

GENDER DIVERSITY IN DANISH RESEARCH

RESULTS FROM A
2020 SURVEY BY
THE CARLSBERG
FOUNDATION

CARLSBERG FOUNDATION

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FOREWORD

By Professor Flemming Besenbacher

CHAIRMAN OF THE CARLSBERG FOUNDATION

For far too many years the Danish academic society has been discussing how to improve the gender diversity at Danish universities, where female researchers continue to be underrepresented, particularly in senior positions. In 2018, the share of women at assistant professor level was 41% - the same as in 2011 - while the share of women in associate professor positions had increased by 1% since 2015 to 33%. Furthermore, the number of female professors is only 23%, up from 13% in 2008 (Ministry of Higher Education and Science 2020). Relative to countries we normally compare ourselves with, we are sadly trailing behind.

When the Carlsberg Foundation formulated its strategy for 2019-2023, the Board therefore decided that promotion of gender diversity should be included as one of four strategic principles, alongside strengthening talent development, revitalizing cultural values and knowledge, and communicating effectively. These strategic principles are important for the Carlsberg Foundation to be able to fulfill its overarching aspiration: "To brew knowledge for a brighter future" - a purpose that has guided the Foundation ever since it was established in 1876 by Master Brewer J.C. Jacobsen.

Excellent research requires academic freedom, unique infrastructure, academic leadership, and promotion of the very best talents at Danish universities. Consequently, the entire talent pool must be considered - regardless of gender.

The Carlsberg Foundation firmly believes that all decisions in the Danish society should be based on science, and that actions initiated to promote gender diversity should therefore be based on insights deriving from the researchers themselves.

For these reasons, we decided to conduct a survey among our grant recipients to build a more solid knowledge base for identifying the types of actions which might help promote gender diversity in Danish academia.

However, it is important to emphasize that in the Carlsberg Foundation, it will always be the quality of the research, and not the gender of the researcher, that decides who receives a grant. That is also the reason why we place great emphasis on the term "qualified" when, in terms of diversity, we maintain that the Foundation's commitment is to achieve a qualified equal gender distribution among our grant recipients.

According to our knowledge, this kind of survey has never been conducted before in Denmark, and it has indeed sparked considerable interest. As Chairman of the Carlsberg Foundation, I want to thank all the researchers who contributed to the survey and thus made it possible for us to focus our efforts.

The results of the survey clearly demonstrate that Danish academia is facing gender challenges. Almost all female respondents find that the lack of female researchers in Danish academia is a problem, and 89% of the female respondents state that they have

experienced gender-related obstacles during their careers. Fewer male researchers consider this to be a problem.

This perception gap in relation to gender equality in Danish academia is very important, as we see a majority of men in leading positions and in university managements, and if they do not recognize the same challenges as women, then this may likely explain why we see little action and such slow progress.

The survey also sends a clear message to the Carlsberg Foundation to use our voice in the public debate on gender diversity in Danish academia, to work to minimize gender bias when applications are evaluated, to actively contribute to promoting female role models, and - finally - to communicate that the long-term target of the Carlsberg Foundation is to ensure a qualified equal gender distribution among our grant holders.

Based on the knowledge we have derived from the survey, we will introduce initiatives that we trust will help increase the share of talented female researchers in the Danish research society, and we encourage other foundations, universities, and politicians to contribute as best they can - each in their own way.

EXECUTIVE SUMMARY

Drawing on a survey conducted in May 2020 by the Carlsberg Foundation, this report explores the experiences and attitudes of a sample of Carlsberg Foundation grantees relative to the issue of gender diversity in Danish academia. The main purpose of the survey was to provide data for the Foundation to use as a knowledge basis in its work to promote gender diversity in Danish academia, which is a strategic priority.

Although we have witnessed a considerable gender convergence in terms of labor market participation in the last couple of decades, the situation remains far from ideal in the scientific community. In academia, there is a disproportionate lack of representation of women in most scientific disciplines, especially at the top tier of the profession. Although Denmark and other Scandinavian countries are often praised for their high rate of female participation in the workforce and their generous policies in support of families, currently only 23% of full professors in Danish universities are women. This report documents how Carlsberg Foundation grantees perceive the situation of female academics in Denmark, their experiences regarding gender discrimination and career barriers, and their views on possible actions to achieve gender equality, including specific actions for the Carlsberg Foundation to implement.

THE KEY FINDINGS FROM THE REPORT ARE:

- 79% of the respondents agreed or strongly agreed that the lower representation of women among Danish academics, especially in tenured positions, represents a problem for the Danish scientific community. 96% of the female respondents agreed or strongly agreed with the statement, compared with 70% of the men. Almost all respondents agreeing with this statement (94%) also believe that this problem warrants an immediate response.
- Overall, the respondents believe that an adjustment of the work environment at universities and of recruitment and employment has the highest potential of ensuring better gender equality in Danish science.
- University management, both at top (40%) and local (29%) levels, is considered the actor with the greatest responsibility for addressing the issue of gender inequality in Danish academia.
- Only 1% of the respondents believe that private foundations have the greatest responsibility for addressing the gender imbalance in Danish universities; however, especially female respondents deem that they have good opportunities to do so (33% of the female respondents agree, compared with 10% of the male respondents).
- Both men and women agree that uncertainty concerning employment and career paths represents the most important barrier faced by women in their scientific career.

- Unconscious bias related to different aspects of academic careers, from recruitment to leadership succession – and in connection with application processes and grants – is considered one of the most important barriers by female respondents, but not by their male colleagues. It is worth noting the widespread differences between male and female respondents in terms of the barriers that are considered important, as they may have strong implications for the actions that should be implemented to tackle gender inequality in academia.
- Among the female respondents, only 11% reported that they had never experienced any obstacles in their career related to gender, while 32% reported that they had experienced such obstacles frequently or very frequently.
- The obstacles faced by women are aligned with women's perceptions of barriers. Half of the respondents indicated that unconscious bias was one of the obstacles they faced in their careers, followed by the lack of female role models.
- When asked to reflect upon the most recent instance in which they had experienced an obstacle in their career due to their gender, women indicated that their superior was involved in 70% of the cases, followed by colleagues (67%), the university management (47%), and funding providers (39%). While immediate superiors and colleagues were involved in around two thirds of the cases, their assistance was only rated as effective in 30% and 24% of the cases, respectively. The assistance by the university management was rated as effective in only 11% of the cases, while the assistance by funding providers, even if they were the least involved, was considered effective in 60% of the cases.
- Finally, respondents were asked to rate the effectiveness and desirability of a list of actions which the Carlsberg Foundation could potentially initiate to remedy the gender imbalance in the Danish research community. Both men and women responded that the most effective actions by the Foundation would be to:

BE A VOICE IN THE PUBLIC DEBATE ON GENDER DIVERSITY IN DANISH RESEARCH.

ACTIVELY CONTRIBUTE TO MAKING FEMALE ROLE MODELS (PROFESSORS OR ASSOCIATE PROFESSORS) VISIBLE AT UNIVERSITIES/RESEARCH INSTITUTIONS.

ACTIVELY COMMUNICATE THAT THE CARLSBERG FOUNDATION HAS A TARGET OF A 50-50% GENDER DISTRIBUTION AMONG ITS GRANT HOLDERS TO LEAD THE WAY AND INSPIRE OTHER PLAYERS IN THE RESEARCH COMMUNITY TO SET THE SAME GOAL.

MINIMIZE GENDER BIAS WHEN APPLICATIONS ARE EVALUATED E.G., BY MAKING THE BOARD AWARE OF ITS OWN GENDER BIAS.

ABOUT THE SURVEY

This report presents key findings from a survey of researchers who received funding from the Carlsberg Foundation from 2016 to 2020. The survey was conducted in May 2020 by the Carlsberg Foundation in collaboration with Associate Professor Valentina Tartari at the Copenhagen Business School.

The survey is part of the Foundation's ongoing efforts to address the issue of gender imbalance in its portfolio of grants, given the Foundation's strategic objective of improving the gender balance in Danish research. The survey had two parts. One part focused on collecting information on the perception of the challenges faced by female researchers in Danish academia and the possible actions that can be taken to overcome them, specifically what the Carlsberg Foundation can do. The other part focused on researchers' fundraising activities during the Covid-19 pandemic in the spring of 2020. Only the results of the first part will be reported here.

THE SURVEY POPULATION

The population targeted by the survey included researchers who received funding from the Carlsberg Foundation in the period 2016-2020. In addition, heads of research centers under the Danish National Research Foundation were added to the population. In total, the survey was sent by e-mail to 289 recipients.

A total of 182 researchers responded to the survey, equivalent to an overall response rate of 63%. The overall response rate is higher than in similar surveys conducted in Denmark and abroad. The Carlsberg Foundation is indeed very grateful to all researchers who took the time to participate and answer the survey questions.

The distribution of survey respondents by gender shows that 39% of the respondents (N=70) identified as female and 59% (N=108) as male, while 2% (N=4) did not wish to disclose their gender. To preserve the anonymity of the results, the analysis contained in this report will not disclose the results for the four participants who did not disclose their gender.

A total of 178 respondents reported their age. Among these, 52% (N=92) are under 40 years old (of whom five are under 30 years old), 33% (N=59) are between 40 and 50 years old, while the remaining 15% (N=27) are over 50 years old.

The distribution of respondents across scientific disciplines largely reflects the primary basic scientific research areas supported by the Foundation: the natural sciences, social sciences, and the humanities. 45% (N=82) work in the natural sciences, 20% (N=37) in the social sciences and the humanities, 9% (N=17) in the medical and health sciences, 2% (N=3) in engineering and technology, and 1% (N=2) in agricultural and veterinary sciences. 2% (N=4) of the respondents either did not mention a specific area of research or mentioned a combination of areas.

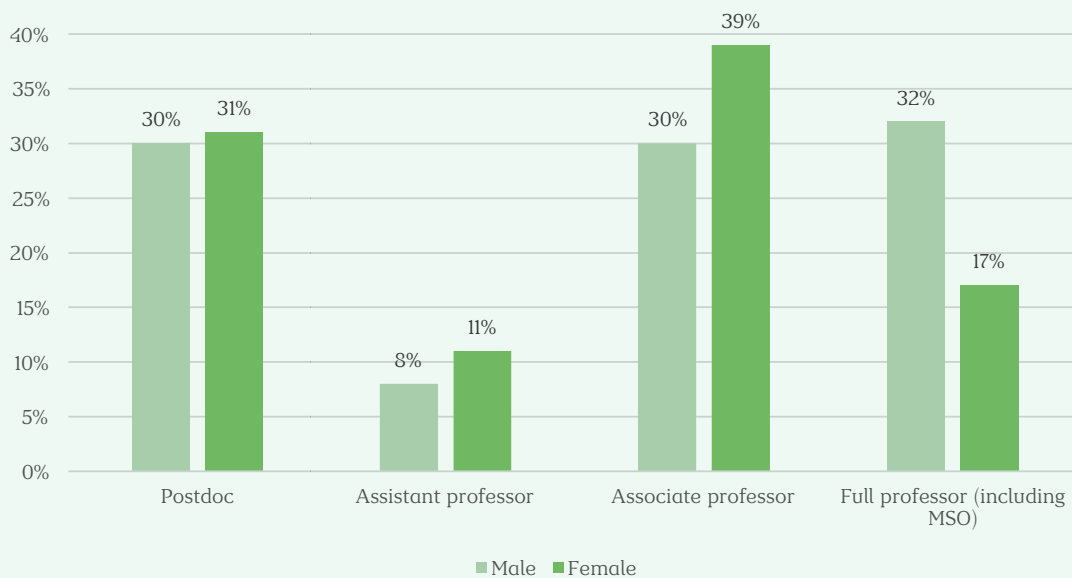
In terms of affiliation, 19% (N=34) of the respondents are currently affiliated with a foreign institution (outside of Denmark). Among those who indicated a Danish affiliation, 43% are employed by the University of Copenhagen, 24% by Aarhus University, 5% by the

Copenhagen Business School, 3% by the University of Southern Denmark, and 2% by Roskilde University. No respondents are currently affiliated with Aalborg University. This distribution largely matches the distribution of support by the Carlsberg Foundation in recent years.

Finally, 99% of the respondents reported their position.

Figure 1 shows the distribution of respondents across positions, by declared gender.

FIGURE 1
RESPONDENTS' POSITION, BY GENDER



At an aggregate level, respondents are rather evenly distributed between full professor positions, including MSO professors (26%, N=48), associate professor positions, including senior researchers (32%, N=59), and postdoc positions (30%, N=55). Only 10% (N=18) of the respondents hold assistant professor positions. Again, this distribution largely reflects the nature of the grant types offered by the Carlsberg Foundation. Looking at the distribution of positions across genders, we can see that for junior positions (postdocs and assistant professors), there is a balanced distribution between women and men, while there is a higher percentage of female associate professors among the respondents. As we move toward the more senior positions, the distribution becomes more skewed, with a much larger percentage of men at the top. This is indicative of the general situation in Danish academia: In 2018, only 23% of the full professors were women, while women made up 41% of all assistant professors and postdocs¹ (Ministry of Higher Education and Science 2020). This picture is likely the result of what has been called the “leaky pipeline” in science (Etzkowitz et al. 2000), namely, that as researchers advance in the academic profession, we tend to see a decreasing percentage of women.

1. This category includes the positions (in Danish) adjunkt, postdoc and forsker.

LIMITATIONS

One element that is important to consider when reading this report is that, for several reasons, the conclusions arrived at are not representative of the full academic population in Denmark. First, the population surveyed is highly selected, having been successful in obtaining research funding from one of the biggest and most prestigious Danish private foundations. Second, additional participants were included from a group of key players in Danish academia who are likely to be in the top tier of the distribution in terms of scientific productivity. This selection mechanism may mean that the problems highlighted in the report are related to a highly productive and successful part of Danish academics, which in turn may suggest that the rest of the population could face different, potentially even harsher, challenges related to gender representation. Finally, because of the highly sensitive nature of the questions, the survey was conducted anonymously (Tourangeau and Smith 1996), which means that it is not possible to perform standard statistical tests of the representativeness of the sample of respondents compared to the population surveyed. On the other hand, the high response rate offers some validity to the representativeness of the survey results for the population of Carlsberg Foundation grantees. This is extremely important, especially in relation to possible future Carlsberg Foundation initiatives addressing the issue of gender inequality in Danish academia.

GENERAL EXPERIENCE OF GENDER DIVERSITY IN THE DANISH RESEARCH COMMUNITY

In this chapter, we focus on the respondents' general experience of the issue of gender diversity in Danish universities. We also analyze the areas perceived by respondents as more critical regarding solving the issue of gender representation, and the possible players in the Danish scientific ecosystem that can promote a better balance.

GENDER INEQUALITY IN DANISH UNIVERSITIES

As an introductory question, respondents were asked to indicate their level of agreement with the following statement: *"The lower representation of women among Danish academics, especially in tenured positions, represents a problem for the Danish scientific community."*

79% of the respondents agreed or strongly agreed with this statement. No one strongly disagreed, but three respondents (2%) did not answer the question. Looking at the distribution across genders, 96% of the women (N=67) agreed or strongly agreed with the statement, compared to 70% (N=74) of the men (the difference is statistically significant at $p < 0.001$).

The researchers who agreed with the above statement were then asked to indicate their level of agreement with a subsequent statement: *"The lower representation of women among Danish academics is a problem which requires an immediate response."* 94% of the respondents agreed or strongly agreed with the statement. Again, looking at the gender distribution, 98.5% of the women (N=66) agreed or strongly agreed with the statement, compared to 80% (N=66) of the men (the difference is statistically significant at $p < 0.001$).

AREAS FOR IMPROVEMENT

In principle, the issue of gender inequality can be tackled through several adjustments or interventions. Respondents were asked to consider the significance of changes in several individual areas to achieve greater gender equality in Danish research.

Figure 2 shows the percentage of respondents who stated that changes in a specific area would significantly or very significantly result in more gender equality in Danish research.

FIGURE 2
SIGNIFICANT OR VERY SIGNIFICANT CHANGES IN DIFFERENT AREAS, TOTAL AND BY GENDER

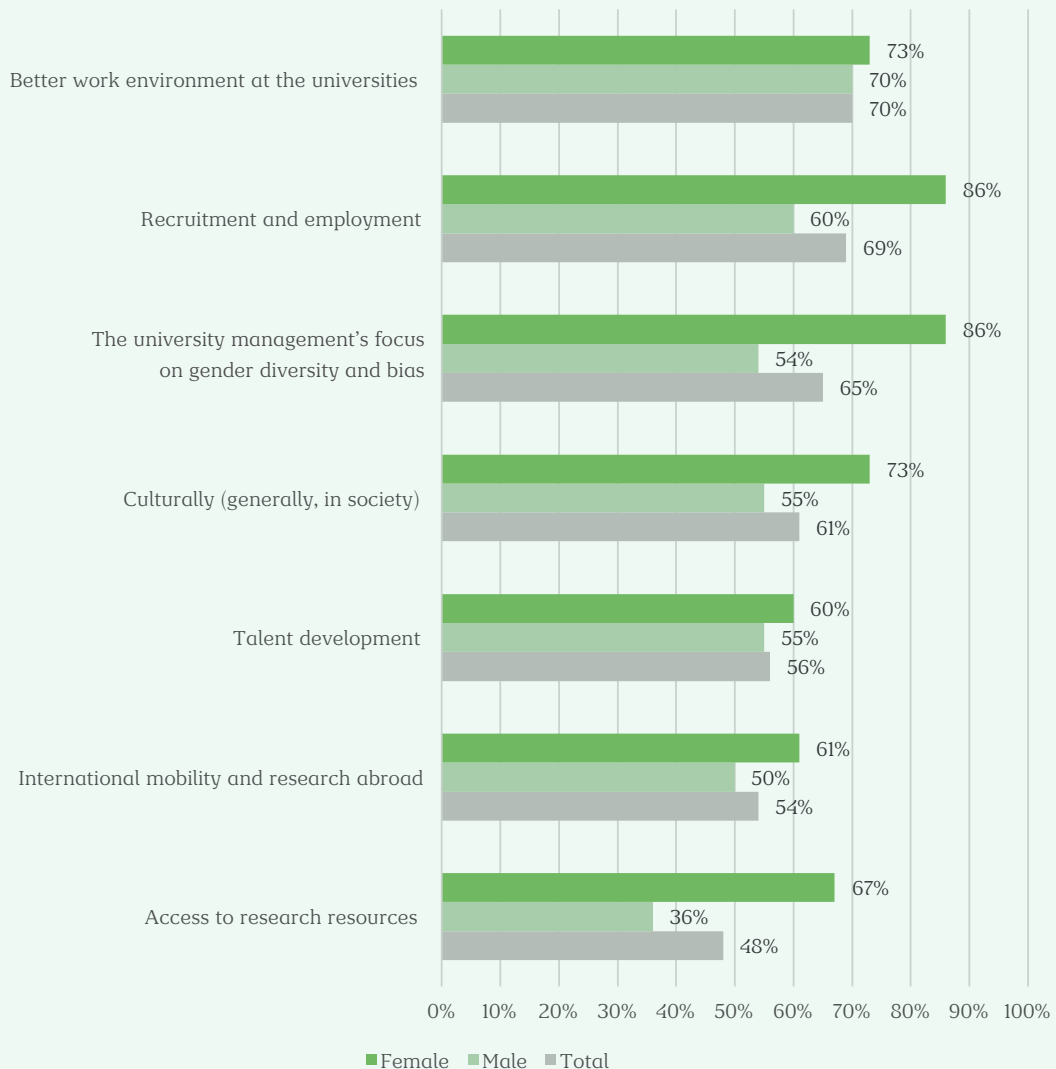


Figure 2 shows that overall, the respondents believe that adjusting both the work environment at universities and recruitment and employment have the highest potentials of ensuring more gender equality in Danish academia. An additional interesting insight is that men and women seem to have different views of the areas which are more relevant to achieve an improvement. 86% of the female respondents indicate that adjustments to recruitment and employment and to the university management's focus on gender diversity and bias are significant or very significant, compared to 60% and 54%, respectively, for male respondents (the difference is significant at $p < 0.001$). Two more areas show a significant difference of opinion between female and male respondents: access to research resources (67% of the women responding significant or very significant versus 36% of the men) and culture-related issues (73% of the women responding significant or very significant versus 55% of the men).

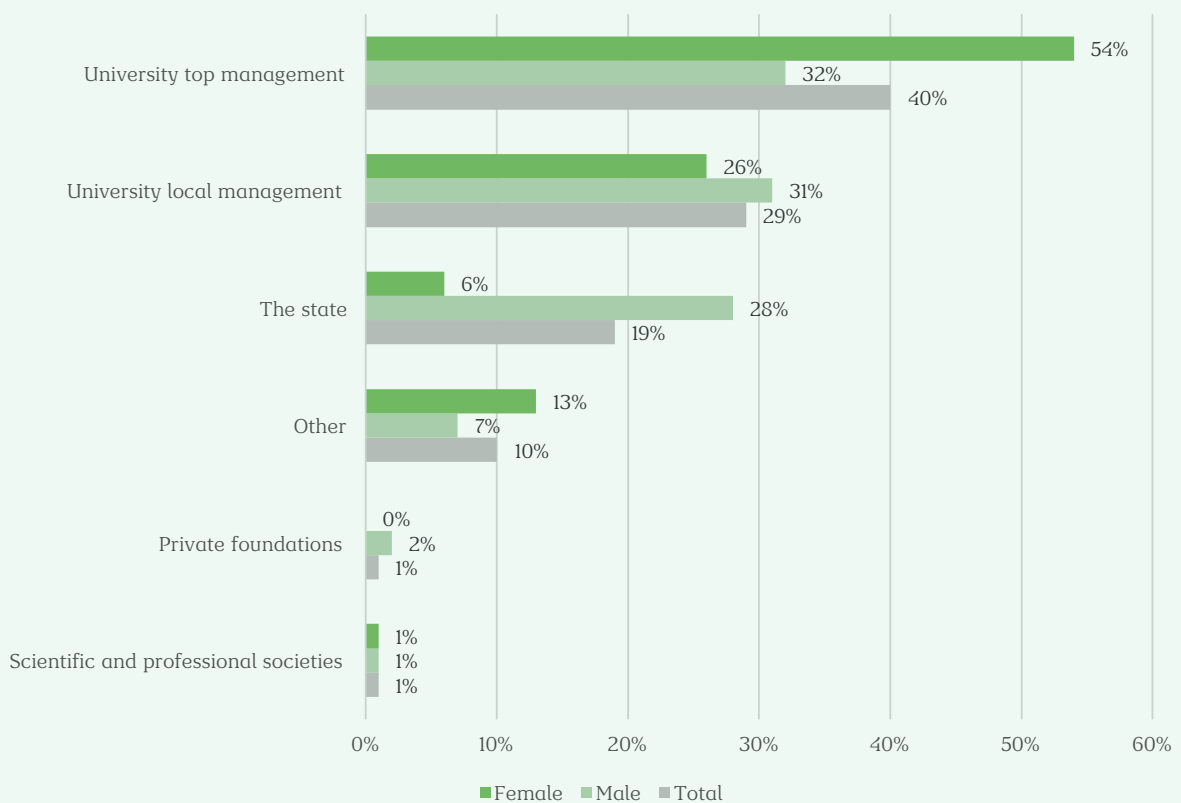
The respondents were able to add comments if they felt that the predefined adjustment options in the survey did not cover all relevant aspects. Most comments focused on the challenge of combining a research career with having a family (and maternity leave), particularly in relation to research stays abroad. Some female respondents also emphasized that it can be difficult to fulfill their role as researchers while having childcare responsibilities, given that women in Denmark are typically the primary caregivers (Bonke and Wiese Christensen 2018). Several comments focused on the general work environment at universities, where relatively low salaries are accompanied by an overly harsh and competitive culture which has become so widespread and dominating that it does not leave much room for alternative behavior. A few respondents also pointed to the lack of female role models.

PLAYERS RESPONSIBLE FOR IMPROVEMENT

The above-mentioned adjustments may be initiated by a variety of players, and the respondents were asked who they believe has the greatest responsibility and the best opportunities for implementing those adjustments.

Figure 3 shows the respondents' answers related to the players deemed responsible for making the adjustments required to address the problem of gender inequality in Danish academia.

FIGURE 3
IN YOUR OPINION, WHO HAS THE GREATEST RESPONSIBILITY TO CREATE THESE ADJUSTMENTS?

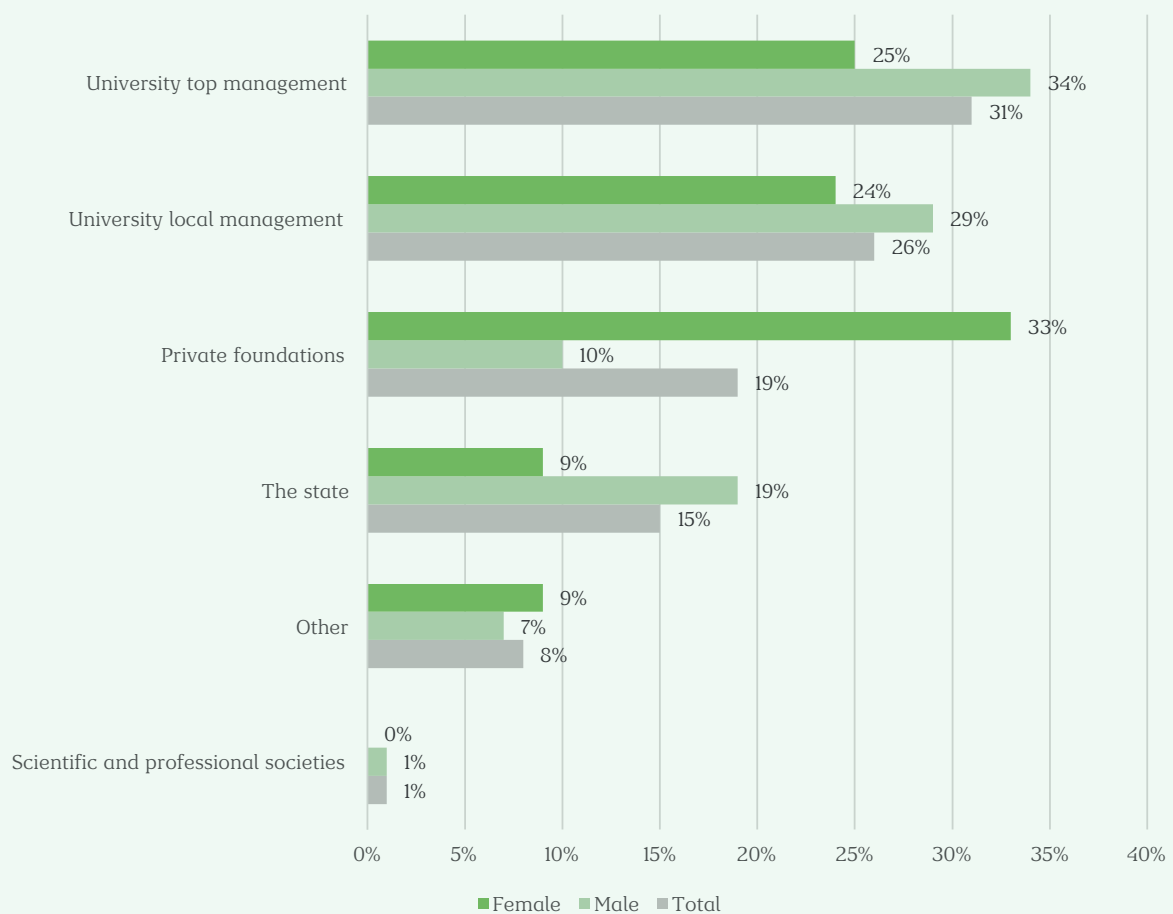


University management, both at top (40%) and local (29%) levels, is considered the player with the greatest responsibility for making adjustments that shall ensure gender equality in Danish academia. More than half of the female respondents (54%) believe that the university top management has the greatest responsibility, compared to 32% of the male respondents (the difference is significant at $p < 0.01$). Men and women have similar opinions concerning the local university management, while they differ with respect to the responsibility of the state: Only 6% of the female respondents consider the state to have the greatest responsibility in addressing gender inequality in science, compared to 28% of the male respondents (the difference is significant at $p < 0.01$).

From the point of view of the Carlsberg Foundation, it is also worth highlighting that only 1% of the respondents believe that private foundations have the greatest responsibility for making adjustments to address gender imbalance in Danish universities.

Figure 4 shows the respondents' answers related to the players deemed to have the greatest opportunity to implement the adjustments required to address the problem of gender inequality in Danish academia.

FIGURE 4
IN YOUR OPINION, WHO HAS THE BEST OPPORTUNITIES TO CREATE THESE ADJUSTMENTS?



Overall, the university management (both top and local) is also believed to be the player with the best opportunities to create the adjustments required to ensure gender equality in Danish academia. 34% of the male respondents believe that the university top management has the greatest opportunity to make adjustments (compared to 25% of the female respondents). While private foundations were not considered to have the greatest responsibility for addressing gender inequality in Danish academia, they are, however, believed to be in a good position to do so, especially by the female respondents (33%, compared to 10% of the male respondents; the difference is significant at $p < 0.01$). This result is interesting because it may indicate that women are aware of the importance for their career of attracting external funding, even though female researchers generally head smaller labs and attract fewer resources, which may, in turn, negatively affect their opportunities for career advancement (Murray and Graham 2007).

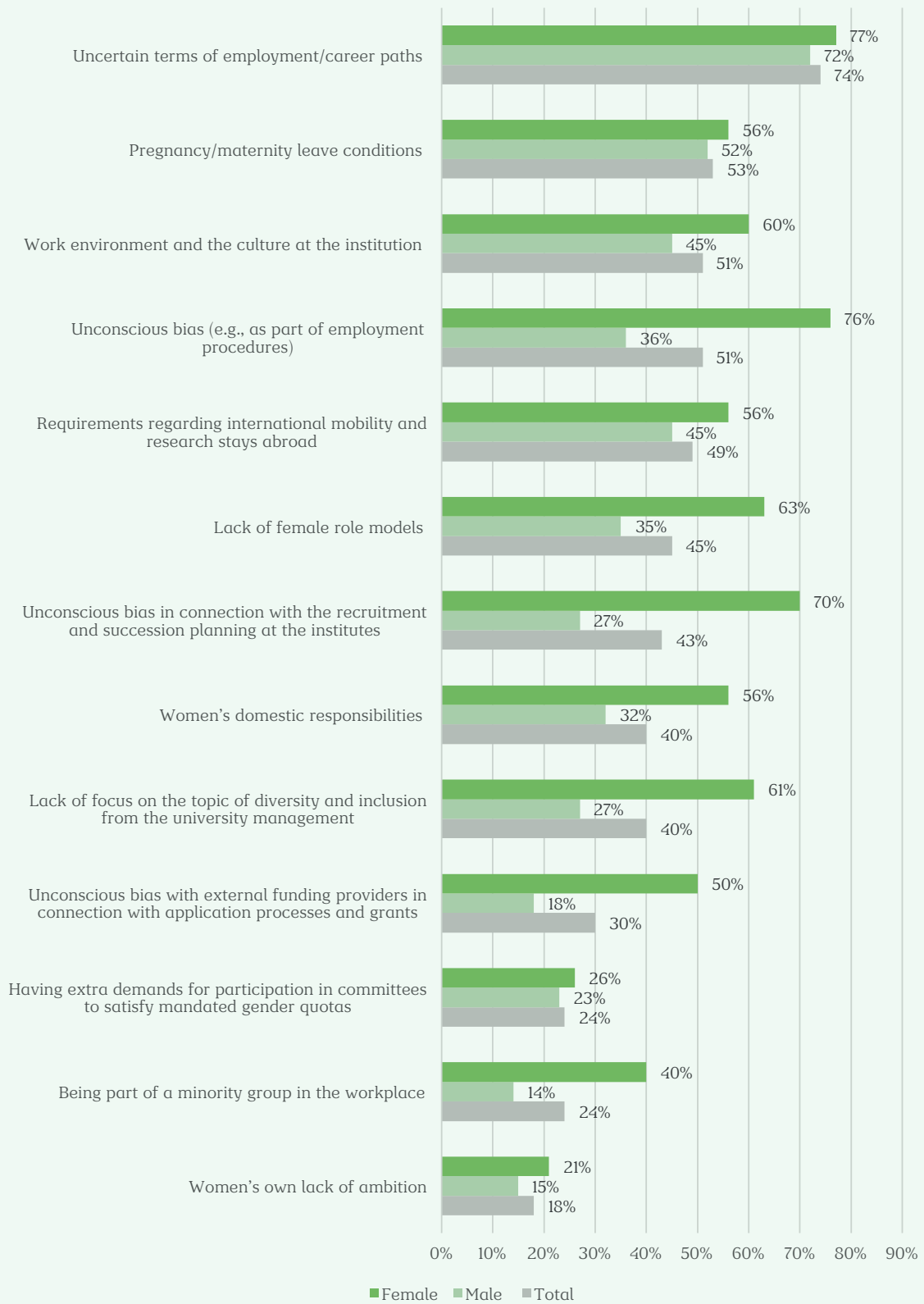
PERCEIVED BARRIERS FOR FEMALE RESEARCHERS' ACADEMIC CAREERS

Several contributions in the scientific literature show that women face a series of specific gender-related barriers to entry into and success in scientific and technical careers (Etzkowitz et al. 2000; Gupta et al. 2005). Gupta and colleagues (2005) note that women suffer from a triple burden: an unfavorable work environment, disproportionate domestic responsibilities, and a social capital deficit. These three elements are interrelated and contribute to gender inequality. In addition, gender stereotypes and gender-related barriers mean that women often have to work harder than men to prove themselves (Gupta et al. 2005; Kanter 1977).

The respondents were asked to rate the importance of a wide range of possible barriers that women may face in their careers as researchers - barriers related to the specific work environment (such as the culture at their place of employment or belonging to a minority group), to more general characteristics of academic careers (such as demands for international mobility or the lack of female role models), and to the private life of the female researcher (such as domestic responsibilities).

Figure 5 shows the percentage of respondents who stated that a specific barrier is important or very important for women in Danish research.

FIGURE 5
 IMPORTANT OR VERY IMPORTANT BARRIERS, TOTAL AND BY GENDER



First, men and women agree that uncertain conditions in relation to employment and career paths represent the most important barrier that women face in their scientific careers. As long spells of temporary postdoc employment become more common and are institutionalized as a requirement in the scientific profession, researchers face a longer window of uncertainty in their careers. This uncertainty may negatively impact female researchers disproportionately relative to their male colleagues, as the time span for this uncertainty usually coincides with the period of biological fertility of women, leaving many women with the choice between bearing children and tenure (Jacobs and Gerson 2004; Williams and Ceci 2012). In addition, pregnancy and maternity leave conditions are considered very important barriers by more than half of the respondents (53%, N=97).

Research shows that in some cases career gaps due to maternity leave and childcare are not fully considered in connection with tenure decisions (Williams and Ceci 2012). For instance, Hunter and Leahey (2010) estimate that the effect of childbirth on a woman's academic productivity corresponds to two years of lost publications, a figure that is well beyond the maternity arrangements of even the most progressive Scandinavian employers. This also corresponds to the observation that domestic responsibilities tend to fall disproportionately to women, subjecting them to pressure from two "greedy institutions": academia and the family (Jacobs and Gerson 2004).

There is evidence that academic mothers spend more hours per week on childcare than academic fathers and fewer hours on their professional responsibilities (Mason and Goulden 2004). Looking specifically at the Danish situation, a recent study by the ROCKWOOL Foundation indicates that Danish women, compared to men, on average tend to spend one hour more on household-related activities and 40 minutes more on childcare (Bonke and Wiese Christensen 2018).

Several specific features of the workplace are also rated as highly important. Overall, 51% of the respondents believe that the work environment and culture (characterized by e.g. a high level of competition) at one's own institution may constitute a barrier for female researchers (60% of the female respondents rate this barrier as important or very important, compared to 45% of the men; the difference is statistically significant at $p < 0.1$). This is in line with findings in the literature, where male-dominated academic and professional cultures have been described as a "gentlemen's club", a "barrack yard", and a "locker room", respectively (Maddock and Parkin 1993). Women are underrepresented in all these (if not absent) and tend to occupy low-status positions. Indeed, 40% of female respondents rate being part of a minority as an important barrier they face (compared to 14% of the men; the difference is statistically significant at $p < 0.001$).

Unconscious bias related to different aspects of academic careers, from recruitment to leadership succession, is also considered one of the most important barriers by female respondents. In particular, 76% of the female respondents indicate that unconscious bias, e.g., in connection with recruitment procedures, is an important or very important barrier, and 70% rate unconscious bias in connection with departmental recruitment and succession planning as important or very important. Again, this aligns with several observations found in the literature on gender inequality in science. In particular, it has been noted that women tend to be excluded from the "Kula Ring of Power", the informal gatherings in science where resources, knowledge, and reputation are exchanged and developed (Etzkowitz et al. 2000).

In some academic environments, women may even be considered risky employees whose personal commitment is considered in connection with hiring and promotion decisions, while this is often largely ignored for men.

An important observation that must be made in relation to the figures emerging from this survey is that the male respondents do not seem to have the same perception as their female colleagues of unconscious bias as an important barrier (36% and 27%, respectively; in both cases, the difference is statistically significant at $p < 0.001$). An additional barrier perceived by many women is the lack of female role models (63% of the female respondents rate this barrier as important or very important, compared to 35% of the men; the difference is statistically significant at $p < 0.001$). This absence has been noted repeatedly in the literature. Thus, Faulkner (2006) comments that in academia “far fewer alpha females than alpha males are available as role models.”

It is worth noting the differences between the male and female respondents in terms of the barriers that are considered important, as they may have strong implications in terms of the solutions to be implemented to tackle gender inequality in academia. If men occupy most senior managerial positions, this may result in policies and measures that, even with the best intention of lessening barriers for women, address the “wrong” set of challenges, as men and women hold different views of the barriers which are most relevant. This may leave the academic system with a set of inefficient measures and a poor chance of addressing the issue of gender inequality. To this we may need to add that more than 60% of the female respondents found the lack of focus on the topic of diversity and inclusion by university managements to be an important or very important barrier (compared to 27% of the male respondents; the difference is statistically significant at $p < 0.001$), signaling that there may also be a lack of willingness in university managements to address the inequality problem.

Finally, 50% of female respondents state that unconscious bias among external funding providers in connection with application processes and grants is an important or very important barrier in female researchers’ careers (compared to 18% of the men; the difference is statistically significant at $p < 0.001$). This is an important figure, as the perception of fairness in terms of funding allocation can have a great impact on the decision of individual researchers to apply for funding in the first place. To remedy this challenge, public and private foundations may have to actively communicate that they have long-term focus on contributing to a more equal gender balance in Danish academia. Public and private foundations may also invest in gender bias courses for boards and employees and encourage their stakeholders to do the same, and furthermore communicate this to its stakeholders, particularly potential female applicants. The Carlsberg Foundation has recently communicated that its long-term aim is to achieve a qualified equal gender distribution among its grant recipients.

Respondents were also asked to describe obstacles that were not part of the list. 44 respondents used this option (24 women and 19 men). Female respondents mainly pointed to maternity leave (even though it was actually part of the list of choices) as an obstacle in their careers, but they also highlighted barriers such as all-male networks, the presence of unconscious bias about women, insecure terms of employment, and the predominance of social structures where women are the primary caregivers. Some female respondents also reported that a lack of mentors for young female researchers is a substantial barrier, and

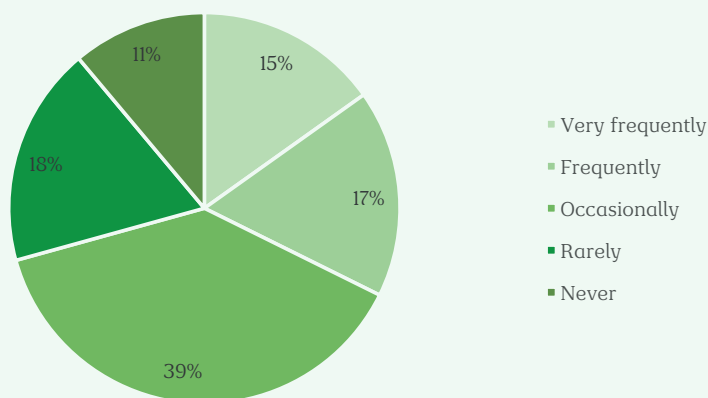
that female researchers tend to disproportionately take on tasks which fall into the broad category of “good academic citizenship”, such as being part of committees and providing pastoral care to students. The reason why such commitments can become a barrier is that time spent on such tasks means less time devoted directly to credit-bearing research. In their answers, the male respondents focused more on career barriers such as social structures and gender roles. A few highlighted the heavy burden of long working hours and insecure terms of employment. They also observed that women seem to lack faith in their own abilities.

WOMEN’S EXPERIENCES WITH GENDER DIVERSITY AND DISCRIMINATION IN ACADEMIA

This section of the survey was presented only to respondents who identified as females or who did not disclose their gender (N=74). 69 researchers (99%) who identified as female answered the questions. Out of respect for their anonymity, results will not be provided for respondents who did not wish to disclose their gender. The purpose of this section is to investigate the experience of female researchers in relation to the specific obstacles they face in their career. As an opening question, respondents were asked if they had experienced obstacles in their own career because of their gender.

Figure 6 shows the distribution across the possible answers.

FIGURE 6
IN YOUR OWN CAREER, HAVE YOU EXPERIENCED OBSTACLES BECAUSE OF YOUR GENDER?

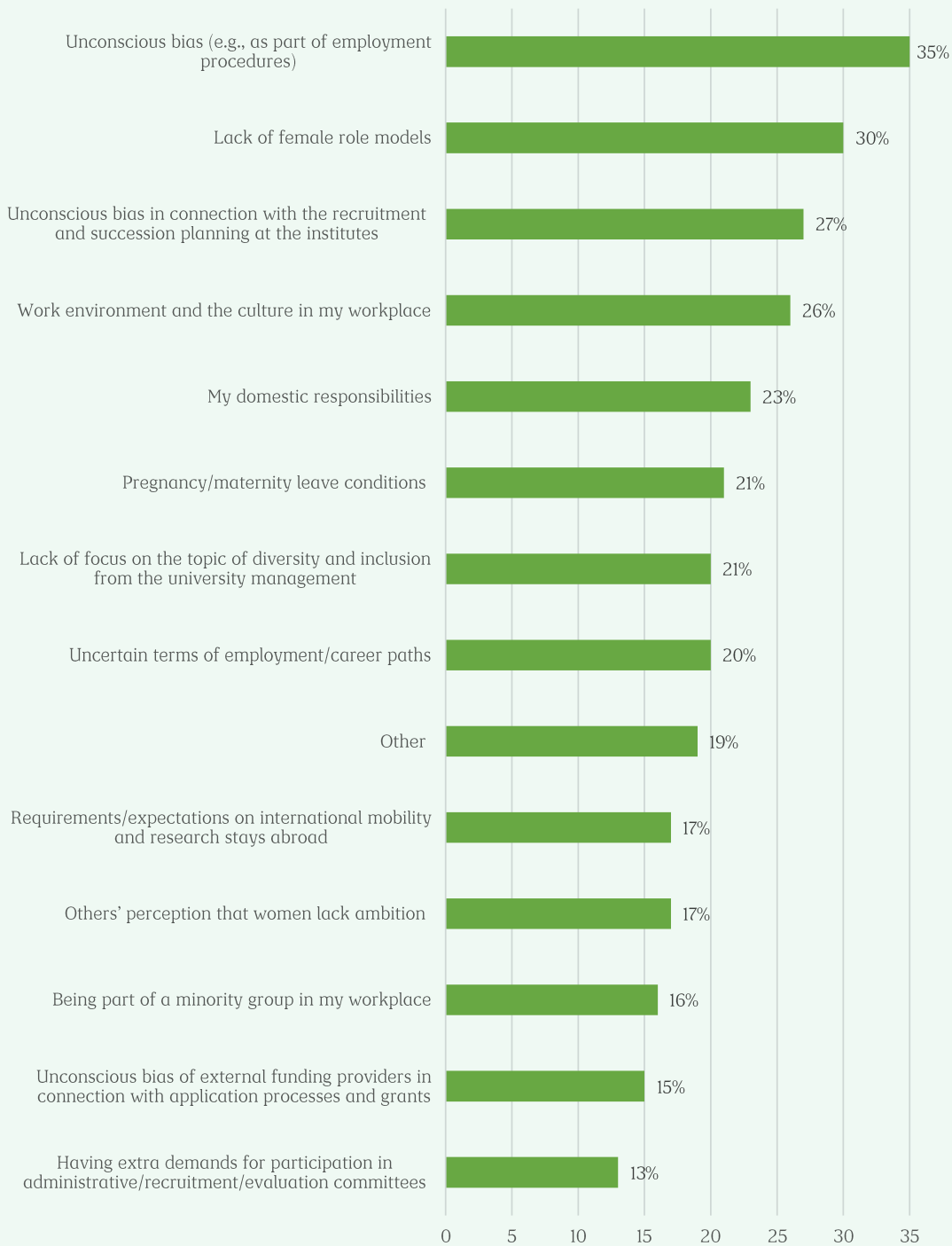


Only 11% of the respondents (N=8) reported that they had never experienced any obstacles in their career related to their gender, while 32% (N=22) of the respondents reported to have experienced such obstacles frequently or very frequently.

Respondents who stated that they had experienced some obstacles (N=62) were subsequently asked to indicate which specific obstacles they had encountered. The obstacles presented could either be of a general nature or related to discrimination. Examples of these two broad categories were offered. For the first group (general obstacles), the following example was provided: *“You feel less productive than male colleagues because you need to take care of your children, while their partners do a larger share, and they are free to work long hours”*. For obstacles related to discrimination, the following example was provided: *“You feel you are left out of important decisions in your department because they are taken at informal gatherings where only male colleagues go”*.

Figure 7 shows how many respondents indicated having encountered a specific obstacle (please note that multiple obstacles could be selected).

FIGURE 7
OBSTACLES ENCOUNTERED (NUMBER OF INSTANCES)

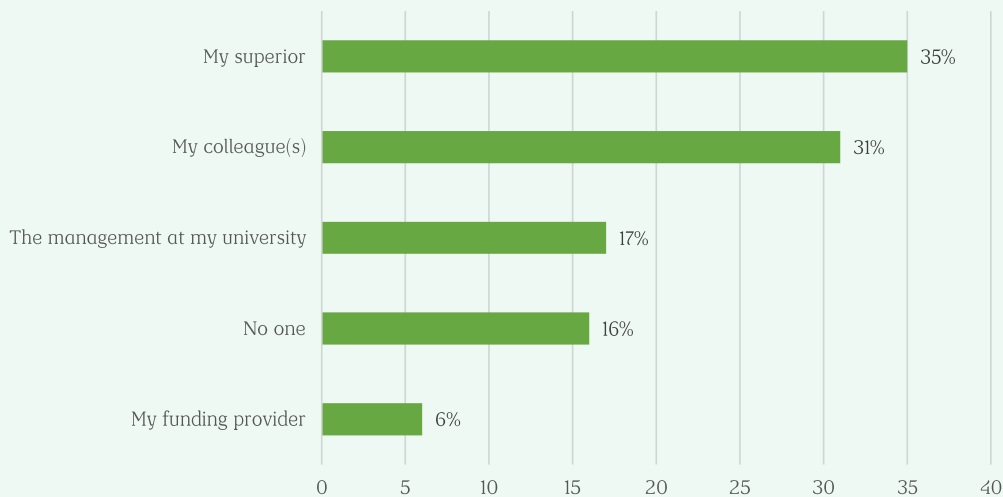


The obstacles women have faced are clearly aligned with women's perceptions of barriers, as discussed in the previous section. Half of the respondents indicated that unconscious bias was one of the obstacles they faced in their careers, followed by the lack of female role models.

Finally, the respondents were told to consider the most recent episode when they had experienced one of the obstacles mentioned in the previous list and asked to indicate who

knew about the episode, who took responsibility for solving the problem, and how effective that particular person was. Of the 62 women who indicated having experienced obstacles in their career because of their gender, 57 (92%) answered this part of the questionnaire.

FIGURE 8
WHO KNEW ABOUT THE EPISODE?



In terms of who took responsibility for solving the problem, the respondents indicated that in all cases, they themselves took responsibility. Their superior was involved in 70% of the cases, followed by colleagues (67%), the university management (47%), and a funding provider (39%).

The respondents were also asked to rate on a scale from 1 (not at all) to 5 (to a very high degree) how effective each player was. In 68% of the cases, the respondents rated themselves as effective to a high or very high degree. While involved in around two thirds of the cases, immediate superiors and colleagues were rated as effective only in 30% and 24% of the cases, respectively. The university management was rated as effective only in 11% of the cases, while funding providers, even if they were the least involved, were considered effective in 60% of the cases. This insight is very interesting from a funding provider perspective, as one would normally conclude that gender-related obstacles is an issue that should be addressed only at the universities. The results from this survey clearly show that funding providers, i.e., private foundations like the Carlsberg Foundation, are indeed perceived as being able to help female researchers tackle such career obstacles.

To understand whether female researchers experience obstacles in their career because of their gender is important for several reasons. First, we need to have a precise idea of the obstacles which are indeed affecting women's careers if we wish to design policy and management interventions capable of effectively addressing the obstacles. Furthermore, the fact that a large majority of female researchers (89%) have experienced some kind of obstacle related to gender suggests that the discrepancy in gender representation at higher levels in academia is not a problem that will solve itself over time. Even if we are seeing a higher intake of women as graduate students and junior researchers at Danish universities these days, the evidence from this survey suggests that the challenges blocking female researchers' careers are systemic and will continue to prevent a more balanced gender distribution in Danish academia if they are not addressed swiftly and effectively.

CONCRETE ACTIONS THE CARLSBERG FOUNDATION MAY INITIATE

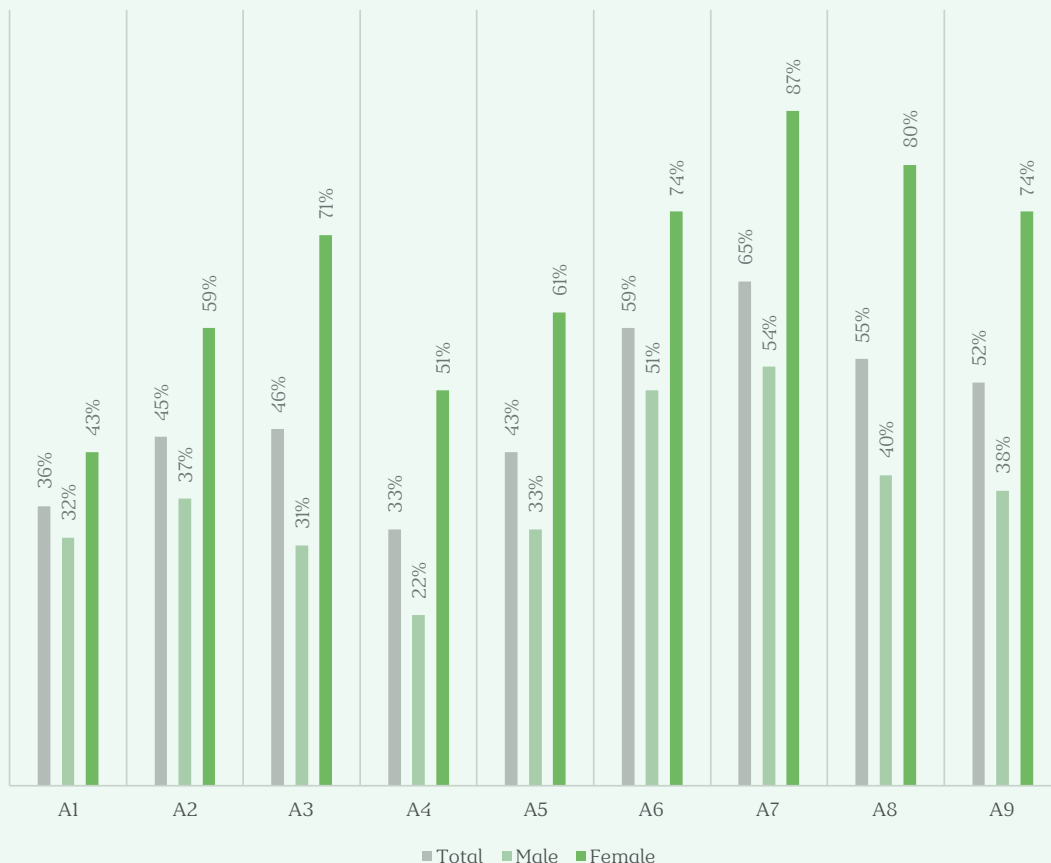
In the last section of the survey, all respondents (both men and women) were presented with a list of potential actions which the Carlsberg Foundation might initiate. It was clearly stated that these initiatives aim to remedy the gender imbalance that exists in the Danish research community. The respondents were asked to rate the effectiveness of each action on a scale from 1 (ineffective) to 5 (very effective).

Table 1 presents the list of actions, while Figure 9 presents the percentage of respondents by gender who indicated that an action would be effective or very effective.

ACTIONS THE CARLSBERG FOUNDATION MAY INITIATE

A1	Expand the number of well-defined and quantitative criteria (in addition to, for example, bibliometry and grant history), which are evaluated when reviewing
A2	Make the Carlsberg Foundation's requirements for research stays abroad more flexible
A3	Influence universities by requiring overall gender diversity targets to be set as a prerequisite for funding
A4	Influence universities by setting specific demands on gender distribution within each project as a prerequisite for grants
A5	Require all PIs on larger research projects to explain the gender goals of the research group for which funding is sought and report on the results
A6	Actively contribute to making female role models (professors or associate professors) visible at the universities/research institutions
A7	Be a voice in the public debate on gender diversity in Danish research by pointing out the focus areas
A8	Actively communicate that the Carlsberg Foundation has a target of a 50-50% gender distribution among its grant holders to lead the way and inspire other players to make the same effort in the research community
A9	Minimize gender bias when applications are evaluated e.g., by making the board aware of its own gender bias

FIGURE 9
PERCENTAGE OF RESPONDENTS CONSIDERING A POTENTIAL ACTION BY THE CARLSBERG FOUNDATION AS EFFECTIVE OR VERY EFFECTIVE, TOTAL AND BY GENDER



Both the male and female respondents believe that the most effective action by the Carlsberg Foundation’s would be to be a voice in the public debate on gender diversity in Danish research. The action which the male respondents believe to be the second most effective is to actively contribute to making female role models visible at the universities. While the female respondents also find that this action would be effective, they rate the active communication by the Carlsberg Foundation of a target of a 50-50% gender distribution among its grant holders as highly effective in leading the way and inspiring other players to set the same target. More than 70% of the female respondents also believe that minimizing gender bias when applications are evaluated and influencing universities by requiring overall gender diversity targets as a prerequisite for funding could be effective or very effective actions for the Carlsberg Foundation. Specific requirements on gender distribution in individual projects (*influence universities by making specific demands on gender distribution within each project as a prerequisite for grants and require all PIs on larger research projects to explain the gender goals of the research group for which funding is sought and report on the results*) are considered effective by between 51% and 61% of the female researchers, but only by between 22% and 33% of the male respondents.

Interestingly, making the requirements for research stays abroad more flexible is overall considered effective or very effective by 45% of the respondents, and expanding the number of review criteria evaluated is considered the least effective action, with only 36% of the respondents rating it as effective or highly effective.

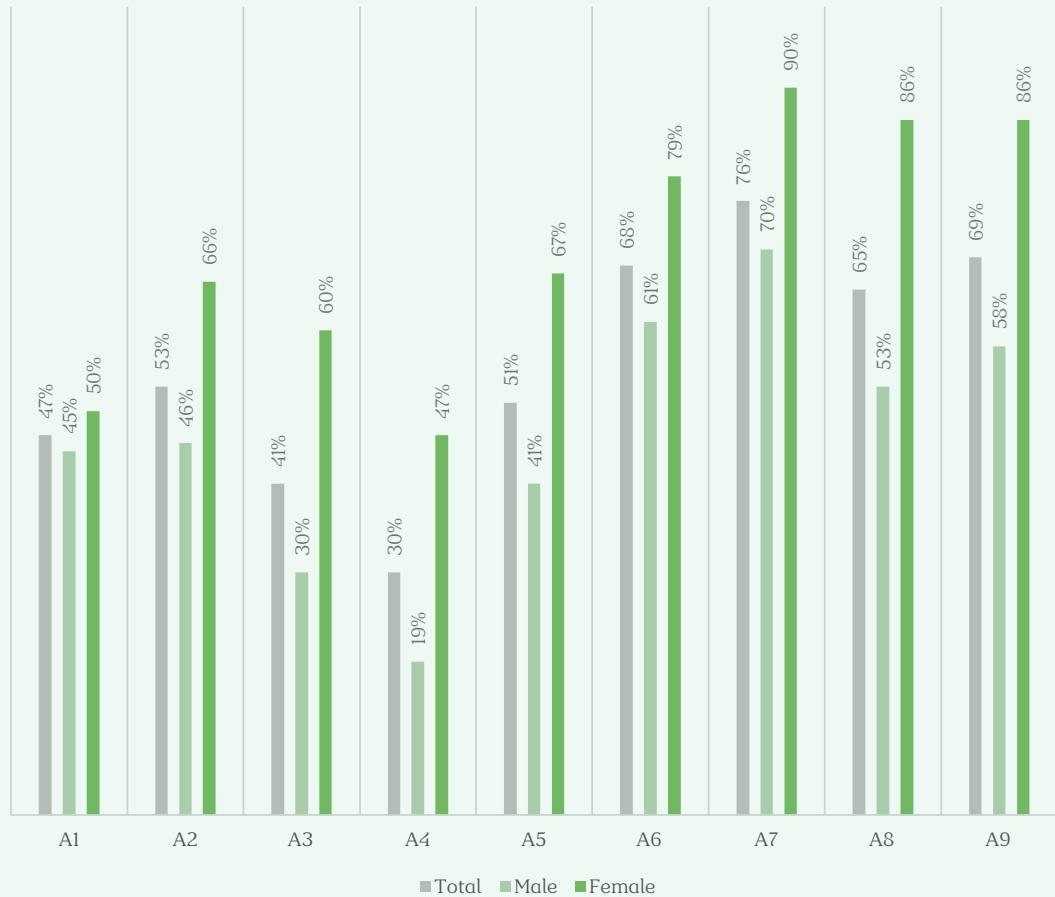
Concerning the recommendation to make research stays abroad more flexible, 87 respondents provided suggestions on how to do so. Regardless of gender, it was generally pointed out that the need to make the demand for stays abroad more flexible is mainly a result of the challenges and costs of traveling abroad for an extended period of time (typically two years), especially when bringing one's family. The respondents provided concrete ideas for how the Carlsberg Foundation can make stays abroad more manageable for researchers, such as changing the required length of the stay abroad, allowing digital forms of academic visits, increasing the funding associated with mobility, allowing PIs to "share" the period abroad with their postdocs or PhD students, and, finally, offering more concrete advice on how to balance a research career with family responsibilities.

Again, it is interesting how men and women have different views of the effectiveness of these actions, and how women seem to perceive all actions as more effective compared to their male colleagues (all differences are statistically significant with $p < 0.001$, except for A2, where $p < 0.01$, and A1, where the difference between men and women is not statistically significant).

The respondents were then asked, regardless of their assessment of the effectiveness of each action, to indicate on a scale from 1 (strongly disagree) to 5 (strongly agree) to which extent they agreed that the Foundation should initiate such an action.

Figure 10 presents the percentage of respondents by gender who indicated that they agreed or strongly agreed that the Carlsberg Foundation's should initiate a specific action.

FIGURE 10
PERCENTAGE OF RESPONDENTS INDICATING THAT THEY AGREED OR STRONGLY AGREED WITH THE CARLSBERG FOUNDATION LAUNCHING A SPECIFIC INITIATIVE, TOTAL AND BY GENDER



Percentages are largely aligned with those for the previous question, both in terms of the action to be initiated and in terms of the differences between men and women. The results suggest that researchers seem to see a good potential for the Carlsberg Foundation's to play a positive role, both internally (regarding its specific processes) and externally (toward universities and the scientific community in general). It is also evident that women have a higher sense of urgency for these actions to be undertaken and compared to their male colleagues, they are more confident that these actions would bear positive results.

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