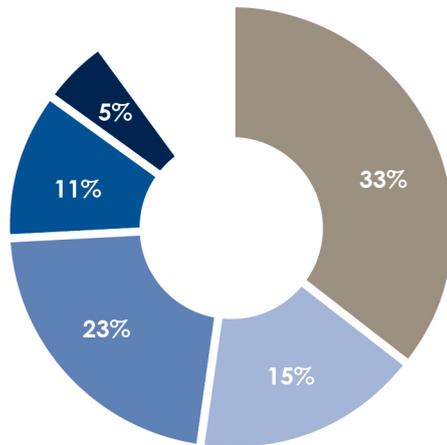
**I have faced gender bias in hiring, promotion and funding decisions**

(N = 324, No opinion = 10%)



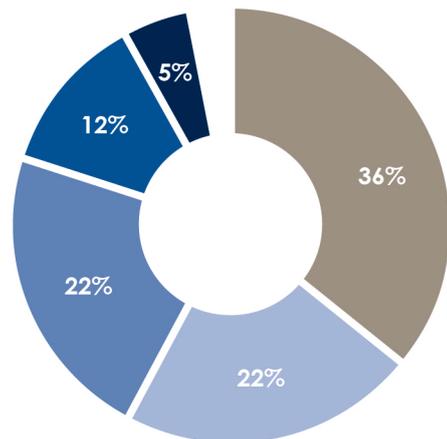
**I have experienced difficulty in attaining opportunities for visibility in my career (e.g. jury member, journal editorial boards, contributions at major events)**

(N= 326, No opinion = 13%)



**I have experienced issues regarding ownership or authorship position in projects/publications I have been involved in**

(N= 326, No opinion = 3%)



**Q:** Please rate the extent to which each of the following statements is representative of your experience in your academic career

(1 = Never, 2 = At least once, 3 = On occasion, 4 = Quite frequently, 5 = Very frequently, No opinion)

time they may not feel part of the 'inner circle' — the informal social groups and networks by which scientists exchange ideas, learn of opportunities, and build professional relationships.

More harmful microaggressions such as sexist stories, jokes, and assumptions about gender can demoralise and disengage women at work, and discourage them from taking chances that might catalyse their rise through the ranks. Fifty-five percent of respondents 'completely agreed' or 'strongly agreed' that their self-confidence had affected decisions in their career such as whether to apply for a grant, with only 14% saying this had never happened. Senior scientists interviewed during this study also highlighted the frequency of young women in particular not having the confidence to apply for opportunities that their male colleagues did.

These challenges around workplace culture are not unique to science, but the male-dominated environment that many women scientists inhabit is nevertheless having measurable negative impact.<sup>13</sup>

By contrast, *For Women in Science* alumnae also shared numerous examples of positive, gender-conscious and supportive behaviour from colleagues and

managers. Eighty-six percent of respondents said that they have benefited from the support of colleagues in advancing their careers. "I had the support of very good mentors (male in both cases) who gave me unique opportunities, such as sending me in their place to conferences, which really allowed me to be better known in the field."

"When I began as a faculty member, a senior woman professor took the time to send me notes of encouragement when I received

a fellowship or an accolade. I also had a wonderful female colleague to share experiences with and to discuss and support each other's science and achievements. These were crucial in framing my confidence and my excitement about science as a career."

These insights demonstrate how institutions and individuals can support women in science, just as they indicate where obstacles still exist.

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# 61%

**of respondents agree that the way science careers and institutions are structured is a barrier to women's advancement.**

**Q: To what extent do you agree with the statement "The way science careers and institutions are structured is a barrier to women's advancement"?**

Completely agree = 13%  
 Strongly agree = 23%  
 Somewhat agree = 25%  
 Neither agree nor disagree = 12%  
 Somewhat disagree = 9%  
 Strongly disagree = 7%  
 Completely disagree = 3%  
 No opinion = 7%  
 (N = 322, 2% no answer)

13. Sneader, Kevin & Yee, Lareina. (2019) One is the loneliest number. McKinsey Quarterly, January 2019. Accessed at: <https://www.mckinsey.com/featured-insights/gender-equality/one-is-the-loneliest-number>

## *Long, unstable academic career structures are stumbling-blocks*

The changing demands of academia are creating new challenges for all young scientists, male and female. Science careers take ever-longer pathways, from graduate studies to multiple, low-paid postdoctoral fellowships<sup>14</sup> and a series of research and teaching positions. Today there are fewer permanent positions available,<sup>15</sup> more competition for each, and a much greater load of responsibilities beyond research in academia.<sup>16</sup> Global figures are scarce, but in the United Kingdom only three or four in every hundred PhD students will land a permanent staff position at a university, and only marginally more in the United States will do so.<sup>17</sup> Half of all those pursuing careers as scientists at institutions of higher education drop out of the field after just five years; by comparison, in the 1960s, half of academic scientists remained in the field for 35 years.<sup>18</sup>

The shifting nature of science careers today affects women in different ways from men, especially where women are expected to be the main caregivers for children and family members, and when this coincides with critical periods in their careers.

Six in ten respondents (61%) agreed that the way science careers and institutions are structured is a barrier to women's advancement. For younger respondents in particular, length of study and low pay without employment security are among the greatest hurdles they face: 41% of those aged 25-34 considered this a major challenge. Fewer of the older respondents (24% of those between 35-44 years old, and 5% of over-45) faced these challenges, partly because of their seniority, but also because earlier generations of scientists had more direct pathways to permanent roles and the number of tenured posts was considerably higher.

Financial insecurity (cited by 39% of respondents overall, 41% of those 25-34 and 47% of those 35-44) and contract insecurity (32% overall and 39% of the youngest group) were also among the most challenging career hurdles. Respondents wrote of short-term contracts as a hindrance to life and family planning, struggling to reconcile low pay with high costs of living, and discovering gender pay gaps relative to men at their institutions.

Other elements, however, may be changing for the better. Fewer junior respondents (19%) cited lack of mentorship and informal support as a challenge during their careers, compared with more senior respondents (29%).

14. Turk-Bicakci, L., Berger, A. and Haxton, C. (2014). The Nonacademic Careers of STEM PhD Holders. American Institutes for Research, April 2014. Accessed at: <https://www.air.org/resource/nonacademic-careers-stem-ph-d-holders>.

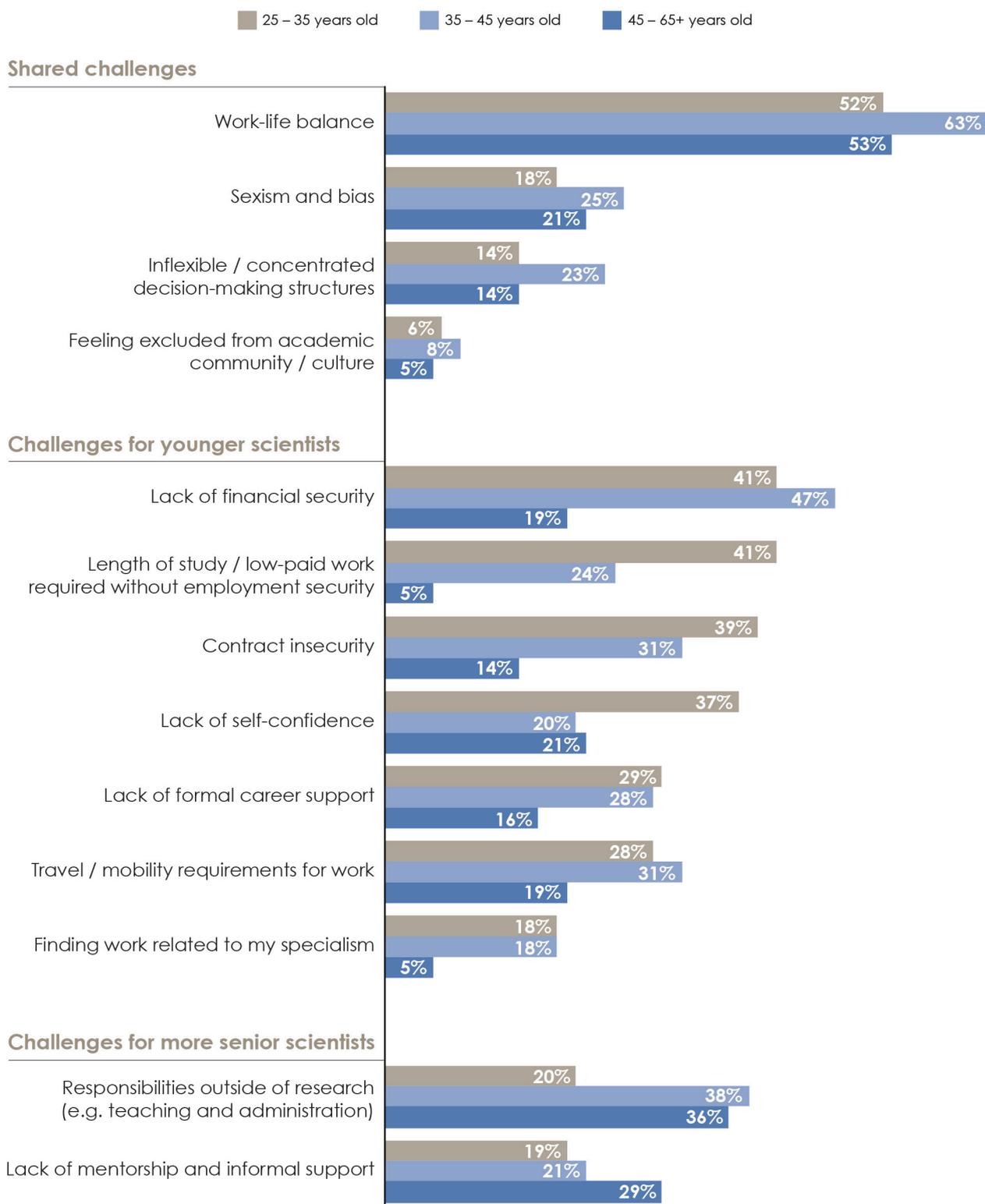
15. Kaplan, K. (2010). Academia: the changing face of tenure. *Nature*, 468(7320), 123-125

16. Lynch, K., & Ivancheva, M. (2015). Academic freedom and the commercialisation of universities: a critical ethical analysis. *Ethics in Science and Environmental Politics*, 15(1), 71-85.

17. Woolston, C. (2017) 'Graduate survey: a love-hurt relationship', *Nature*, 550(7677), 549-552.

18. Milojević, S., Radicchi, F. and Walsh, J. (2018). Changing demographics of scientific careers: The rise of the temporary workforce. *Proceedings of the National Academy of Sciences*, 115(50), pp.12616-12623.

**Figure 4:** The changing structures and demands of science place new and different strains on women starting out in their careers.



Q: Which of the following factors do you feel have been most challenging for you during your career? (Select up to six) N = 327

## *Institutions fail to support women balancing family, relationships and work*

Becoming a parent is not only a significant life milestone in a person's life; for individuals in science jobs, it may mean leaving the STEM workforce. Recent research on US STEM workers found that 43% of women leave full-time science jobs after the birth or adoption of their first child, compared with 23% of men.<sup>19</sup> Over a quarter of women who leave STEM go on to full-time positions in non-STEM jobs where workplace cultures and policies may be more accommodating of family life.

This apparent mismatch between science careers and the demands of parenthood was supported by the survey findings. Over half of the survey respondents (55%) were mothers. Of this group, 59% said they faced gender bias in hiring, promotion and funding decisions. In contrast, 47% of respondents without children said they faced similar hiring, promotion and funding bias; a difference of 12% between the two groups. (See Figure 2; pg.13)

The impact or perceived impact of children on women's careers did not vary by region: there was widespread global agreement, ranging from 61% in the Middle East to 74% in North America, that having a child was guaranteed to affect a woman's career in science. Overall, 67% of all respondents agreed with this statement.

To some degree, parenthood has a negative impact on careers simply because workplaces, managers or colleagues treat parents differently.

In all, 45% of respondents agreed to at least some extent that 'Women who choose to have children are treated differently than those who do not by their colleagues and superiors at my institution'. Many of the verbatim answers confirmed this. Respondents wrote that they were rejected for promotions, ranked 'below average' in appraisals for the years they were pregnant, removed from projects after returning from maternity leave, or had salary docked for poor 'productivity' that failed to take into account maternity leave. One respondent said that when she became pregnant, a professor told her it was 'irresponsible' to

have a child during medical residency, while another said her non-permanent contract was not extended due to her pregnancy.

However, the main impact of parenthood on careers, as reported by most respondents, was the restriction it imposed on the number of hours available for work or networking. Women with caregiving responsibilities had to be more selective about the conferences and meetings they could attend out of town or after-hours: 66% said that the travel requirements and expectations associated with a career in academic science limited their

# 60%

**of respondents say that their career has affected their decisions regarding children, including whether to have children, the number of children they chose to have or when they had children.**

**Q:** To what extent do you agree with the following statement?  
**"My career has affected my decisions regarding children including my decisions whether to have children, the number of children I chose to have or when I had children."**

Completely agree = 32%  
 Strongly agree = 15%  
 Somewhat agree = 13%  
 Neither agree or disagree = 6%  
 Somewhat disagree = 4%  
 Strongly disagree = 5%  
 Completely disagree = 9%  
 No opinion: 7%  
 (N= 301, 8% no answer)

19. Cech, E.A., & Blair-Loy, M. (2019) The changing career trajectories of new parents in STEM. Proceedings of the National Academy of Sciences Mar 2019, 116 (10) 4182-4187; DOI: 10.1073/pnas.1810862116

***“[Family and caregiving factors] have made me think strategically about when to have children and [affected] my decision about which institutions to join.”***

L'ORÉAL-UNESCO FOR WOMEN IN SCIENCE ALUMNA

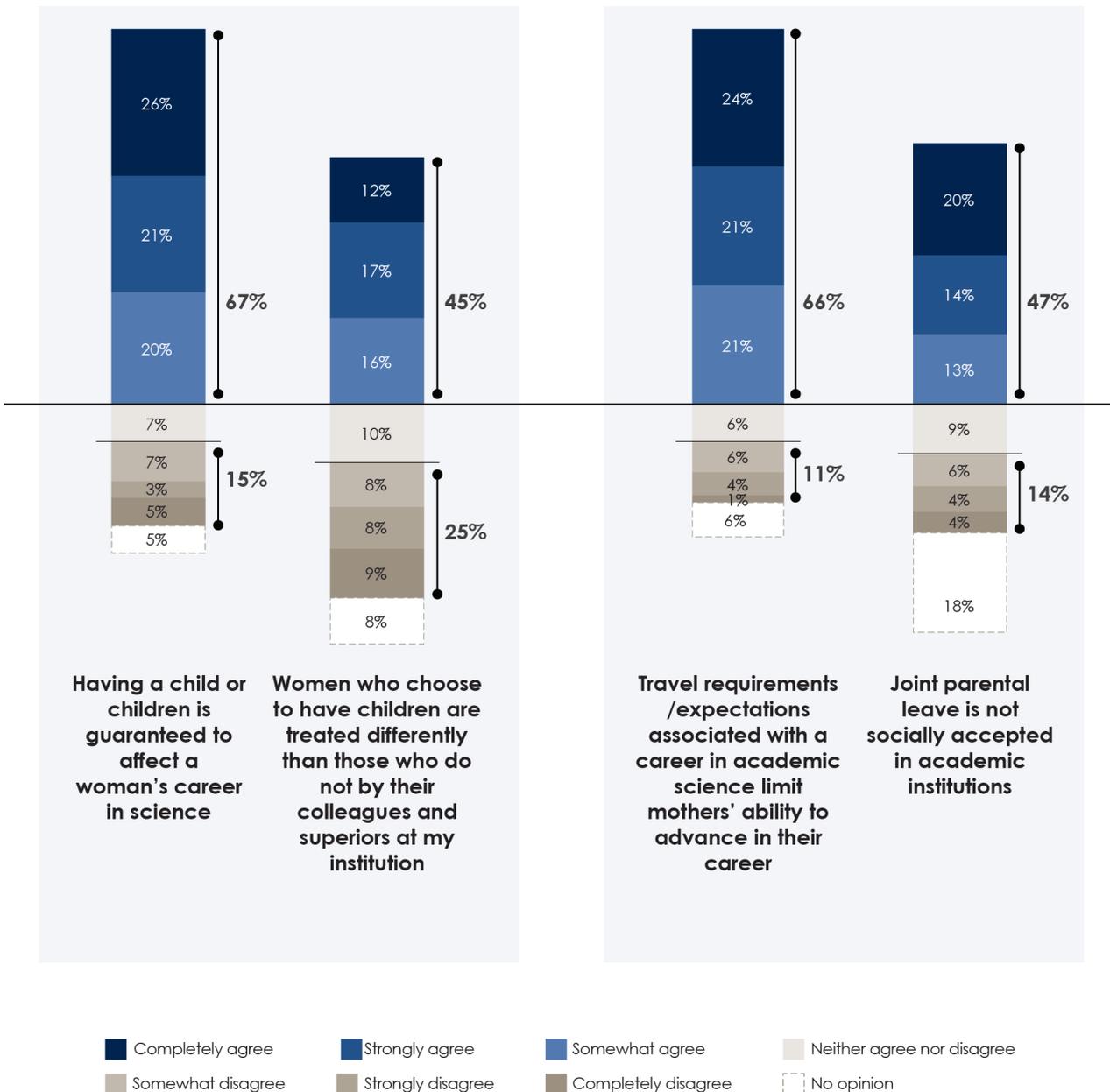
ability to advance when they had children. Even the short-term fieldwork or conference travel required of academics presents challenges, especially for those with young children. Forty-three percent of respondents with children said that childcare at their institutions was inadequate. Notably, 67% of mothers cited work-life balance as a major challenge, compared to 43% of those without children.

Besides the impact of parenthood on scientific careers, 60% of alumnae also reported their career timing and goals had an influence on whether

to become a parent, when to have a child, and how many children to have. Family decisions such as these influence and are deeply influenced by career stability and progression. Some respondents told us they had ended relationships or postponed having children to advance in their career, or that they felt they had to choose between having children and reaching their maximum potential career-wise; others chose to pass up fellowships or job opportunities, especially in other countries, due to relationships or care responsibilities.

Of the parents who said having children did not affect their careers, those who responded attributed this to having childcare facilities in or near their workplace, a partner who shouldered equal parental duties and who understood how important it was to them to further their career, or other family members or friends who helped out with childcare. The successes of high-achieving alumnae testify to the value of this support.

**Figure 6:** Two-thirds of respondents believe the travel expectations of scientific careers limit mothers' ability to advance, while close to half believe colleagues treat mothers differently.



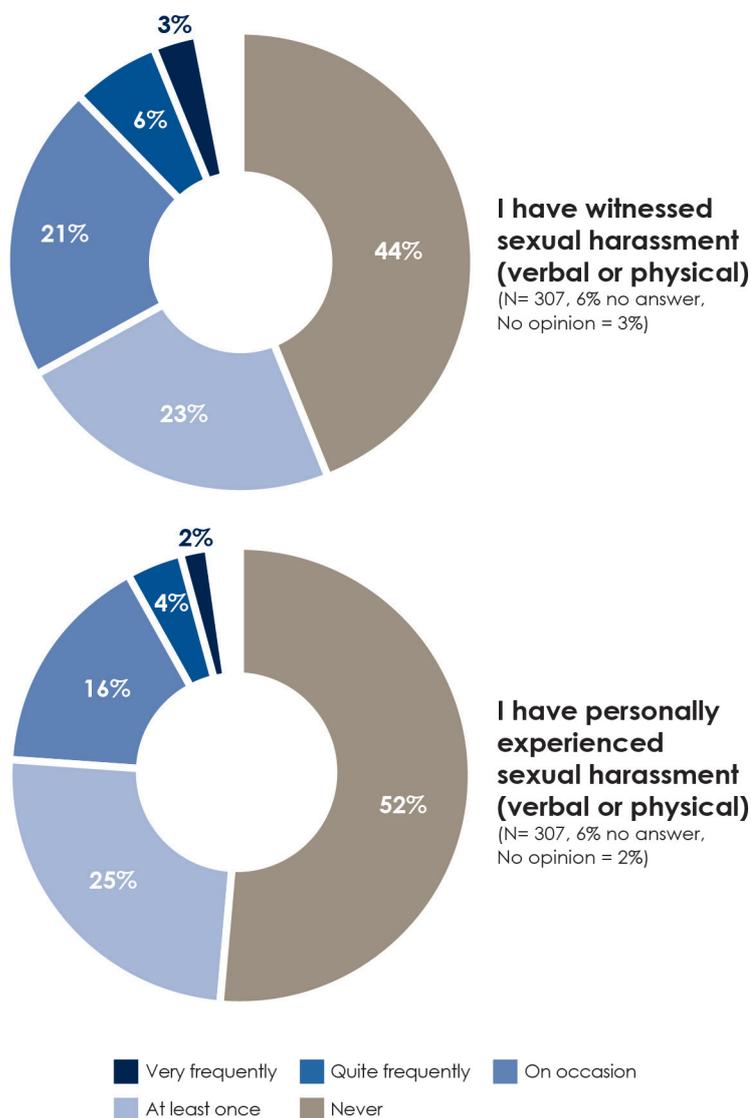
**Q:** Please rate the extent to which each of the following statements is representative of your experience in your academic career (1 = Never, 2 = At least once, 3 = On occasion, 4 = Quite frequently, 5 = Very frequently, No opinion)

## Harassment and sexism create hostile workplace environments

Research has found that sexual harassment in science, engineering and medicine is present at similar rates to other workplaces. In 2018, the US National Academies of Science, Engineering and Medicine published a landmark report which found more than 50% of women faculty and staff and 20 to 50% of women students witness or experience sexually harassing conduct in academia.<sup>20</sup> Such conduct includes gender-based harassment (verbal and nonverbal behaviours that convey hostility, objectification, exclusion, or second-class status about members of one gender), unwanted sexual attention (verbal or physical unwelcome sexual advances, which can include assault), and sexual coercion (when favourable professional or educational treatment is conditioned on sexual activity).

Among survey respondents, witnessing or experiencing sexual harassment was common, with 53% of respondents saying that they had witnessed it over the course of their career and 47% experiencing it at least once. These numbers mirror the wider statistics,<sup>21</sup> indicating the experience of alumnae represents that of women in science more broadly.

**Figure 7:** Nearly 50% of respondents have witnessed or experienced verbal or physical sexual harassment during their careers. More than 1 in 5 have personally experienced sexual harassment **more than once**.



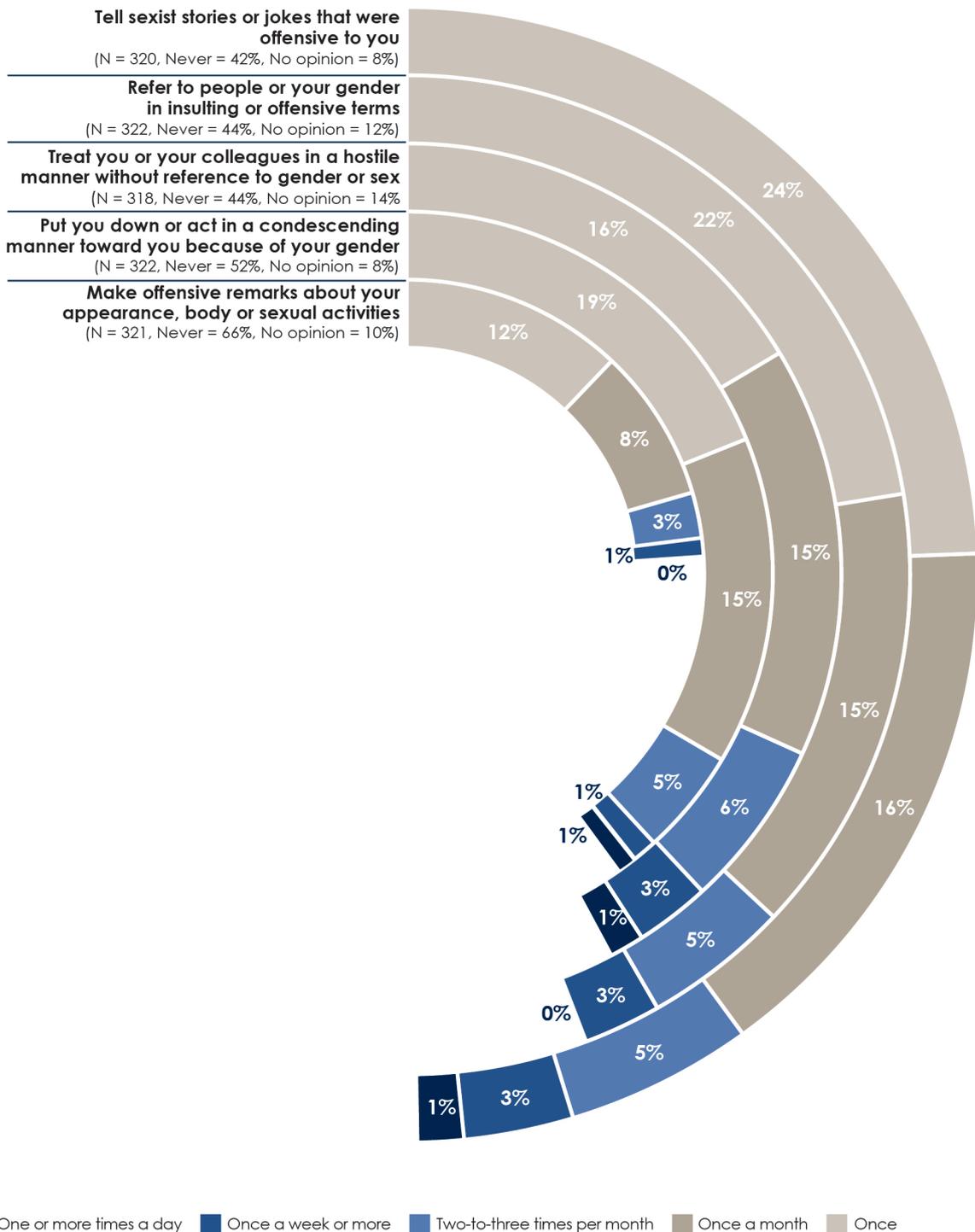
**Q:** Please rate the extent to which each of the following statements is representative of your experience in your academic career (1 = Never, 2 = At least once, 3 = On occasion, 4 = Quite frequently, 5 = Very frequently, No opinion)

20. National Academies of Sciences, Engineering, and Medicine. 2018. Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24994>

21. National Academies of Sciences, Engineering, and Medicine. 2018. Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24994>

**Figure 8:** In the past year, many respondents experienced gender-related micro-aggressions at work. Offensive sexist comments were most frequent, but condescension was also common.

*In the past 12 months, how often did someone at work...*



Beyond harassment directed at themselves as individuals, alumnae also encountered sexist remarks, offensive jokes, or gendered condescension. This was true globally. In the last year, at least a third of alumnae in every region had experienced this, rising to 52% in North America. Most women (58%) had heard someone tell a sexist story or joke which offended them in the last year, while 56% had heard someone referring to people of their gender in offensive or insulting terms. Over a third

(34%) had had such remarks directed towards them personally, hearing offensive remarks about their experience, body, or sexual activities. These aggressions and slights may be subtle, but add up to create a toxic atmosphere for female staff that affects their willingness and ability to progress at their organisations.

Sometimes, harassment is more coercive. One respondent wrote about how she was sexually assaulted by a lecturer during her

undergraduate degree and was told she would pass the course only if she complied with his demands.

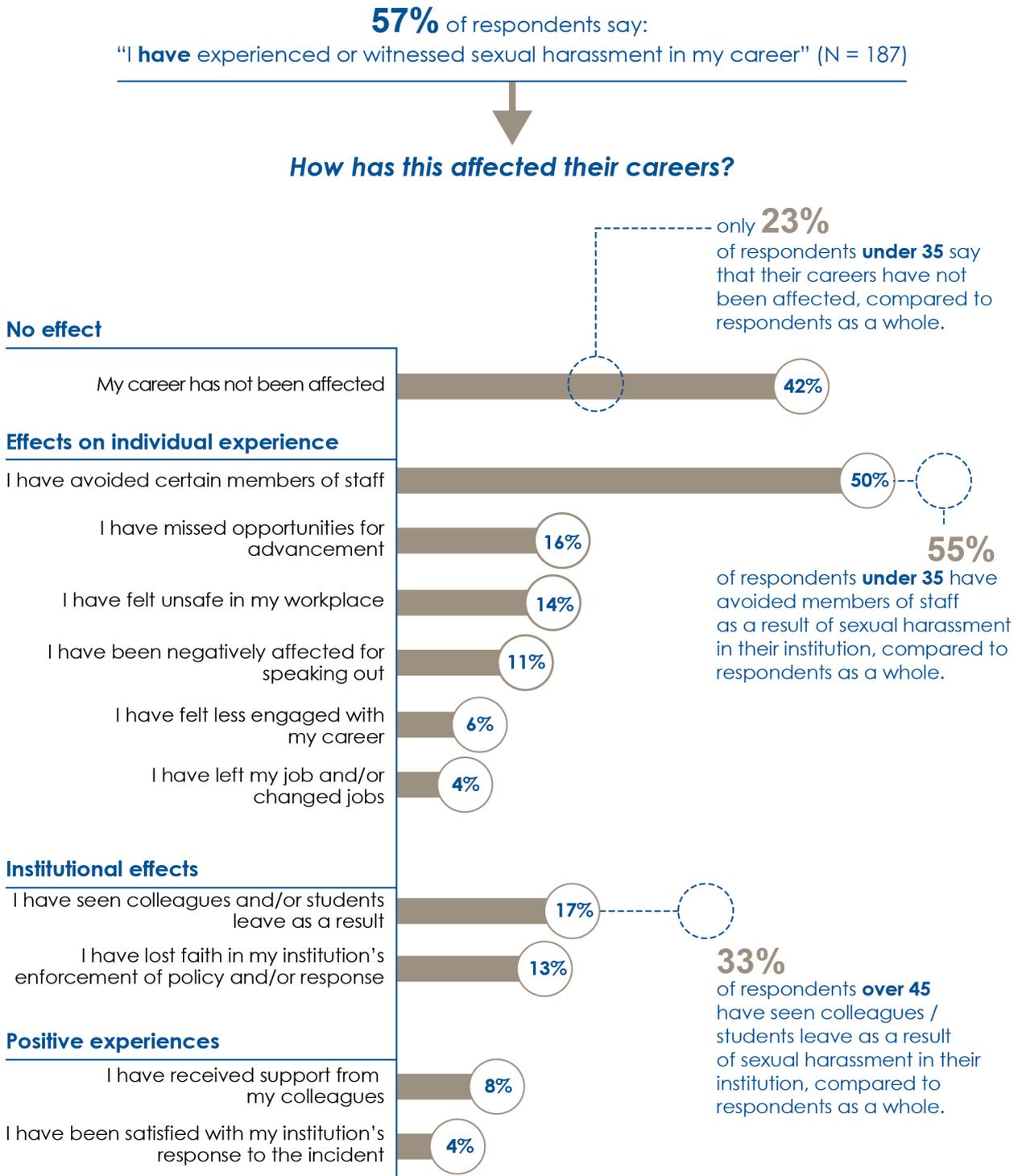
When harassment has affected respondents' careers, it is most often because they avoided specific members of staff, such as supervisors, who were the perpetrators of harassment — 51% of those who experienced or witnessed harassment said they responded this way. For instance, one respondent said her doctoral supervisor consistently made comments that made her uncomfortable, but that she was able to change supervisors. Overall, alumnae observed a lack of understanding and action around relatively "minor" instances of harassment, even though such incidents cause discomfort, contribute to a negative environment and signal deep-seated bias.

A smaller group report even more drastic responses, such as feeling unsafe in their workplace or changing jobs altogether. Eighteen percent of respondents have seen colleagues or students leave as a result of sexual harassment, a statistic that should be of deep concern to institutional leaders.

***“I was sexually assaulted by my lecturer during my undergraduate degree. He threatened to fail me if I did not sleep with him.”***

L'ORÉAL-UNESCO FOR WOMEN IN SCIENCE ALUMNA

**Figure 9:** Most respondents have experienced or witnessed sexual harassment during their time working in science. For many, this has had a profound effect on their career or the career of others.



**Q:** If you have witnessed or experienced sexual harassment in your career (verbal or physical), how has it affected you / your career? (Select all that apply)



# Results

*Women in science  
call on leaders  
and institutions  
to match ambition  
with action*

In addition to asking *For Women in Science* alumnae about their career experiences, the survey also sought to understand to what extent their institutions and leaders are engaged in diversity issues. Do institutions and leaders recognise the extent of the challenges women face? How effective are current actions to address women's barriers and challenges? How proactive are institutions and leaders in addressing barriers to women's advancement in science, and what steps by leaders can make the most difference?

The survey uncovered the implementation gaps where women needed more and better policies than they currently receive, notably in parenting and harassment-related domains. It also identified bright spots, such as a growing awareness of women's

challenges and support from individual supervisors, mentors and other colleagues.

While respondents called for change, they also demonstrated appreciation for decent treatment they received, and gave credit to individuals and institutions which sponsored women and championed inclusion. Their survey answers acknowledge progress, but reveal that a great deal is left to do; not just to put policies in place and shift a biased culture, but also to recognise the extent of the challenge remaining for women to advance.



Doctor Menattallah Elserafy, 2018 International Rising Talent (Egypt)

## *Recognising challenges: collecting data, then building on successes*

In the last decade and a half, there has been gradual progress for women's representation in STEM in some regions. Between 2006 and 2016, for instance, the proportion of women among European researchers rose from 30% to 33.4%, according to the European Commission's 2009 and 2018 She Figures reports.<sup>22,23</sup> And in the United States, a seminal 2007 National Academies of Science, Engineering and Medicine report, *Beyond Bias and Barriers*, flagged institutional and systemic obstacles to women's STEM advancement. The report led to a number of publicly-funded and institutional initiatives to break down these barriers, from eliminating bias in hiring to improving work-life balance.<sup>24</sup>

In some contexts, the recognition of challenges women face constitutes progress. In 2006,

the Japanese government acknowledged the nation's gender gap in STEM research, and set a target of 20% women researchers in science and 15% in engineering, though this target has not yet been achieved.<sup>25</sup>

Survey results reflected this progress. Close to eight in ten alumnae (79%) agreed women's experiences in academia, including opportunities for advancement, have improved in the last decade.

At the same time, alumnae did not believe that gender equality in science was a system-wide fait accompli. Only 45% agreed that academic institutions on the whole recognised the extent of problems regarding gender in their organisations, while 76% of alumnae said that their organisations could do more to advance women leaders.

As a start, alumnae called on institutions to acknowledge and measure gender gaps — something that has proven effective at top institutions. In the 1990s, women scientists at MIT collected evidence that women were being systematically excluded as they moved up the career ladder, pushing the institution to change.<sup>26</sup>

Some *For Women in Science* alumnae have been involved in such efforts at their institutions. In the early 2000s, one respondent wrote, she served on a campus-wide committee that uncovered a gender pay gap and differences in promotion. The committee recommended policy changes to extend mothers' tenure clocks and remove bias from hiring. "These policy changes, along with increased awareness, have made a big difference at our university", she wrote.

22. European Commission (2010). 'She Figures 2009'. Statistics and Indicators on Gender Equality in Science. Accessed at: [https://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/she\\_figures\\_2009\\_en.pdf](https://ec.europa.eu/research/science-society/document_library/pdf_06/she_figures_2009_en.pdf)

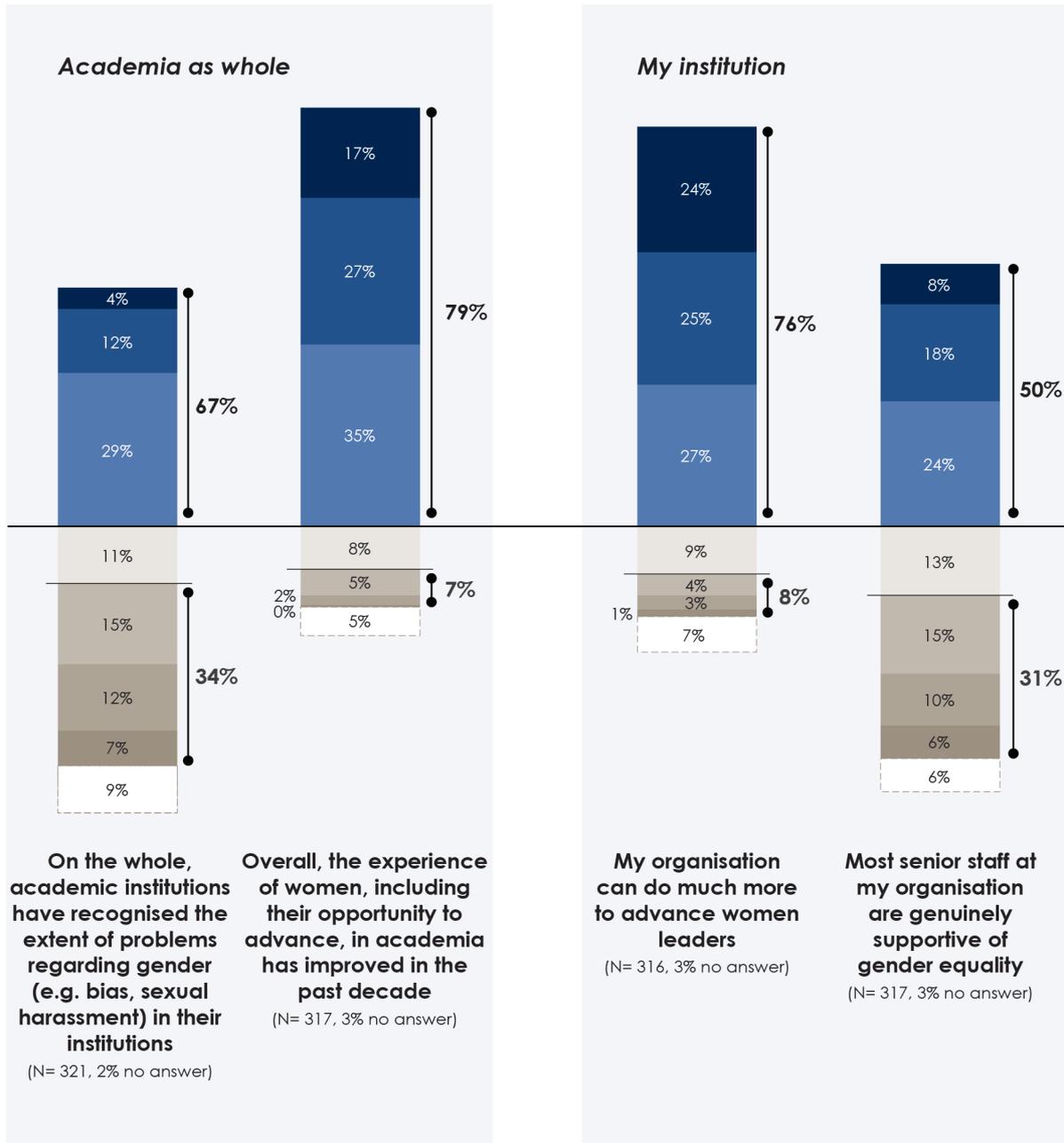
23. European Commission (2019) 'She Figures 2018'. Accessed at: <https://op.europa.eu/en/publication-detail/-/publication/9540ffa1-4478-11e9-a8ed-01aa75ed71a1/language-en>

24. Loeff Benderly, B. (2019). Mixed messages about women's representation in science — and a missing piece of the picture. *Science*, 1 April 2019. Accessed at: <https://www.sciencemag.org/careers/2019/04/mixed-messages-about-women-s-representation-science-and-missing-piece-picture>

25. Catalyst.org (14 June 2019). Women in Science, Technology, Engineering, and Mathematics (STEM): Quick Take. Accessed at: <https://www.catalyst.org/research/women-in-science-technology-engineering-and-mathematics-stem>

26. Birgeneau Robert J. (1999) MIT Faculty Newsletter: Special edition. Accessed at: <http://web.mit.edu/fnl/women/women.html>

**Figure 10:** More than three-quarters of respondents believe women's experiences in academia have improved in the last decade – yet a similar proportion say their institutions can do much more to advance women leaders.



Completely agree    
  Strongly agree    
  Somewhat agree    
  Neither agree nor disagree  
 Somewhat disagree    
  Strongly disagree    
  Completely disagree    
 No opinion

Q: To what extent do you agree with the following statement?  
 (1 = Completely disagree, 4= Neither agree nor disagree, 7 = Completely agree)

## Closing implementation gaps: childcare and harassment policy are critical

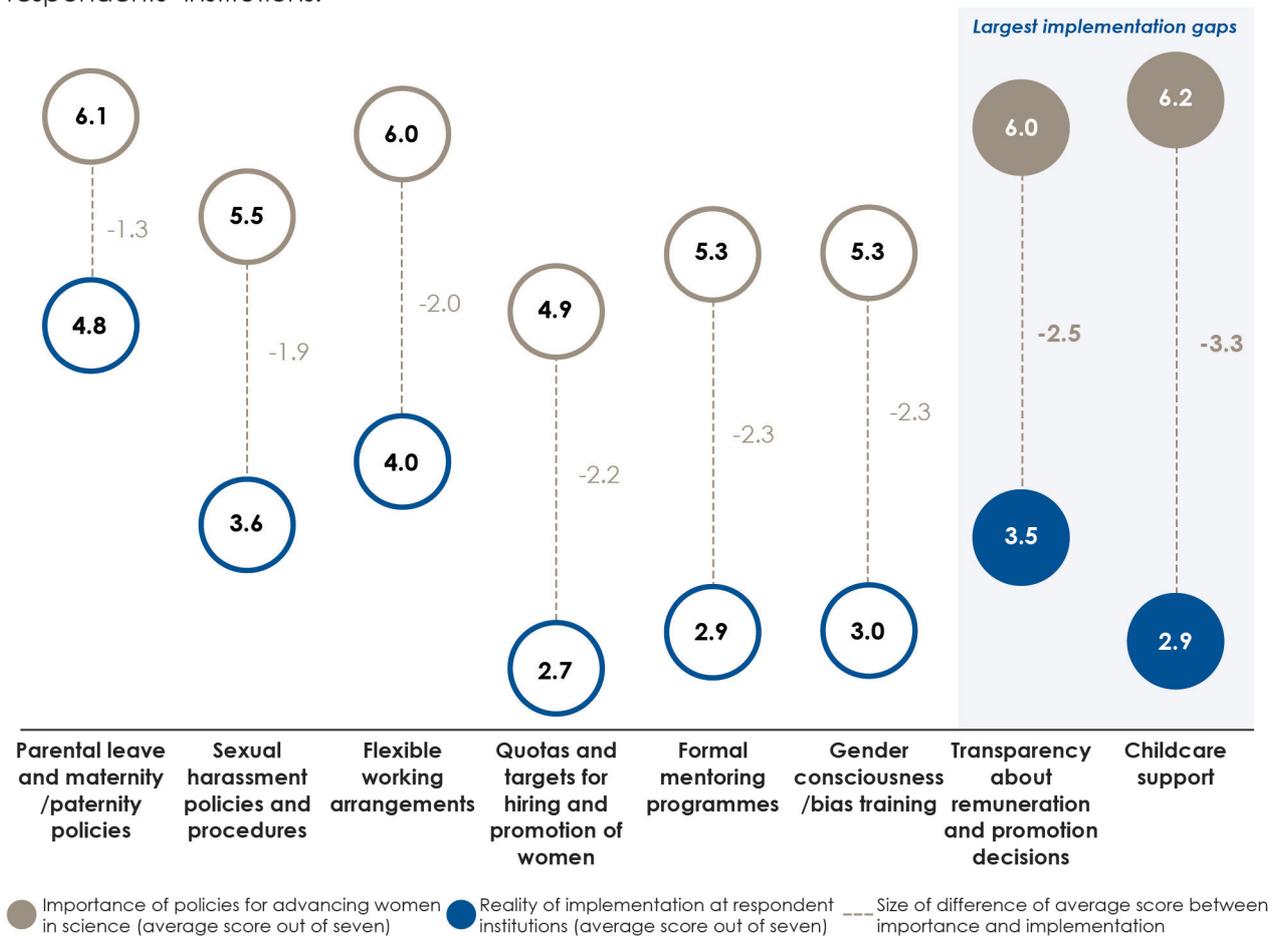
Research on global corporate workforces has found that while companies invest in diversity and inclusion programmes, about three-quarters of employees in target underrepresented groups, such as minorities and women, did not feel they had personally

benefitted. The same research has since uncovered 'hidden gems', diversity measures that target groups found most helpful. For women, such interventions included tools to balance career and family responsibilities, such as parental leave, health

care coverage and childcare support.<sup>27</sup>

In the same vein, respondents were asked to rate the importance of various institutional policies for advancing women in academic science, and also to rate how

**Figure 11:** Of the policies for advancing women, childcare support and transparency in pay and promotion had the widest gaps between their importance and their implementation in respondents' institutions.



**Q:** Please rate the following policies and practices in terms of how important you believe they are for advancing women in academic science (1 = Not very important, 4 = Somewhat important, 7 = Very important)

**Q:** Please rate the following policies and practices in terms of how well formulated and implemented they are in your current place of work (1 = Not at all well, 4 = Somewhat well, 7 = Very well)

27. Krentz, M., Dean, J., Garcia-Alonso, J., Taplett, F.B., Tsusaka, M., & Vaughn, E. (2019). Fixing the Flawed Approach to Diversity. BCG, January 2019. Accessed at: [http://image-src.bcg.com/Images/BCG-Fixing-the-Flawed-Approach-to-Diversity-Jan-2019-R\\_tcm9-212433.pdf](http://image-src.bcg.com/Images/BCG-Fixing-the-Flawed-Approach-to-Diversity-Jan-2019-R_tcm9-212433.pdf)

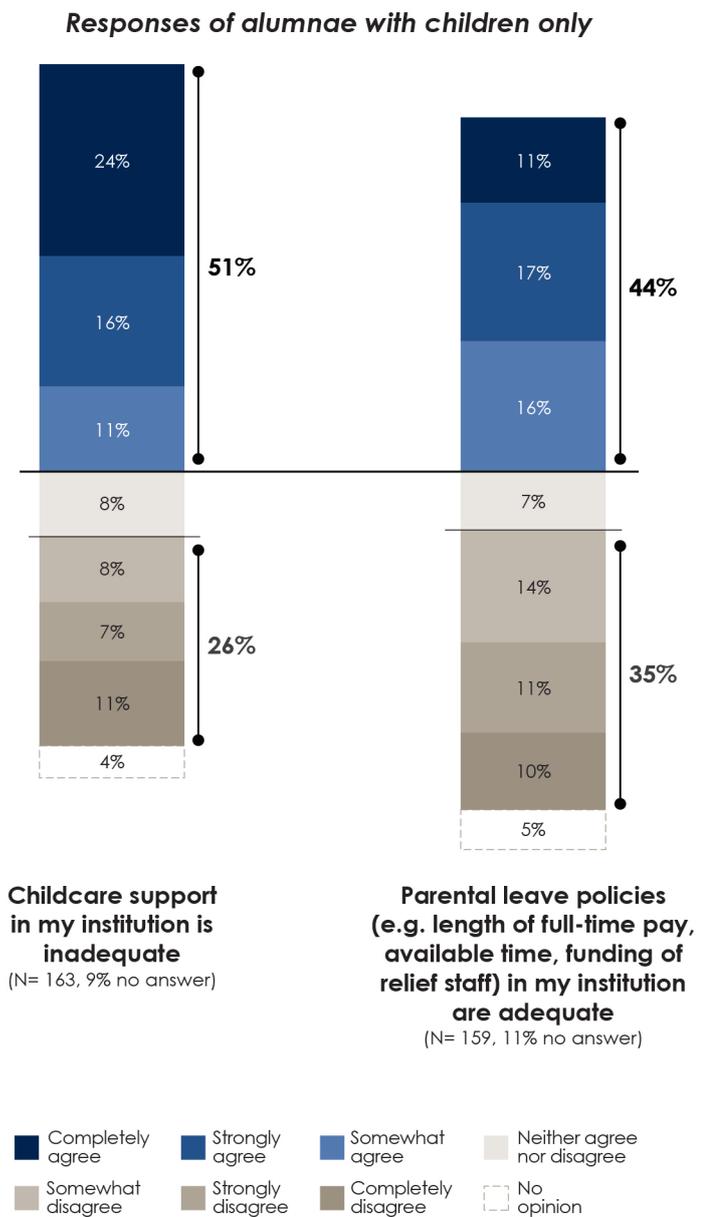
well-implemented the same policies were in their institutions. The difference between the two revealed where the largest implementation gaps lie.

### Childcare and parenting

On the whole, alumnae rated childcare support as extremely important (an average of 6.2 out of 7) for advancing women. Parental leave policies (6.1), flexible work (6.0), and transparency in pay and promotion decisions (6.0) were not far behind. Least important were quotas and targets for women's hiring and promotion (4.9 out of 7), formal mentoring programmes, and gender consciousness or bias training (both 5.3), which may reflect greater urgency around parenting and childcare challenges.

Globally, there was most agreement on the importance of childcare support, ranging from 5.7 in Europe to 6.3 in Asia. However, the implementation of childcare support was rated 2.9 out of 7, the widest gap for any policy, meaning current policies do not meet women's needs. The travel requirements of science, whether short-term for conferences or long-term for brief contracts, often increase families' childcare needs. When providing written responses, some respondents suggested support to hire additional care or bring nursing infants to conferences. Others proposed childcare facilities at the workplace, subsidised childcare, compulsory paternity leave, and encouraging men to lead by example and split childcare equally with their partners.

**Figure 12:** More than half the respondents with children were dissatisfied with their institutions' childcare support and parental leave policies.



**Q:** To what extent do you agree with the following statement?  
(1 = Completely disagree, 4= Neither agree nor disagree, 7 = Completely agree)

In contrast, parental leave policies had the smallest gap between importance (6.1) and implementation (4.8). To some extent this may reflect the widespread prevalence of national maternity leave policies for employees around the world: 185 countries guarantee paid maternity leave, with 106 of those providing at least 14 weeks of leave.<sup>28</sup>

Some countries have designed highly effective parental leave policies that help women advance. By making joint parental leave compulsory and equal, Nordic countries have increased women's participation in the labour force, increased their presence in senior positions, and offered fathers multiple positive benefits.<sup>29</sup> Compulsory and equal parental leave between men and women eliminates one source of gender bias in hiring: if all workers take the same amount of parental leave, employers and managers cannot discriminate on those grounds.

Yet even the Nordic countries are not gender-equal in science. In Sweden, 43.6% of parliamentary seats are held by women,<sup>30</sup> yet women make up only 23.8% of professors despite comprising 45% of those obtaining PhDs.<sup>31</sup> Even where national policies make it easier to be a working parent, scientific institutions cannot

always rely on these policies to bolster gender equality within their organisations.

Finally, general policies can be designed in ways that ease the structural challenges for mothers. For example, critical periods in academic careers overlap with important life events such as starting a family, creating structural barriers to women's advancement. When academics are assessed for promotion or tenure based on the number of publications, rather than their quality alone, women who have taken time out for maternity leave or other family responsibilities are at a disadvantage. Using publication

quality rather than volume as criteria for promotion would erase the disadvantage.

### *Sexual harassment*

Institutional efforts to combat harassment run the gamut from national to non-existent. In the UK and US respectively, Athena Scientific Women's Academic Network (SWAN) and the National Academies of Sciences, Engineering and Medicine have issued comprehensive guidelines for institutions to systematically combat harassment, from prevention and response to careful measurement of impact.<sup>32,33</sup> Other similar efforts have started in Europe, such as those by the European

only **23%**

**of respondents are satisfied with their institution's enforcement of its sexual harassment policies.**

Q: To what extent do you agree with the following statement?

**"I am satisfied with my institution's enforcement of its sexual harassment policies"**

Completely agree = 3%  
Strongly agree = 7%  
Somewhat agree = 13%  
Neither agree or disagree = 10%  
Somewhat disagree = 12%  
Strongly disagree = 10%  
Completely disagree = 13%  
No opinion: 20%  
(N= 288, 12% no answer)

28. Gharib, M. (2019). Which Countries Guarantee That New Dads Get Paid Paternity Leave? NPR. Accessed at: <https://www.npr.org/sections/goatsandsoda/2018/06/14/619604235/which-countries-guarantee-that-new-dads-get-paid-paternity-leave>

29. Nordic Information on Gender (2018) 'In depth: Parental leave' Accessed at: <https://nikk.no/en/publications/shared-and-paid-parental-leave/>

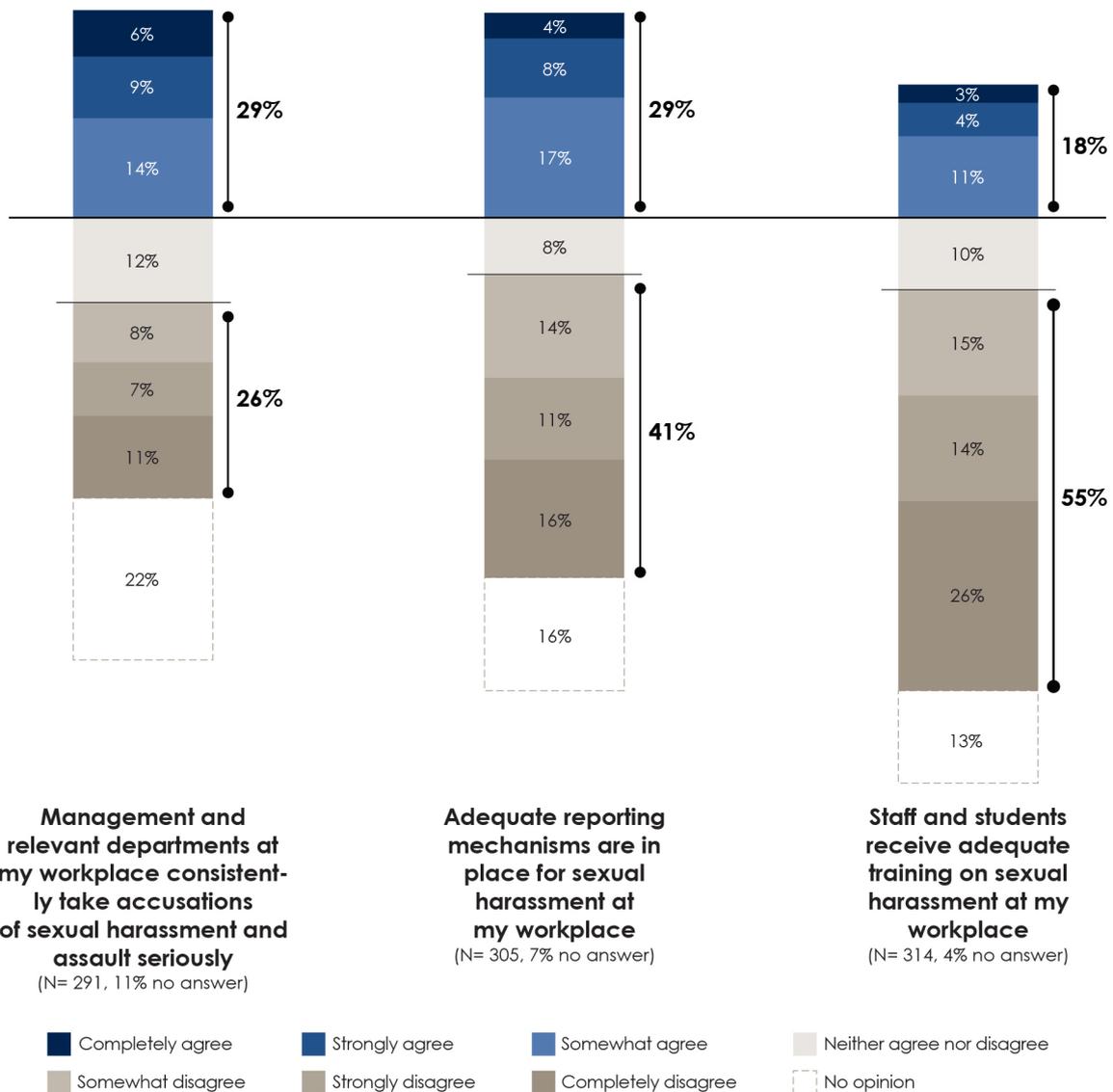
30. UNDP Human Development Data, Gender Inequality Index. Accessed at: <http://hdr.undp.org/en/data>

31. Salinas, P. and Bagni, C. (2017). Gender Equality from a European Perspective: Myth and Reality. *Neuron*, 96(4), pp.721-729.

32. Universities UK (2016). Changing the Culture: Report of the Universities UK Taskforce examining violence against women, harassment and hate crime affecting university students. October 2016. Accessed at: <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2016/changing-the-culture.pdf>

33. National Academies of Sciences, Engineering, and Medicine. 2018. Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24994>.

**Figure 13:** Fewer than 3 in 10 respondents say their institutions take sexual harassment accusations seriously or have adequate reporting mechanisms for harassment. Still fewer say staff and students at their workplaces receive adequate training on harassment.



**Q:** To what extent do you agree with the following statement?  
(1 = Completely disagree, 4= Neither agree nor disagree, 7 = Completely agree)

**“There should be more weight on the quality of the work rather than the number of publications. Focusing on the number of publications over quality hurts women who may have had to take time off for children.”**

L'ORÉAL-UNESCO FOR WOMEN IN SCIENCE LAUREATE

Platform for Women Scientists.<sup>34</sup> Still, other institutions lack even written policies to combat gender-based harassment, as one Latin American alumna told us in an interview.

Survey respondents rated sexual harassment policies and procedures a 5.5 out of 7 in importance to women's advancement. However, satisfaction with the creation and implementation of sexual harassment policies, including management engagement and staff/student training, was very low: only 25% of respondents were satisfied with their institution's policies and only 23% were satisfied with how these policies were enforced in practice. Alumnae from Europe and South America had the lowest satisfaction of any region on these measures.

Globally, only 29% of alumnae agreed that their workplaces had adequate mechanisms for reporting harassment and that management would take such reports seriously; only 18% agreed that staff and students at their workplaces received adequate training on sexual harassment.

Of those who witnessed or experienced harassment, 51% avoided harassers, while 4% left or changed jobs; 14% continued to feel unsafe in their workplaces. The need to take individual actions

such as these further underscores the idea that institutions are failing to take systemic action against sexual harassment. One interviewee noted that nothing gets reported “unless it becomes a very dramatic situation”.

These results suggest there is significant room for change. The Athena SWAN and National Academies guidelines on combatting harassment may be a useful starting point. Given the impact of harassment on women's careers, adopting measures against harassment could help scientific research organisations retain talent and empower women to advance.

#### ***Other policies: quotas, pay and promotion***

Respondents agreed on the importance of pay and promotion transparency (6.0), but this measure too had a large implementation gap (3.5 out of 7 for implementation). In practice, the challenges around transparency are likely to extend beyond remuneration and promotion: research has previously shown that women scientists receive less start-up funding from their universities than men, and also less first-time grant funding from the US National Institutes of Health.<sup>35</sup>

Beyond their home institutions, many respondents said that initiatives such as the Athena SWAN Charter and the L'Oréal-UNESCO *For Women in Science* programme had helped them to succeed: 42% of respondents cited the support of such gender-related programmes and institutions as a factor that enabled success in their career, and this figure rose to 55% in Asia and 52% in MENA. Clearly, these programmes encourage women scientists that their hard work and effort will be rewarded.

Finally, although there was general consensus among respondents that more women scientists needed to be hired and promoted to leadership positions, alumnae expressed mixed feelings regarding quotas and other forms of affirmative action. In some countries and contexts, gender quotas have been deployed effectively, such as in France to increase the proportion of women on large corporate boards.<sup>36</sup> Most of those who mentioned quotas in their written responses were in favour of using them to accelerate change. However, others argued that they were unfair and risk casting doubt on the competence of women in science, and that institutions should hire and promote the most talented people, regardless of gender.

34. European Platform of Women Scientists. (2019) Pisa Declaration on Sexual Harassment in Higher Education and Research. Accessed at: <https://epws.org/pisa-declaration-on-sexual-harassment-in-highereducation-research/>

35. Oliveira, D., Ma, Y., Woodruff, T., & Uzzi, B. (2019). Comparison of National Institutes of Health Grant Amounts to First-Time Male and Female Principal Investigators. *JAMA*, 321(9), 898. doi: 10.1001/jama.2018.21944

36. Govotsos, K. (2017). “Gender Diversity in Corporate Boards in France: An Analysis.” Joseph Wharton Research Scholars. Accessed at: [http://repository.upenn.edu/joseph\\_wharton\\_scholars/29](http://repository.upenn.edu/joseph_wharton_scholars/29)

## *Stepping up: what alumnae seek from male leaders and champions of women in science*

The leadership of top research universities and other scientific institutions, who are mostly men,<sup>37</sup> have a major role to play in creating a level playing field for men and women in science. Dismantling entrenched structural barriers will take time, but a visible commitment by institutions and leaders is vital to the effort. Research from the corporate world already offers examples of best practices by CEOs for increasing diversity and inclusion. These include, inter alia, leading by example, measuring diversity and inclusion against published KPIs, and setting targets to hold managers accountable.<sup>38</sup>

Survey results further outlined how individual leaders and colleagues can and have stepped up. Half of respondents said most senior colleagues at their organisations genuinely supported gender equality; those without children were slightly more likely (53%) than those with children (45%) to say so.

Respondents were also given an opportunity to suggest how male colleagues could act on their beliefs to improve women's opportunities for advancement in academic science. Of those who provided written responses, 40% said they should respect female colleagues and proactively fight bias. Close

to a quarter (24%) said senior colleagues should make hiring and promotion more inclusive, while 23% named ways to support working mothers, such as childcare and shared parental leave.

Alumnae lauded senior leaders who sponsored and supported women. One wrote of a Dean who was willing to write letters of support for women, appealed for women to apply for research and postgraduate opportunities, and was generally proactive and vocal about women's advancement. "He made coming to work worthwhile," she wrote.

***“Men should bear the load of childcare and running a household more. Right now, both of these are on women's shoulders. It's hard for academia to change without these social expectations changing too.”***

L'ORÉAL-UNESCO FOR WOMEN IN SCIENCE ALUMNA

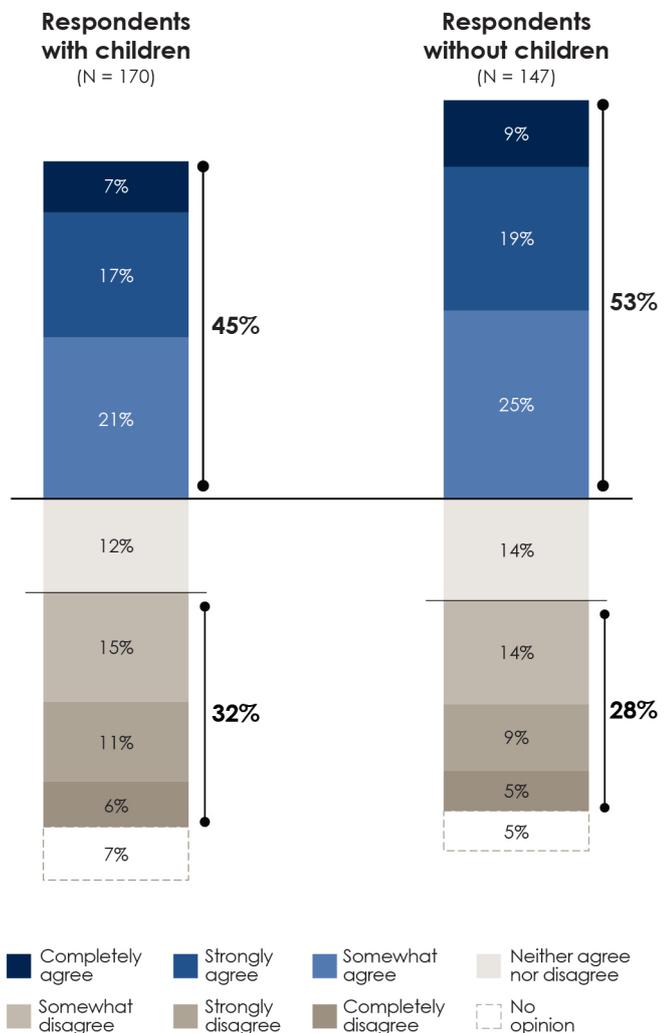
37. 'International Women's Day: top 10 universities led by women'. (2019) Times Higher Education Supplement, 8 March 2019. Accessed at: <https://www.timeshighereducation.com/student/best-universities/top-10-universities-led-women#survey-answer>

38. Groysberg, Boris, and Connolly, Katherine. (2013) "Great Leaders Who Make the Mix Work." Harvard Business Review 91, no. 9 (September 2013): 68-76.

Further, systemic change is as important as individual action. Leaders who genuinely support women can amplify change by encouraging men who encourage women, another respondent said. These include men who direct women's research, finance women's work, lead laboratories that offer opportunities for women — and who engage and convince other men of the need to eradicate systemic, invisible gender bias. For example, the University of Michigan deliberately strove for more than 50% men, particularly senior academics viewed as credible by male colleagues, on its faculty-diversity committee.<sup>39</sup> This built engagement and support among male colleagues, improving the recruitment and hiring of women science and engineering faculty.

**Figure 15:** Respondents with children are less likely to believe that their institutions and senior staff are supportive of or committed to gender equality.

***“Most senior staff at my organisation are genuinely supportive of gender equality”***



**Q:** To what extent do you agree with the following statement?  
 (1 = Completely disagree, 4= Neither agree nor disagree, 7 = Completely agree)

39. Stewart, A., Malley, J. and LaVaquer-Manty, D. (2010). Transforming science and engineering: Advancing Academic Women. Ann Arbor: University of Michigan Press.

## What can male scientists and managers do to help improve the opportunities for women's advancement in academic science?

These were common responses.

### **Regularly sponsor women**

*Actively put women forward, nominate them, include them on projects, ask them to join teams. Use actions rather than rhetoric to show your support for women.*

### **Pursue inclusion**

*At regular intervals, stand back and think about the ratios of women: men on teams, publications, grant applications etc. Think about how this can be improved and take steps to improve it.*

### **Ask women what they need**

*Don't make assumptions. Well-meaning managers, wrote alumnae, often shielded women from responsibilities or did not offer them career opportunities in an attempt to reduce stress or improve work-life balance. This loss of responsibility is a barrier to women who wish to advance.*

### **Sign a panel pledge (or something similar)**

*Refuse to speak at conferences or on panels where the representation of women is below 50%. Offer your speaker spot to a woman instead to share the opportunities.*



# Conclusion

*Inaction holds risk,  
change affords  
opportunity*

The *For Women in Science Alumnae* are a group of the world's most talented and tenacious women scientists, but these survey findings show they share many common experiences with other women in science, from maternity discrimination to sexual harassment. The anecdotes they share support experimental evidence for the range of ways in which gender bias manifests, from funding to publication.

Their challenges also highlight a prevailing mode of thinking about science and science careers that is based on men as default and women as interlopers. In this model, the ideal default scientist is someone unencumbered by caregiving responsibilities, who need not plan their early career choices around a biological clock, and who is unperturbed and unthreatened by sexist environments. In this model, women's needs are a 'problem' to be 'solved', rather than a normal aspect of professional careers.

However, if scientific research organisations wish to advance knowledge and bring it to bear on humanity's grand challenges, they must tap the full and diverse range of human potential, including that of women in science. To that end, these findings also demonstrate how much of a difference gender-related initiatives and programmes can make, such as guidelines to combat gender-based and other harassment, hiring and promotion processes designed to

minimise bias, and parental leave and other support that lowers the barriers for scientist-parents. Normalising and accommodating the needs of women scientists would allow women's abilities to be fully unleashed.

The structural challenges that confront women in science run deep, however. To root them

out and drive science towards broader impact, universities, scientific institutions and those who lead them need a system-wide evolution in attitudes, structures, policy, and practice. As Harvard President Lawrence Bacow has remarked:<sup>40</sup> "gender equality is not a problem with a solution to be engineered; rather, it is a change to be continually managed."



Doctor Caterina Vălcu, 2019 French Young Talent

40. Bacow, L. (2019). Remarks at the Paris-Boston University Women's Forum, 25 September 2019. <https://www.youtube.com/watch?v=Bt6NbedVWw4>

## *Inaction has consequences for science and society*

Science, and by extension society, requires diverse perspectives and talents for maximum innovation and impact. For instance, when women authors are involved in medical research studies, those studies tend to include gender and sex analysis,<sup>41</sup> thereby addressing life-threatening gender biases in drug development, safety testing, medical diagnosis and other areas.<sup>42</sup>

However, science has not yet harnessed the full potential of gender diversity. This survey clearly demonstrates the ways in which women in science are affected by their gender, from unequal family and care responsibilities, to subtle bias and gender-based harassment.

For scientific institutions, and for science itself, the risk of not addressing these gendered pressures is clear: the best and brightest will leave and the quality of science will be diminished. The intrinsic motivation which propels many researchers to pursue humanity's grand challenges goes only so far, even among Laureates and Fellows recognised by their awards as scientists of the highest calibre or potential. Many have persevered, but others have left

for sectors that offer professional stability, clear progression and better financial support.

These sectors include the corporate world, which is moving on apace. Companies are adopting hiring practices that combat gender bias, such as eliminating gendered language from job ads,<sup>43</sup> taking steps toward pay parity<sup>44</sup> and implementing policies such as parental leave that make it easier to fit careers around children. The proportion of US companies offering paid parental leave has grown 15% in the three years to 2018, according to a snapshot survey of 423 employers conducted by consultancy Mercer.<sup>45</sup>

This shift has momentum and is likely to continue. This is true not just of paid parental leave, but also childcare provisions and subsidies, shared parental leave, and other policies which make a workplace attractive.

A similar dynamic will play out with issues of workplace culture and gender-based harassment. Some countries and industries have undergone a radical culture shift in recent years; #MeToo has

changed the conversation and is changing expectations. For instance, recent walkouts by tech-sector employees over the handling of sexual harassment claims are beginning to catalyse change. Universities and research organisations which do not keep pace with other sectors in how they handle gendered workplace issues risk being viewed as out-of-date, increasingly unattractive options for future generations of talented women. Unless scientific institutions change their practices around hiring, promotion, and opportunities for visibility, improve financial and job security, and take deliberate steps to create salubrious work environments, they will continue to bleed talent.

41. Nielsen, M. W. et al. (2017) 'One and a half million medical papers reveal a link between author gender and attention to gender and sex analysis', *Nature Human Behaviour*, vol. 1, p. 791\_796

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## *Collective action for systems change offers opportunities for impact*

For some of the most fundamental changes required, institutions will need to work together in partnership to create new, fairer systems. The current definitions of scientific success disadvantage women, especially those who are parents. Invisible and unconscious biases, including those held by women themselves, pervade the culture of science and affect key steps in career progression, from publication to tenure. Redefining science-career success and eradicating systemic bias is not accomplished by the actions of individual leaders alone, but by leaders and institutions working collectively for change.

When asked to select what had helped them to succeed, most alumnae selected factors external to their work, such as individual perseverance and support from family and friends outside their institutions. Ultimately, women should not have to succeed by going beyond their institutions; they should be able to succeed because of them.

Those institutions which lead to transform science for women will reap the benefits for themselves, for science, for women and for

society. *For Women in Science* alumnae and many other women in science have proved themselves so dedicated and passionate about research and discovery that they have overcome great challenges to get to where they are. What could they achieve if given complete freedom to excel?

***“What has aided my career?  
Perseverance, standing up  
for myself and seeking alternative  
means of support outside my  
institution.”***

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## About The

# *Fondation L'Oréal*

The Fondation L'Oréal works to support women across the world, helping them to fulfil their potential in two major areas that sit at the heart of the Group's DNA: scientific research and inclusive beauty.

Established in 1998 and managed by the Fondation L'Oréal in partnership with UNESCO, the *For Women in Science* programme seeks to improve the representation of women in scientific careers, strong in the conviction that the world needs science, and science needs women. Over the past 22 years, the programme has supported and raised the profile of more than 3,400 researchers from 118 countries.

Convinced that beauty is at the core of the process of reconstructing lives and an important element of social inclusion, the Fondation L'Oréal also develops outstanding free training in beauty professions for people from vulnerable backgrounds. The Fondation also provides access to beauty and wellness treatments in medical and social settings, supporting people undergoing physical, psychological or social suffering, as well as reconstructive surgery.

## About

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