NARODOWE CENTRUM NAUKI

Men and women in science

Survey results

Drafted by the NCN's Analysis and Evaluation Team and the Committee of Research Activity Analysis of the NCN Council.

Members of the NCN's Analysis and Evaluation Team:

Anna Strzebońska (Head), Renata Mazurkiewicz, Aleksandra Sienkowiec, Paulina Wojciechowska

Members of the Committee of Research Activity Analysis of the NCN Council:

Teresa Zielińska (Head), Joanna Golińska-Pilarek, Monika M. Kaczmarek, Stanisław Lasocki, Justyna Olko, Tomasz Szapiro, Joanna Wolszczak-Derlacz

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Preface

Dear reader,

The *Report on Men and Women in Science* is the product of months of work by a team of NCN staff and NCN Council members, based on a highly detailed survey filled out by nearly six thousand male and female researchers from all over Poland. I would like to take this opportunity to extend my earnest thanks to all those who contributed to the report, and in particular to Dr Anna Strzebońska, head of the Analysis and Evaluation Team, and professor Teresa Zielińska from the NCN Council, who coordinated this effort.

The issue of gender equality in science and other areas of life is important for many reasons and deservedly stands as a priority for all developed countries. We need to optimise the way we tap available social capital to push our country forward, so that everyone, irrespective of their social or cultural background, is given the same opportunity to deploy their talents and passions in research.

We did our best to explore this matter as comprehensively as possible. Admittedly, the report is not based on a representative sample and will require a more in-depth quantitative and qualitative analysis in the future. However, the high number of responses we received suggests that the problems and irregularities signalled in the survey indeed reflect reality. Personally, I was particularly shocked by table 1, which lists various experiences of discrimination reported by women. I believe it should be considered required reading for anyone involved in research. Polish institutions should adopt a zero-tolerance policy with regard to all situations of the kind described in the survey.

The National Science Centre will further analyse and reflect on the report in the context of possible regulations that may be introduced to our grant system in the future. The report corroborates the view that women are set back in their careers primarily by the unequal distribution of family responsibilities, including those related to childcare. In this context, I heartily applaud the widespread backing for the solutions modelled on the example of the European Research Council, which the NCN introduced a few years ago to help researchers of both genders reconcile their work and family roles. For instance, we extended the period of eligibility for post docs and young researchers' grants by 1.5 years per each child; we also modified the length of the period considered in research record evaluation. However, a lot more remains to be done not only at the NCN, but also at other institutions.

Ensuring equal access to research funding for men and women alike has been our priority for many years. Exactly three years ago, the NCN published a position paper with detailed statistics on the subject. Importantly, however, most of the problems signalled in the following report do not occur in relations with the NCN, but at host institutions, such as universities and research institutes. There are also reasons for optimism if we compare Polish and international statistics. In 2021, for instance, of all the projects recommended for funding at the NCN, nearly 40% were led by women, with the rate for the MINIATURA call as high as 49%. In contrast, the corresponding figure for the ERC stands at just c. 30%; the statistics are similarly low for most other Western grant agencies. However, it might be a bit misleading to say that 49% of NCN projects are led by women, since the figure drops to just 41% when grant amounts are

considered. This disparity reflects a major problem that besets all countries, but especially Poland: the lower representation of women in senior-level research positions.

I believe that our *Report on Men and Women in Science* will attract public interest and help to raise awareness of the issue within the Polish research community. For the NCN, it will also serve as a point of departure for further efforts to advance progress in this area. We will continue to monitor the situation and uphold our commitment to various international gender equality initiatives.

Zbigniew Błocki

Director of the
National Science Center

Introduction

The purpose of this survey conducted by the National Science Centre was to analyse the conditions for research in Poland from a gender-focused perspective. The survey asked about the difficulties, setbacks and challenges faced by researchers of both genders in the process of funding their research and advancing their academic careers. The survey reveals a number of disparities, obstacles and system-level challenges, as well as problems related to practices and attitudes within the research community. At the same time, it encourages a thorough debate on gender equality so as to devise a better way to level the playing field for both genders in research.

1. Methodology

1a. Survey structure

The survey was prepared in two versions, one for men and one for women, and accordingly the results were analysed in two distinct groups. For the purpose of clarity, we will be referring to the respondents who filled out the women's survey as "women/female respondents", abbreviated as "F", while those who filled out the men's survey will be referred to as "men/male respondents, or "M".

The survey was divided into five main sections. Researchers were asked about their experience applying for NCN grants, any difficulties they may have faced in accessing other domestic and international funds, their experiences in the workplace, and the challenges of work and family balance. The survey also featured questions on the impact of the COVID-19 pandemic on their career and research performance.

1b. Sampling method and study duration

The survey was open to researchers from any Polish research centre, regardless of their career level or whether they have previously applied for an NCN grant.

The survey was conducted via CAWI, an online computer-assisted web interview. It was delivered as an active link that redirected the respondents to survey questions, which they then could answer from anywhere at their convenience. Since the purpose of the survey was a diagnosis, rather than a population study, the form was very widely distributed so as to reach out to the largest possible number of researchers. The link was shared in three different ways, i.e.:

- sent directly to NCN applicants (researchers who participated in NCN calls, beginning with their 17th edition);
- distributed via research centres;
- published in press releases and through social media posts (NCN channels on Twitter, Facebook, LinkedIn).

Since the data were collected from a non-random (purposive[1]) sample, the findings cannot be generalised to the entire population of academics in Poland. The survey was available between 19 July 2021 and 30 September 2021.

It was answered by nearly 5790 respondents, including 3722 women (64%) and nearly 2068 men (36%). The greatest number of female respondents represented the fields of art, humanities and social sciences (38%), followed by life sciences (32%), with physical sciences engineering accounting for 30%. 47% of male respondents represented physical sciences and engineering, 33% worked in art, humanities and social sciences, and only 21% in life sciences. A detailed distribution can be found in Appendix 1.

1c. Data presentation

The percentages presented in this study always refer to two distinct sub-groups, i.e. to respondents who answered either the women's or the men's survey. The numbers (N) shown in the visualisations below represent the size of each subgroup and it is to these figures that the percentages ultimately refer.

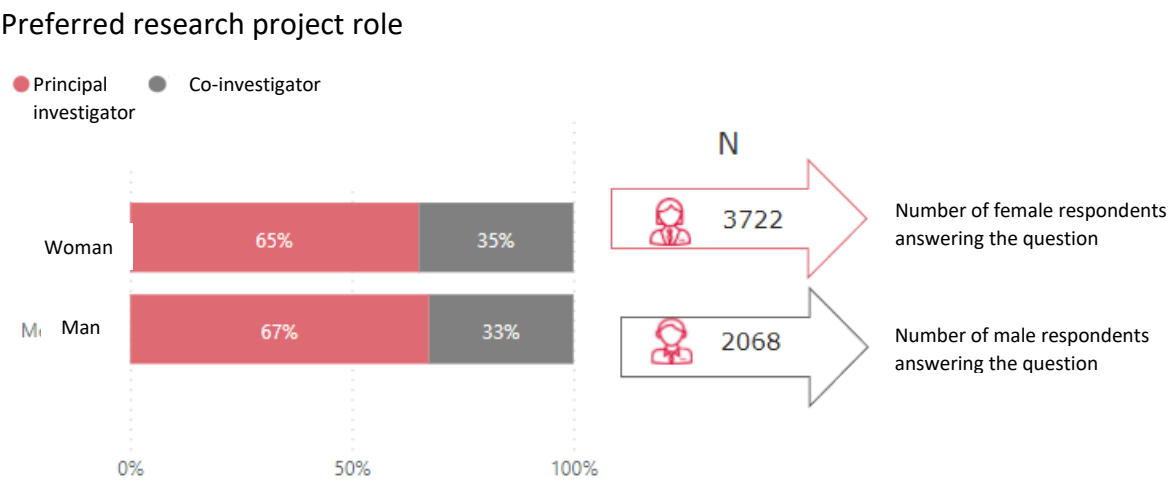
Example 1. Respondents were asked about their preferred role in a research project and all of them answered the question (fig.1). This means that the women's survey was filled out by 3722 female respondents, and the men's survey by 2068. The proportion and number of people who opted for the role of principal investigator were calculated separately for each gender.

Among those who filled out the women's survey, the rate stood at 65% of 3722 respondents, which corresponds to 2419 female respondents.

Among those who filled out the men's survey, the rate stood at 67% of 2068 respondents, which corresponds to 1385 male respondents.

[1] Purposive sampling is a non-random sample selection method, where study subjects are selected based on a decision taken by researchers. In this survey, the sampling criterion was membership in the research community, defined as involvement in at least one of three different types of research activity, such as attempts to acquire project funding at the NCN, interest in research, understood as following NCN social media profiles, and professional affiliation with a research institution. The three criteria of purposive sampling in this survey also determined the way in which it was distributed.

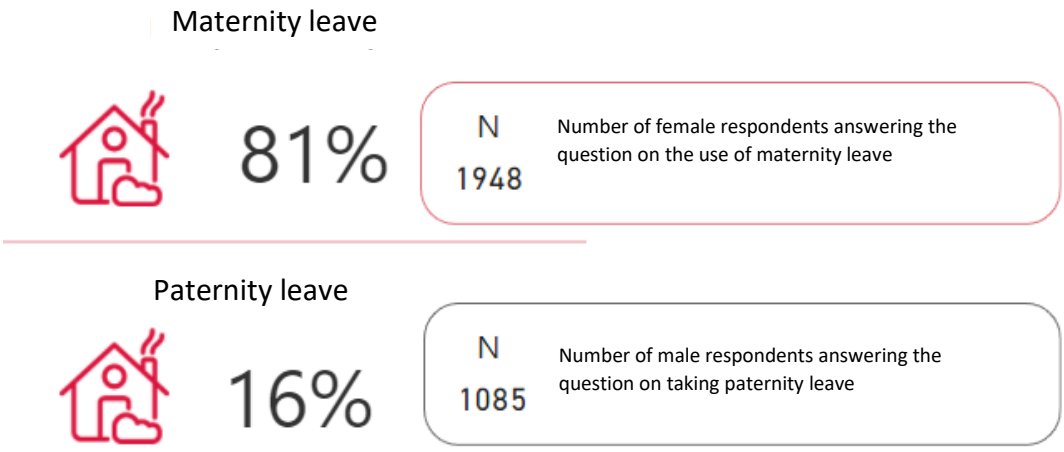
Fig. 1. Preferred research project role



Source: infographic created by the NCN

Example 2. The infographic below (fig. 2) shows the percentage of researchers of either gender who go on parental leave. The question was only displayed to respondents who declared that they had children and was completely optional. The number (N) of respondents for the women's survey was 1948, because 1948 women answered the question, while the corresponding figure for men was 1085.

Fig. 2.



Source: infographic created by the NCN

2. Main conclusions

Our analysis of the survey allowed us to state the following conclusions:

- Men and women apply for research funding under domestic calls equally actively, but their submission rates under international calls are relatively low. Survey data indicate that we might need to develop a more effective strategy to promote international calls, which should be further reinforced by institutional support, including consultations and access to information, in order to encourage a larger group of researchers to apply for international grants. A strategy of this kind would make the main opt-out reasons listed in the survey much less relevant. Project-related problems, such as the lack of a good research idea, were among the least frequently cited reasons for not submitting a proposal.

- Women are much more likely than men to have a low opinion of their research record and doubt that they can acquire research funding. Accordingly, low confidence is the most frequently cited reason for not submitting a proposal. Another negative factor that affects both genders is excessive workload, including administrative tasks; for international calls, however, this factor was more frequently mentioned by men. Women were more likely to list reasons such as family commitments and lack of support at their research institution, reporting that their centre had failed to support them in the application process and they had not had enough information about the calls. This suggests that women much more commonly doubt their odds of success; they do not see themselves as able to secure project funding and deliver on their commitments to a satisfactory level. This stems from individual factors, such as low esteem and inadequate knowledge about the grant system, but also external determinants, such as the lack of institutional support and the excessive burden of professional and family workload.

- Respondents of both genders expressed a similar level of interest in taking on the role of principal investigator in a research project. However, the data also indicate that more men than women actually have any experience in this position. Nevertheless, men are also more likely than women to opt for the role of co-investigator so as to avoid the administrative burden associated with the status of principal investigator. Women express more doubts as to the quality of their research record; they also fear they might have limited availability due to family responsibilities – together, these two factors ultimately stop them from applying for the role of principal investigator.

- More frequently than men, women feel the need to seek support in terms of childcare or family situation, both in their immediate academic environment and the larger research institution, which may explain their greater demand for system-level facilitation measures in the workplace. More often than men, female respondents also say they struggle to strike a work-life balance and report feeling guilty about neglecting their families. Arguably, the phenomenon has to do with their attempt to meet social expectations, as manifested in the traditional roles of women as partners, mothers, and guardians of the home. It is worth pointing out that women are also more likely to

believe that going on parental leave[2], which is a form of system-level facilitation, may have a negative impact on a research career, regardless of whether they have used one themselves. These fears are echoed by respondents who have actually been on maternity leave. More women than men report that their parental leave has adversely affected their academic careers, notably by limiting their research activity and reducing mobility.

- Despite a significant shift in attitudes in this respect, the survey included reports of gender equality violations at research institutions and in the immediate academic environment. More women than men said they were affected by gender-based discrimination and gender equality violations. They were also more likely to report disparities in the division of work and pay, as compared to men employed in similar roles and at the same career level. Women also felt more pressure to take on additional responsibilities at work. Their reports of gender-based discrimination and examples of gender equality violations fall into four categories, depending on whether they have to do with their career, dignity, family life and marital status, or represent discriminatory microbehaviours (Table 1, p. 27). In contrast, men predominantly listed two categories of such discriminatory activities, related to their career and personal dignity (Table 2, p. 30). This data suggest that we need to implement targeted policies to level the playing field for both genders in research centres and promote information on equal opportunity initiatives within the research community.

- Respondents reported that the COVID-19 pandemic had affected their research activities. Men and women alike noted both its positive and negative consequences, but there were differences in how they accounted for their reduced research performance and how they perceived the system-level measures introduced to address the situation. The most frequent reasons for lower research activity included the forced shift to online teaching and its associated challenges, such as the need to reorganise their work, limited access to research facilities, and fewer research visits. Men were more likely to list the lack of direct interaction with colleagues as an impediment, while women felt stymied by an increase in family responsibilities, including having to provide care for children during the lockdown of schools and nurseries. Importantly, however, women also reported that they were in fact able to devote more time to research during the pandemic than they had before. Remote education, teleconferences and a flexible schedule all facilitated research work as long as women had access to adequate childcare options.

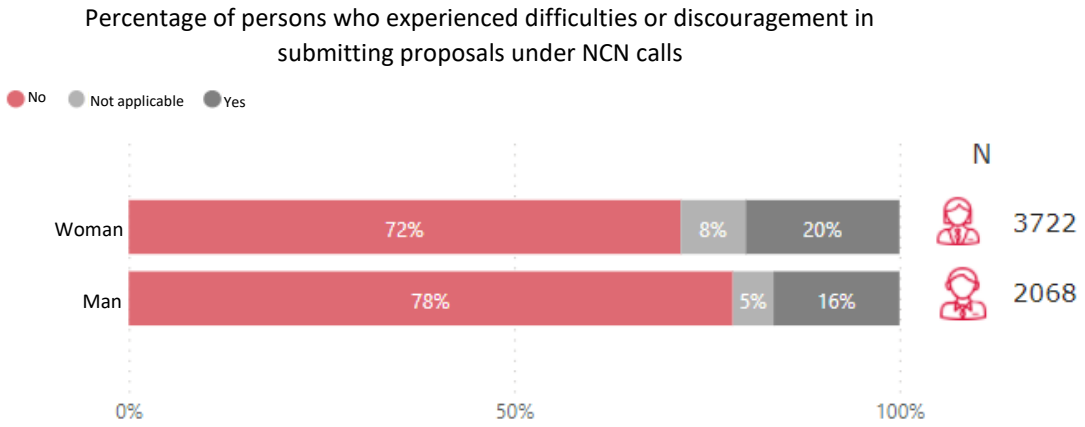
[2] The survey used terms such as “maternity leave”, “paternity leave” and “parental leave” in all survey questions and same terminology is consistently employed in this study. Used interchangeably (and/or with reference to a specific gender), these terms should be understood as referring to a career break that occurs between the birth of a child and the moment at which professional activity is resumed. The NCN decided to employ the terminology in the way described above as it is widely applied with reference to the period of childcare that immediately follows birth. In view of the changes in legislation that regulates these issues in the last decades, the solution seems optimal, especially since our study group included researchers who had children of different ages or none at all. It is important to point out that respondents could indicate the length of their leave, but the main emphasis was placed on their subjective perception of its actual or potential impact on their research career.

3. Experience in applying for research funding under domestic and international calls

3.1. Applying for research funding at the National Science Centre

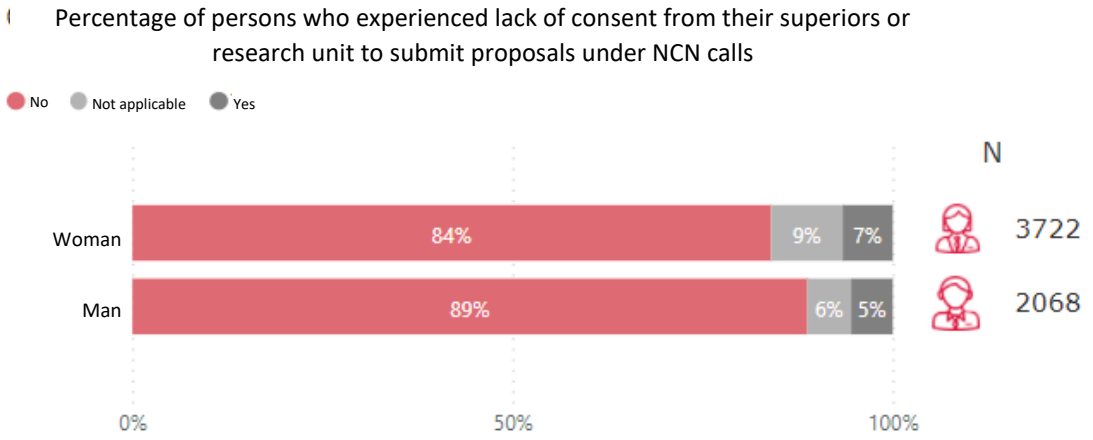
The majority of respondents of both genders have previously submitted a proposal under an NCN call and conducted a project funded from its resources. 83% of women have previously applied for NCN grants and 49% currently serve as principal investigators; the corresponding figures for men stand at 88% and 59%, respectively. The evident disparity between the two groups may be explained by the fact that women more frequently reported having encountered hurdles or attempts to discourage them from responding to NCN calls (F 20% vs. M 16%) (fig. 3); they were also slightly more likely to report that their superiors or research institutions refused to approve their plans to apply, without providing a specific reason (F 7% vs. M 5%) (fig. 4).

Fig. 3. Hurdles and attempts to discourage researchers from submitting proposals under NCN calls



Source: infographic created by the NCN

Fig. 4. Lack of approval from superiors or the research institution for submitting proposals under NCN calls



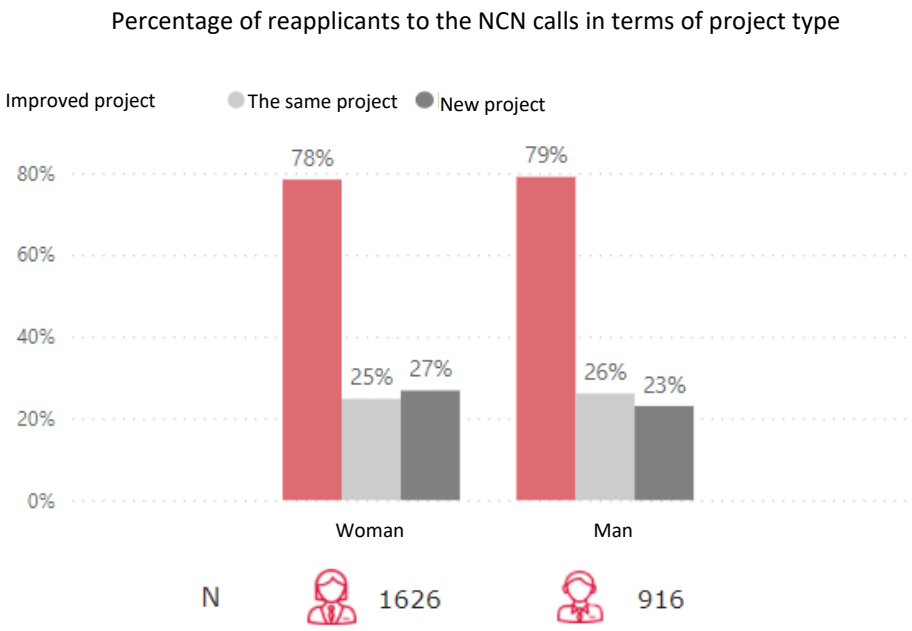
Source: infographic created by the NCN

Among those who have applied for grants under NCN calls[3], a similar proportion of men and women (M 76% and F 78%) have at least once failed to secure funding for their research idea and had their proposal rejected during evaluation. When rejected, both groups expressed equal interest in applying again. Half of male and female respondents decided to submit a proposal in subsequent rounds of NCN calls (F 52% and M 50%).

Among those who applied again[4], a similar proportion of men and women decided to reapply with an improved version of the original project (F 78% vs. M 79%); more women preferred to submit a completely new and different research proposal (F 27% vs. M 23%) (fig. 5).

[3] The percentages refer to subgroups – the data represent 3103 female and 1821 male respondents.
[4] The percentages refer to subgroups – the data represent 1626 female and 916 male respondents, or 43% of all surveyed women (and 52% of female applicants to the NCN) and 44% of all surveyed men (and 50% of male applicants to the NCN).

Fig. 5. Types of projects submitted when reapplying to NCN calls



Source: infographic created by the NCN

Our survey indicates that men and women apply for research funding for very similar reasons. The dominant motivation was a desire to develop their research and/or continue earlier projects (F 85% and M 83%). Respondents also reported they wanted to advance in their research careers (F 83% and M 77%) and solve an important research problem (F 69% and M 68%). Factors such as securing an additional source of income (M 47% vs. F 40%) and peer encouragement (M 25% vs. F 19%) were more frequently reported by men (fig. 6).

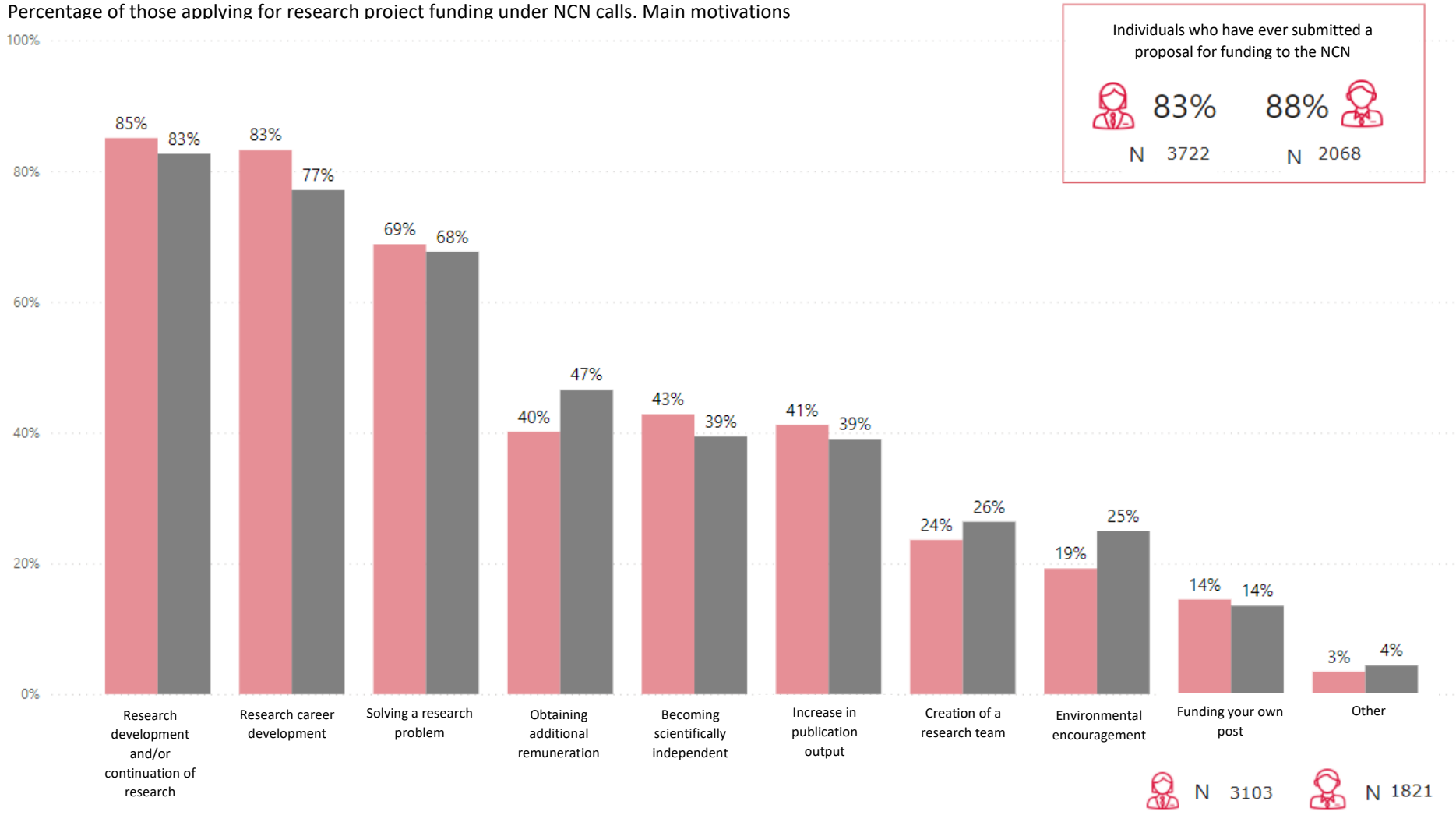
When it comes to factors behind a decision not to apply for funding under NCN calls, however, there are clear disparities among the two genders[5] (fig. 7).

Women are more likely than men not to respond to calls for fear that their research record is insufficient (F 59% vs. M 37%); more women also doubt their odds of success (F 43% vs. M 26). Men more frequently reported that they did not have enough time to prepare a proposal for submission because of their involvement in projects conducted by other researchers (M 31% vs. F 26%).

Other reasons for not applying included the lack of time due to family responsibilities (F 26% vs. M 13%), lack of support at the home institution (F 25% vs. M 14%), and lack of assistance from the home institution in the process of preparing the proposal (F 21 % vs. M 12%). Based on these figures, we may venture a conclusion that women are more heavily influenced by their work and family environment in their decisions not to apply for NCN funding.

[5] The percentages refer to subgroups – the data represent 619 female and 247 male respondents, or 17% of all surveyed women and 12% of all surveyed men.

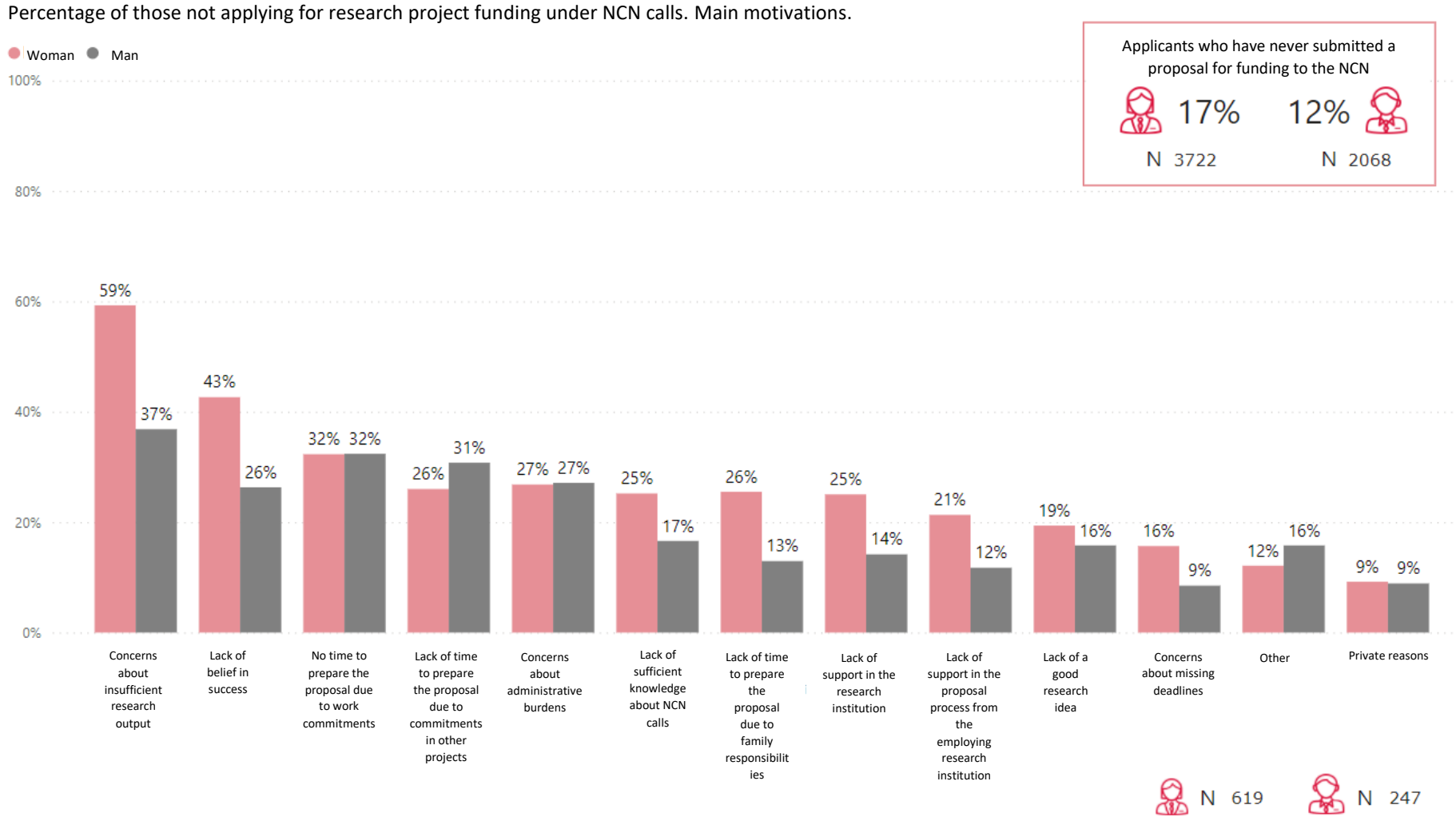
Fig. 6. Applying for research funding under NCN calls. Main motivations.



Respondents could choose more than one answer, which is why the percentages do not add up to 100%.

Source: infographic created by the NCN

Fig 7. Decisions not to apply for research funding under NCN calls. Main motivations.

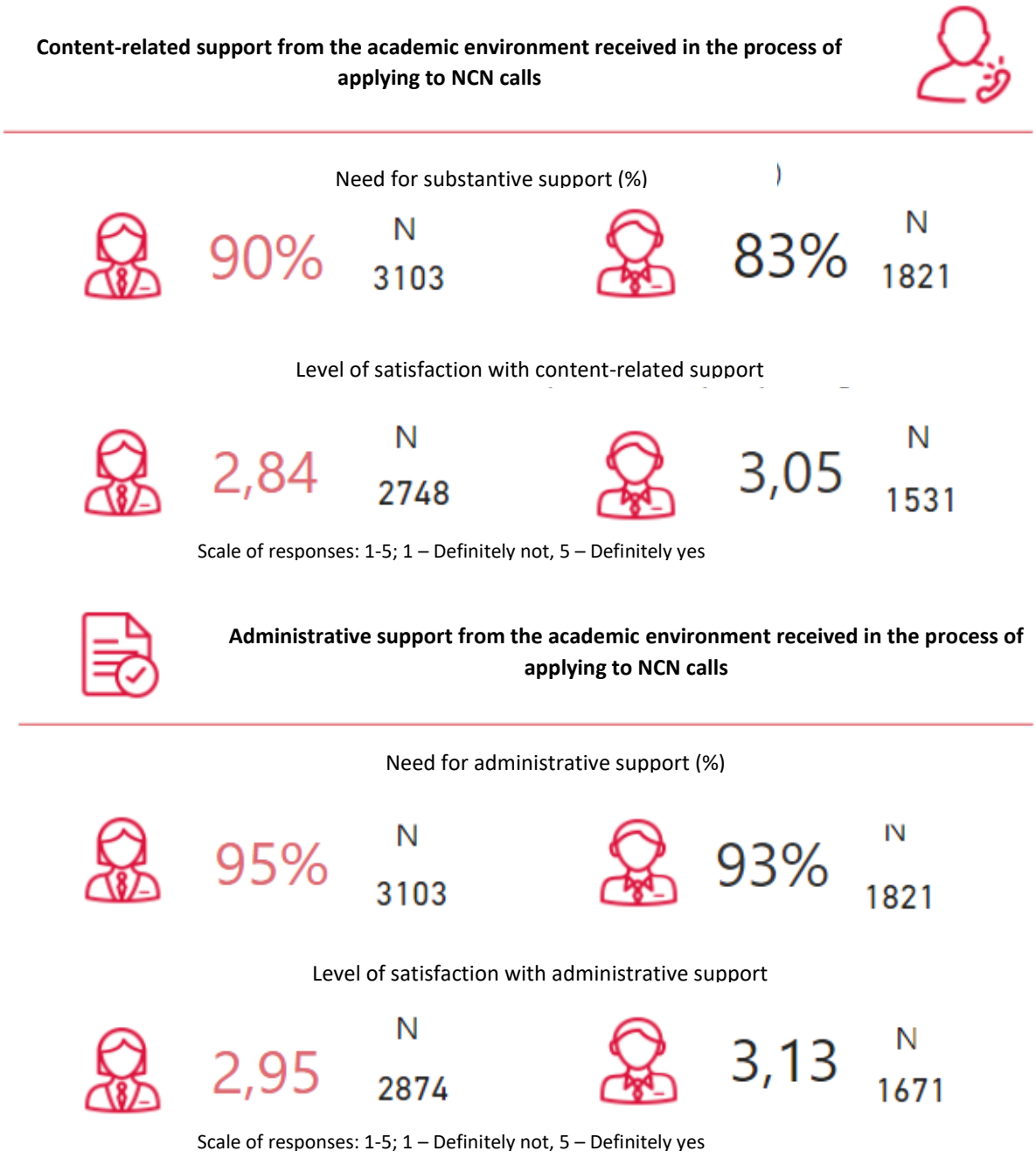


Respondents could choose more than one answer, which is why the percentages do not add up to 100%.

Source: infographic created by the NCN

The survey clearly indicates that an important role in the process of applying to NCN calls is played by the level of support that the applicants receive from their own academic environment. As many as 90% of women and 83% of men could use project content-related support, and even more (F 95% and M 93%) needed administrative backing. Women were much less satisfied with the assistance they received, even though both groups rated it positively, both in terms of content-related and administrative support (fig. 8).

Fig. 8. Content-related and administrative support from the academic environment received in the process of applying to NCN calls



Source: infographic created by the NCN

More than one in three respondents pointed out that the terms and conditions of NCN calls included provisions that could create difficulties when preparing research proposals (F 37% and M 34%). Respondents were asked a series of open-ended questions to tease out the details of the specific difficulties and obstacles they had encountered. The findings are summarised below. Importantly, no differences were observed between the genders in this respect.

Some respondents argued that the applicants' research record is given too much weight in proposal assessment[6], which may favour principal investigators who have previously won research grants. According to this group, this may reduce the odds of success for those who cannot demonstrate significant research achievements, supported with publications, and have never headed a research project, even if they do have interesting research ideas to bring to the table.

Similarly, an evaluation that does not account for career breaks in the research record of applicants who need to provide care for children or other family members is also seen as unfair. It is worth noting, however, that the terms and condition of NCN calls include a provision that allows women to extend their call eligibility period (e.g. from the date of PhD defence), as well as the period for which their research record is assessed, by 18 months for each child born or adopted. A similar proportion of men and women are aware that the regulation exists (F 63% and M 60%); 18% respondents have actually taken advantage of this option and considered it useful (87% of women who have used the regulation[7]).

Another issue raised by respondents was the assessment of research record through the lens of how effective the applicant has been at winning European research funds. Respondents argued that just because a project is funded from foreign sources does not mean it surpasses Poland-based projects in terms of scientific excellence.

A small group of respondents of both genders consider the requirement to submit proposals in English as a major hurdle. Some are not fluent English speakers, which generates extra translation costs. In order to qualify for the second stage of SONATA BIS and MAESTRO calls, applicants are also required to sit an interview in English. If they do not have adequate language skills, this requirement may prove to be a problem.

The complexities of the proposal drafting procedure also create difficulties for many respondents. Administrative intricacies and complex formal requirements, they argue, consume excessive amounts of time and attention, which could otherwise be invested in actual research.

Other difficulties listed by respondents include forced research mobility. Oftentimes, this requirement stops potential candidates from applying, as they cannot change their place of residence due to other commitments, including their personal situation. According to some,

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[6] The criterion of "qualifications and research achievements of the principal investigator" in the evaluation of proposals submitted to the NCN differs between the calls and is always adjusted to account for career level. For instance, the weight given to this criterion in PRELUDIUM, a call targeted at researchers without a PhD degree, is just 10%. Principal investigators who cannot demonstrate any research achievements are thus not disqualified from subsequent stages of proposal review. On the other hand, under the MAESTRO call, which is addressed at experienced researchers, the same criterion represents as much as 45% of the final score.

[7] Usefulness was evaluated by female respondents who had taken advantage of the regulation, i.e. 419 researchers (18% of surveyed women).

their refusal to accept employment in a geographically remote research centre has significantly stymied their research growth. A small number also pointed out that restrictions on hiring postdoctoral researchers at their home institutions cause a brain drain of experienced specialists whose research projects are already well underway[8].

The fact that peer reviewers remain anonymous, while the identity of principal investigators is fully disclosed during peer review, also sparks controversies among respondents. However, it is important to bear in mind that the principle of full disclosure adopted by the NCN with regard to applicants is a *sine qua non* of reliable peer review, as it enables the evaluation of all review criteria, including the research and publication record of the principal investigator. These criteria are a gold standard in grant programmes all over the world and make it impossible for applicants to remain anonymous; the anonymity of peer reviewers is also widely accepted in the world of research. Project-funding entities rely on a procedure of single-blind peer review, as opposed to double-blind peer review, which is commonly employed in the assessment of research papers by certain journals. Another problem reported by a small number of respondents was that appeals[9] against an unfavourable review cannot argue that the reviewer lacked adequate expertise in the subject. If it were possible, some applicants would be more likely to reapply in NCN calls. However, it is important to remember that research-funding procedures adopted under the call system typically rule out the possibility of appeal against merit-based reviews.

According to some respondents of both genders, the introduction of Open Access (OA) policies is also problematic. They argue that the amount of funding awarded for publishing purposes is too low. As a consequence of the OA policy, researchers are more likely to publish in so-called predatory journals, where articles do not undergo reliable peer review, or need to choose between publishing several articles in low-impact journals as opposed to one in a highly recognised journal.

The age criterion for call eligibility is also reported by some respondents as an obstacle to applying. This is particularly true of PhD holders who are too old to submit proposals for young researcher grants but still too young to apply under calls targeted at researchers with a significant research record. The only call for which they are eligible is OPUS, where they face significant competition.

Other factors that discourage application include problems with subsuming interdisciplinary proposals under specific discipline panels. Respondents point out that there are not enough different domain descriptors, which means that such projects are included in the panels that most closely match their research subject. The outcome, some argue, is that researchers who work in very niche disciplines cannot successfully compete against research ideas that are better represented in the academia.

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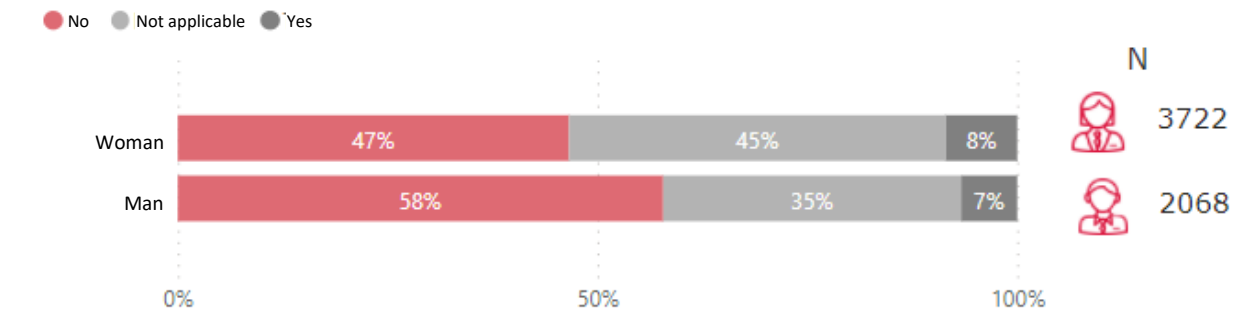
[8] In accordance with current NCN regulations, a postdoctoral position may be filled by a person who earned their PhD degree in an entity other than that in which they seek employment or completed a continuous and well-documented post-doc of at least 10 months in an entity other than the host institution of the project in a country other than that in which the PhD degree was conferred. The post-doc must be selected through an open call.

[9] In accordance with Article 33(2) of the Act on the National Science Centre (Journal of Laws of 2019, item 1384), an appeal against the decision of the Director of NCN can only be lodged in the event of a call procedure violation or another formal breach. Formal violations include errors in the call procedure, such as when the provisions that regulate peer review under NCN calls (i.e. relevant legal acts, resolutions of the NCN Council, and orders of the NCN Director) are not applied or applied erroneously.

3.2. Applying for research funding from sources other than the state budget (so-called foreign grants)

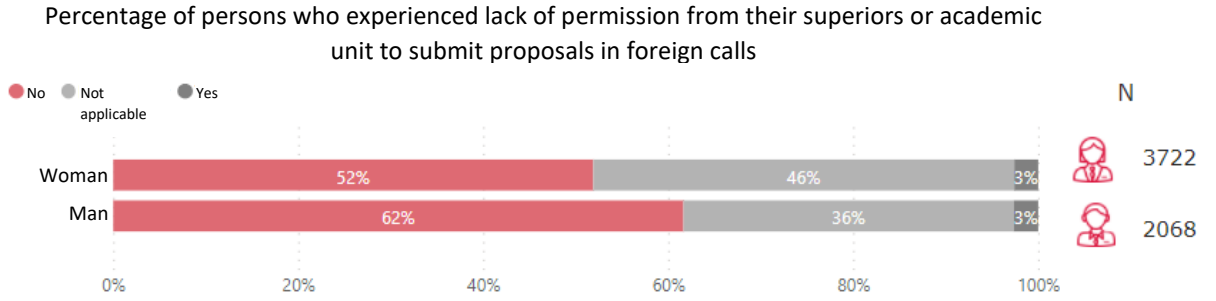
More men (35%) than women (28%) report that they have submitted research proposals to foreign institutions and a greater proportion of men have been awarded funding (M 22% vs. F 17%). At the same time, no differences were observed between the two genders in terms of the frequency with which they encountered difficulties or attempts to discourage them from applying in foreign calls (F 8% vs. M 7%) (fig. 9) or were flatly refused permission to do so by superiors or the home institution without a clear reason (F 3% vs. M 5%) (fig. 10).

Fig. 9. Attempts to create hurdles or discourage researchers from applying for research funding under foreign calls



Source: infographic created by the NCN

Fig. 10. Refusal of permission to apply for research funding under foreign calls by superiors or the institution



Source: infographic created by the NCN

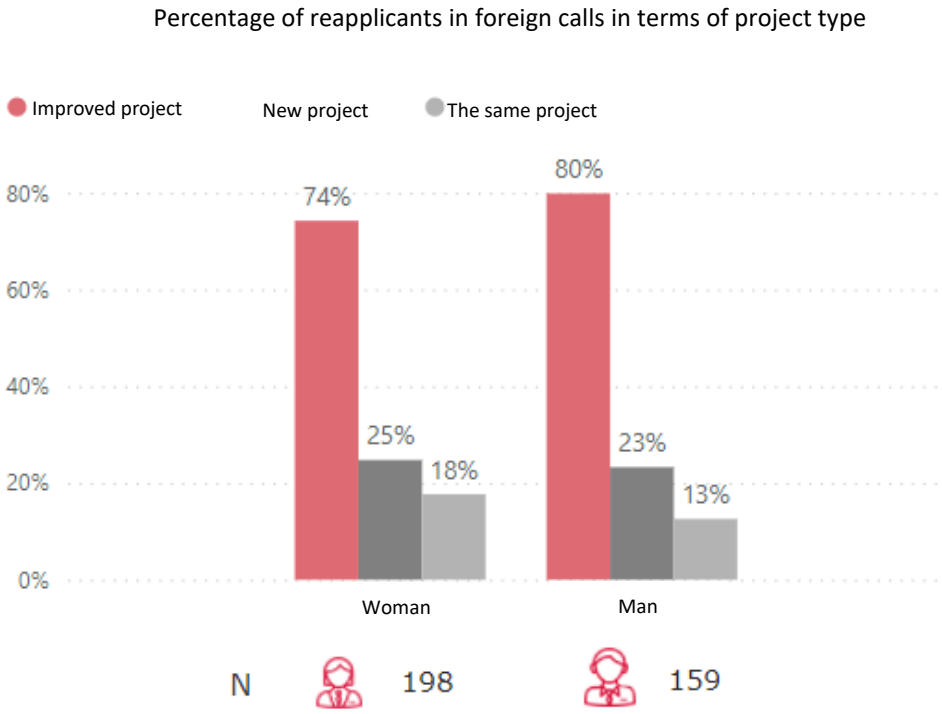
Importantly, 80% of all respondents have previously completed foreign fellowships or won international scholarships, etc. On the other hand, only 30% have attempted to get funding for their research project outside Poland, which allows one to theorise that international experience did not play a role in decisions to enter foreign calls (see appendix 1). In terms of scientific titles and degrees, 79% of all respondents hold at least a PhD, which makes them eligible for submitting grant proposals under foreign calls. Seen in this context, the number of applicants who seek funding from international agencies is rather low. Approximately one in four respondents (F 26% and M 23%) has decided not to respond to any calls announced outside Poland.

Among those who have responded[10], slightly more men than women have failed to acquire funding at least once, with their project being rejected in the process of peer review (F 65% vs. M 70%). Following rejection, both groups expressed much lower levels of interest in reapplying, as compared to their motivation in NCN calls, which was discussed above. Approximately one in five respondents of either gender decided to submit another proposal in subsequent editions of foreign calls (K 19% and M 22%), as compared to one in two for NCN calls.

Among applicants who decided to reapply[11], women were a little less likely to submit an improved version of the rejected project (F 74% vs. M 80%) and preferred to request funding again for the same project (F 18% vs. M 13%) (fig. 11).

[10] The percentages refer to subgroups – the data represent 1052 female and 734 male respondents, or 28 % of all surveyed women and 35% of all surveyed men.
[11]The percentages refer to subgroups – the data represent 198 female and 159 male respondents, or 5.3% of all surveyed women (and 19% of women responding to foreign calls) and 7.6% of all surveyed men (and 22% of men responding to foreign calls).

Fig. 11. Types of projects submitted when reapplying to foreign calls



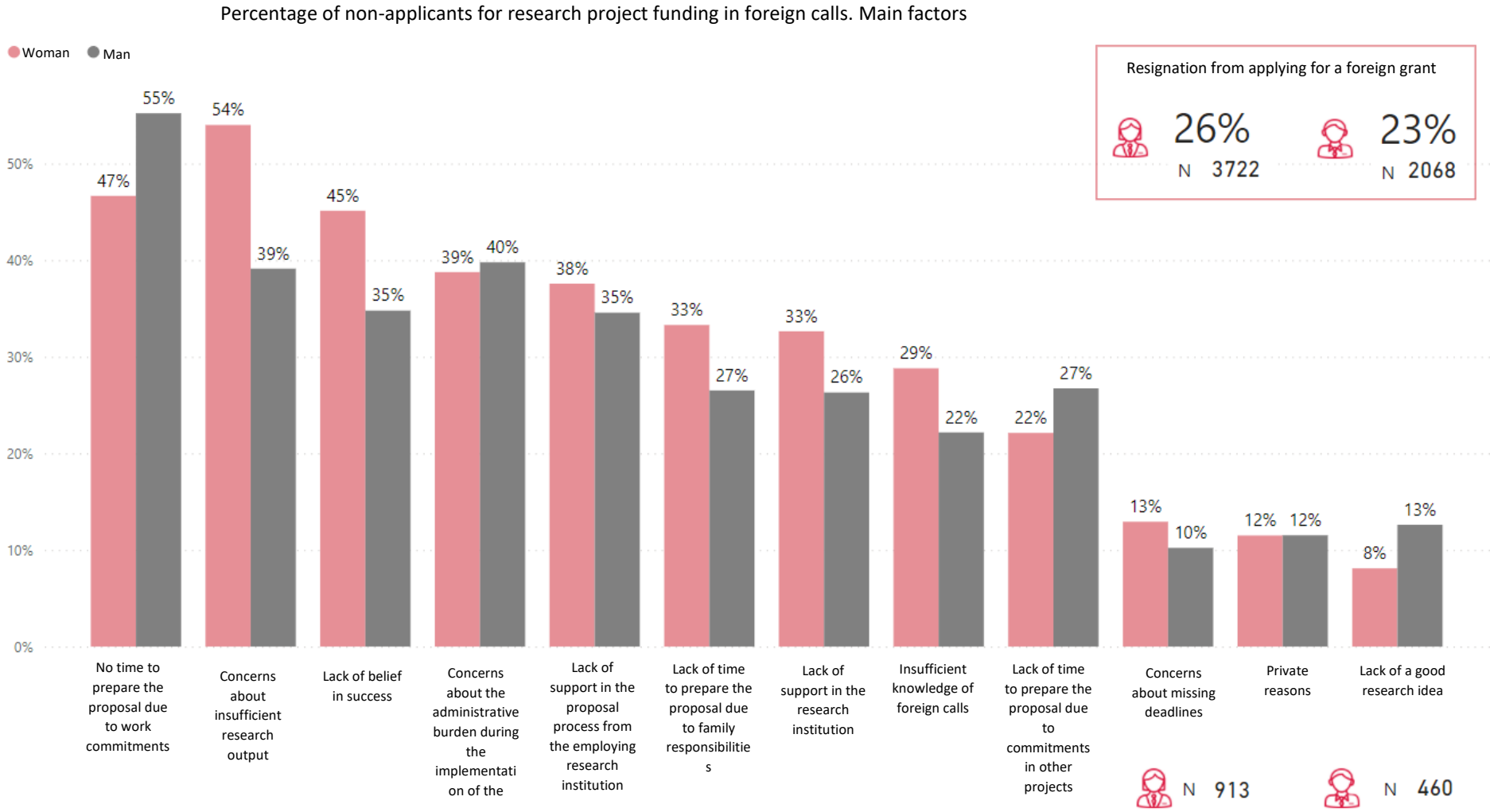
Source: infographic created by the NCN

The main factor that prevents women from responding to foreign calls is a fear that their research record might prove inadequate[12] (F 54% vs. M 39%, of all those who have weighed up submitting a proposal[13]). Men, on the other hand, tend to report that other professional commitments leave them no time to prepare a proposal (M 55% vs. F 47%).

Women are also more likely than men to list the following factors: doubt in the odds of success (F 45% vs. M 35%), lack of time due to family responsibilities (F 33% vs. M 27%), lack of support from the research institution (F 33% vs. M 26%), lack of relevant knowledge about foreign calls (F 29% vs. M 22%). The last of these was brought up more frequently than for domestic calls (F 25%, M 17%) (fig. 12).

[12] Whether there are rational grounds for this assessment, in the context of men's greater success rates in foreign calls, will be a subject of further in-depth data analyses.
[13]The percentages refer to subgroups – the data represent 913 female and 460 male respondents, or 24% of all surveyed women and 22% of all surveyed men.

Fig. 12. Decisions not to apply for funding in foreign calls. Main factors.



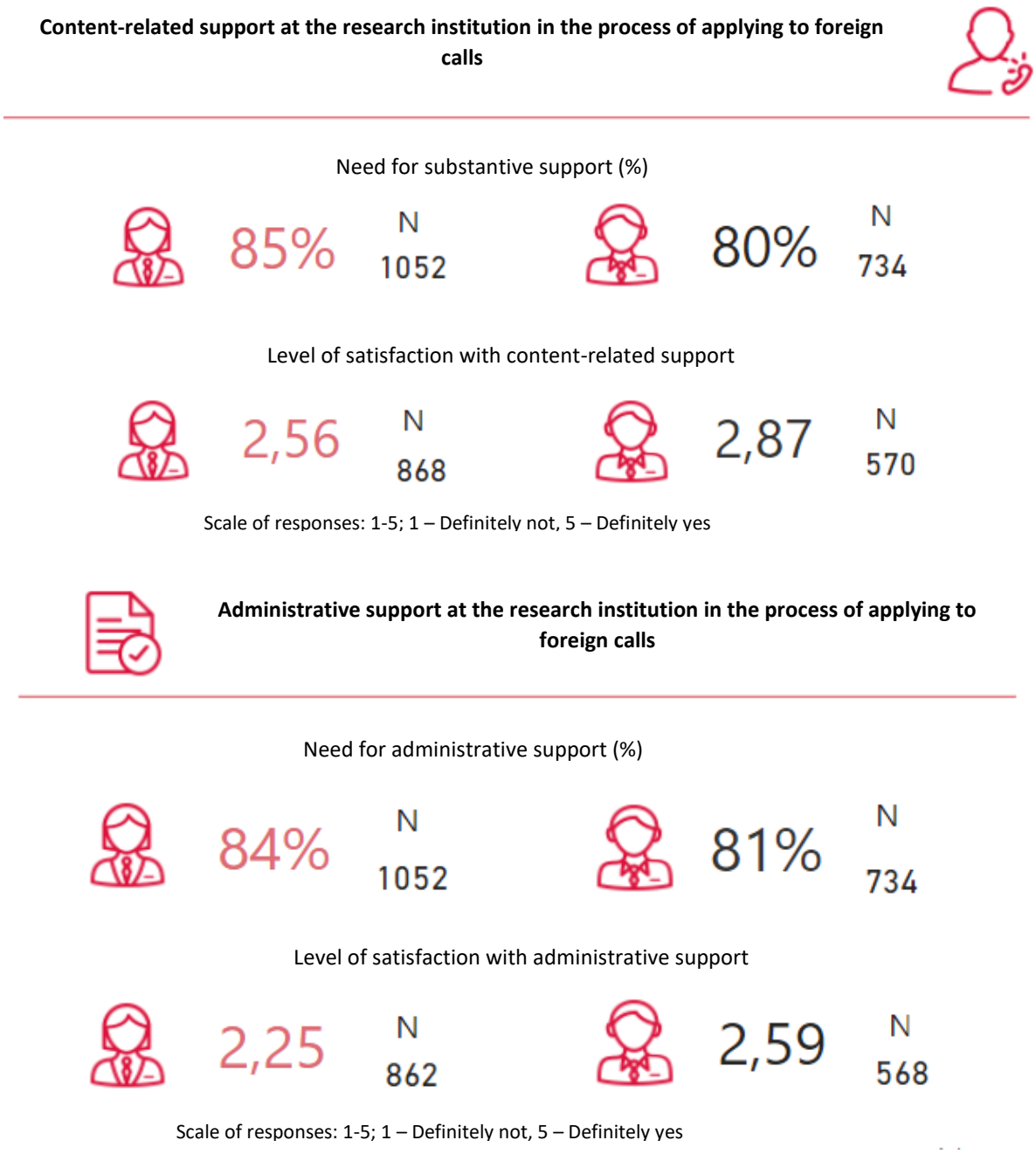
Respondents could choose more than one answer, which is why the percentages do not add up to 100%.

Source: infographic created by the NCN

More frequently than women, men also reported that they did not apply for funding from foreign institutions because they were involved in other projects and had no time (M 27% vs. F 22%) or could not come up with a good research idea (M 13% vs. F 8%).

Just as was the case for NCN calls, respondents emphasised the importance of support from their home institution when preparing proposals for submission in foreign calls. Approximately 85% of women and 80% of men needed content-related and administrative assistance. Overall, women were less satisfied with the support they received but the overall rating was positive, both in terms of content-related and administrative assistance (fig. 13).

Fig. 13. Content-related and administrative support at the research institution in the process of applying to foreign calls



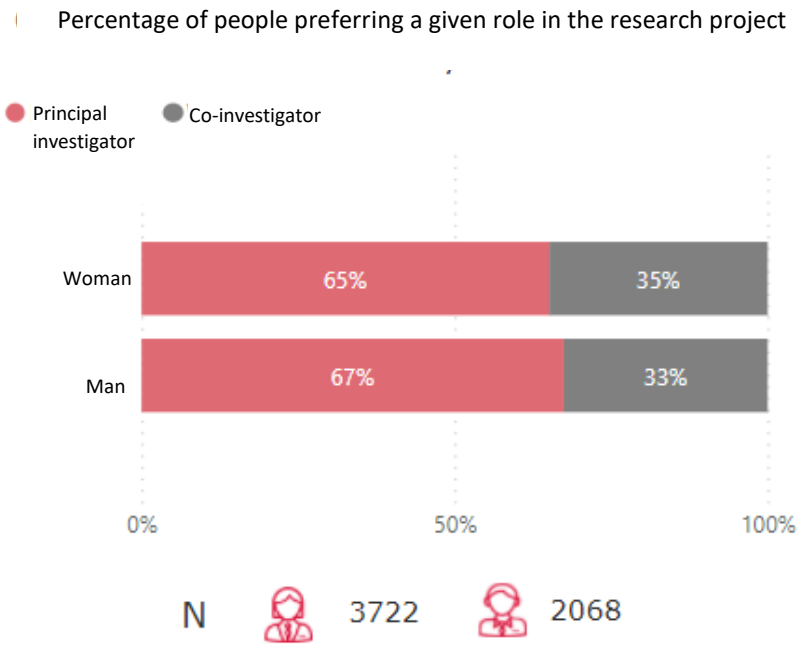
Source: infographic created by the NCN

3.3. Managing projects and research teams

As compared to men, women have less experience in conducting their own call-funded research projects (F 64% vs. M 73%) and managing research teams (F 43% vs. M 55%). Nevertheless, the position of principal investigator holds similar appeal for both genders. Men (67%) and women (65%) were almost equally likely to report they would like to work in that role (fig. 14).

The survey reveals a difference of opinion between men and women when it comes to the role of co-investigator in a research project (fig. 14; the role is preferred by 35% of women and 33% of men). A staggering 81% of men and only 69% of women indicated that they would opt for that role in order to avoid the burden of bureaucracy[14]. Women (50%) often fear that their research record might prove inadequate for the position of principal investigator; similar doubts are expressed by only 39% of men. Men and women alike prefer situations in which they have less responsibility (F 37% vs. M 35%), but female respondents express more fears that they might be less available for family reasons (F 31% vs. M 16%), which could be a setback for a principal investigator. Both genders are similarly unwilling to lead a research team (F 19% and M 21%) (fig.15).

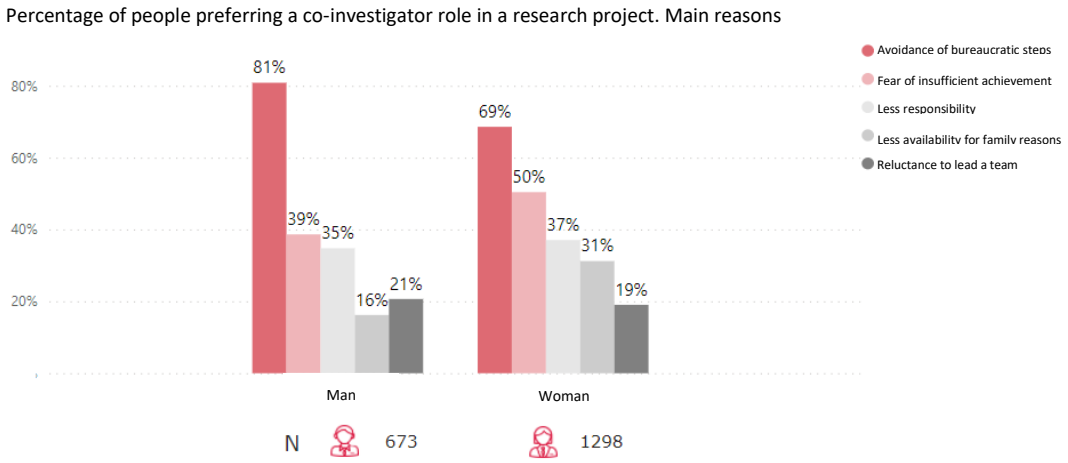
Fig. 14. Preferred project roles for men and women



Source: infographic created by the NCN

[14] 1298 female and 673 male respondents explained the reasons behind their preferences.

Fig. 15. Preferred project roles. Main reasons.



Respondents could choose more than one answer, which is why the percentages do not add up to 100%.

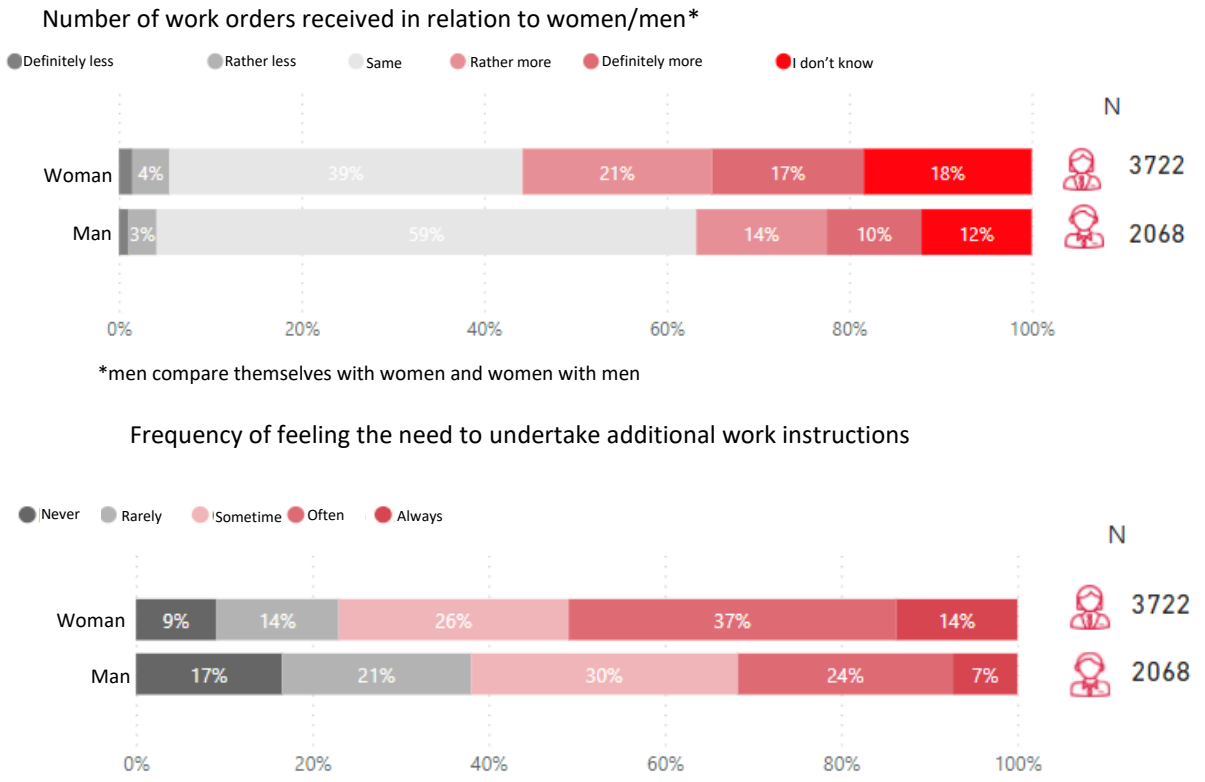
Source: infographic created by the NCN

4. Gender equality in the workplace

Female respondents reported having experienced gender discrimination in their academic environment much more frequently than men (F 36% vs. M 9%). They were also more likely to report gender equality violations at their home institution (F 50% vs. M 25%). This disproportion between the experiences of both genders must be clearly emphasised.

Most women declared that they were assigned more responsibilities than men at a similar career level employed in an equivalent position (F 38% vs. M 24% answered “rather more” and “more”). Women were also more likely to feel pressured to accept extra tasks to prove themselves (F 51% vs. M 31% answered “often” or “always”) (fig.16).

Fig. 16. Differences in assigned workload and pressure to accept additional responsibilities



Source: infographic created by the NCN

Female respondents felt that they were paid less than men working in a similar or identical role (F 26% vs. M 5%). Most men did not report any differences in pay between the two genders (F 73% vs. K 34%).

An analysis of actions that reportedly violated gender equality at the home institution and/or the academic environment allowed us to expand our knowledge of the phenomenon. The findings presented below are broken down into two groups (one for respondents to the women’s survey (table 1) and the other for the men’s survey (table 2)).

It is important to note that the nature of gender equality violations at the home institution essentially mirrors the phenomenon as observed on a wider scale, i.e. in the academic environment at large. Some respondents did not want to respond to questions about specific instances of discrimination for fear of repercussions, even though they were explicitly reassured that the survey was completely anonymous. Importantly, discriminatory and exclusionary behaviours were reported to have been perpetrated by individuals of both genders.

Female respondents reported a number of experiences, attitudes and opinions that fell into four distinct categories, including aspects related to their: career, dignity, family life and marital status, and microbehaviours.

Within each category, specific behaviours were ranked in terms of their frequency, as reported by women who answered the survey. The following scale was used: very often, often, occasionally, rarely.

Table 1. Experiences of respondents who filled out the women's survey

Category 1: career

- **unequal pay** (women received lower salaries than men with identical qualifications, employed in equivalent roles at the same faculty and university; women also reported being passed over for awards despite an eligible research record) **[very often]**

- **hurdles to promotion** (men are promoted more often and much earlier; they are overrepresented in management and research positions; women report being discouraged from applying for higher positions and responding to calls; this was particularly true of female researchers who had children and the argument was that they would be unable to meet their job responsibilities if they had to reconcile them with motherhood; similar experiences were recounted by women who had tried to earn a higher degree; the survey clearly indicates that female respondents often stumble into difficulties on account of their plans to build a family) **[very often]**

- **excessive workload** in terms of teaching and administration, disproportionately higher than that of men employed in the same position (in research projects, women were delegated to handle formal issues, while men dealt with actual research work and prepared publications; sometimes they were also expected to perform tasks that went well beyond their job description, e.g. prepare coffee and sandwiches, serve as hostesses at events) **[very often]**

- **omission of women's academic titles** in formal and informal situations (during meetings, conferences, symposiums, as well as inside the research institution; respondents were addressed by their first name, e.g. during official presentations, while men's names were preceded by their full title) **[very often]**

- **discrimination against research achievements,** manifested in the assumption that a woman who works in a male-dominated academic environment, especially at an early career stage, makes a less valuable contribution to the team **[often]**

- **ignoring relevant contributions** to debates, denying women the right to speak, downplaying their level of competence in a given (stereotypically male-dominated) discipline; showing a lack of professional and academic partnership, expressed as a dismissive attitude toward their research record **[often]**

- **lower appreciation of women's work** (women's autonomy in research was often questioned, while men were not doubted to the same extent) **[often]**

- **excessive expectations** (women need to go out of their way to prove their qualifications and take on more responsibilities at work to make up for maternity leave or sick leave; these behaviours were only reported by women) **[often]**

- **financial blackmail** (women's access to research funding was limited; they were often unable to submit a proposal due to the lack of support from their superiors) **[often]**

Category 2: dignity

- **mobbing** by superiors and/or colleagues (many female respondents reported that they experienced mobbing primarily from senior professors and superiors, to whom they had to defer for fear of losing their job; their professional subordination and lack of faith in the effectiveness of seeking redress often prevented them from reporting these violations) **[very often]**

- behaviours that fell under the rubric of **sexual harassment** (verbal, non-verbal, and physical), including the abuse of the superior-subordinate power relationship (female respondents were approached with explicit and implicit sexual offers, including elements of blackmail; they also reported sexual gestures) **[often]**

- **discriminatory language** was used in communication (examples included expressions such as "honey", "girls", "darling", etc. used to undermine the academic credibility of women and belittle them; female respondents reported attempts by men to fraternise with them in public and make comments on their appearance, looks, clothes, as well as violate their personal dignity, e.g. by making lewd allusions, overt flirting; they also reported situations in which a woman's role during academic meetings was reduced to serving coffee) **[often]**

- **age discrimination** (examples included: blocking opportunities for research development, stopping women from earning a higher degree, forcing retirement and blocking promotion) **[often]**

Category 3: family life and marital status

- **discrimination against women who plan or have children** (women were explicitly warned about getting pregnant during projects and heard that motherhood was incompatible with a dynamic research career; some female respondents also reported that their superiors defaulted on their obligation to account for maternity leave in the evaluation of their research record; women on leave were rated lower than those without children; there were also accounts of threats: they heard they could be dismissed or stripped of their grant salaries if they got pregnant or went on maternity leave; these respondents were also

expected to perform tasks not included in their job description and be more active than men in equivalent positions) **[very often]**

- arbitrary **relegation of women to traditional social roles** (women listed examples of stereotypical thinking about the social role of women among academics, which limited their right to pursue a research career, including promotion) **[often]**

- **verbal aggression** (women reported that they were the target of repeated remarks about the impact of their personal and family life on research performance, including insensitive suggestions that they did not have enough time for research work; women emphasised that their superiors took staffing decisions that affected their research career based on their personal situation **[often]**

- **excessive workload placed on childless women** and **verbal abuse** against them (some female respondents reported that childless women were assigned a heavier workload on the pretext that they had no family responsibilities; some experienced verbal abuse because they did not have a family/child/children; behaviours of this kind were only reported by women **[occasionally]**

Category 4: microbehaviours

- **condescension** (female respondents emphasised that some male academics showed an attitude of condescension toward their younger and/or junior female colleagues; such individuals commonly put a great emphasis on the hierarchical power relationship) **[very often]**

- **mansplaining** (women reported frequent instances in which their male colleagues treated them in a dismissive manner, manifested as an arbitrary tone of debate or conversation, also when communicating with women in equivalent or higher positions; respondents reported that their male colleagues tried to force through their own vision of work, research, reasoning, etc.) **[often]**

- manifestations of **paternalism** (unwarranted interference in research activities, failure to respect the autonomy of junior female respondents: women reported that their male colleagues took decisions for them and tried to micromanage their research activities; there were also strict expectations as to forms of address and rule-governed relations with male professors) **[often]**

The responses given by respondents who answered the men's survey were broken down into two categories of gender equality violations, i.e. those that affected their career and dignity.

Within each category, specific behaviours were ranked in terms of their frequency, as reported by men who answered the survey. As in Table 1, the following scale was used: very often, often, occasionally, rarely. It must be noted, however, that the actual frequency of these behaviours may be different on account of the low number of submitted questionnaires.

Table 2. Experiences of respondents who filled out the men's survey

Category 1: career

- **gender-based exclusion** (respondents pointed out that there were special research programmes specifically targeted at women (*Women in Science*), which they saw as discriminatory, because they limited their freedom to apply to any call of their choice; these men argued that gender should not affect the merit-based evaluation of a research idea) **[very often]**

- **gender parity schemes** (in some research centres, respondents encountered what they considered an unwarranted overrepresentation of women in management positions due to gender parity schemes or through the tendency of women to favour other women) **[very often]**

- **gender-based judgments of the choice of research direction** (reports of stereotypical views in the academic community, which considered some disciplines as typically feminine, and the resulting discrimination) **[occasionally]**

- **an easier path to promotion and the privileged treatment of female researchers** (respondents reported situations in which women were rapidly promoted despite having less experience and a less significant research record than their male colleagues; some respondents expressed a sense of injustice that fewer demands were placed on women due to their family responsibilities; some opined that there was a general tendency to treat women more favourably) **[rarely]**

- **limiting opportunities for pursuing research ideas** that would contradict the institution's internal political correctness policy with respect to women, especially those that had children; respondents also mentioned that their superiors refused to accept their involvement in family life, which often resulted in them being barred from participating in new research projects **[rarely]**

- **lack of understanding for equality measures** targeted at men **[rarely]**

Category 2: dignity

- **mobbing** **[often]**

- behaviours that fell under the rubric of **sexual harassment** (offering sexual sponsorship, making it difficult for a man to complete his PhD programme if he refused sexual advances) **[often]**

- **assigning physical tasks** (the most frequent discriminatory behaviour reported by respondents was the belief that men should perform any tasks that involve physical efforts, regardless of the nature of their research work) **[often]**

- **objectification** (emphasis on appearance) **[occasionally]**

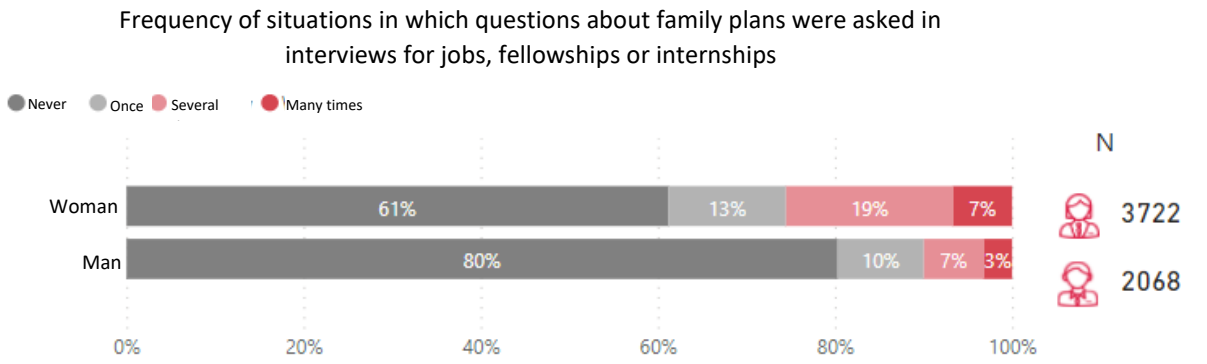
It is important to emphasise that male respondents did acknowledge the presence of discriminatory behaviours toward women, including the omission of titles, inappropriate comments, and attempts to establish ties that go beyond the professional relationship, as well

as the lack of support for practical organisation and research ideas put forward by female researchers.

Regrettably, there were also isolated reports of inappropriate behaviours at the National Science Centre; these included the unsubstantiated, dismissive tone of the feedback some reviewers gave on proposals submitted by female researchers, which belittled their competence and contained references to their personal situation.

Women have a much greater sense of exclusion in the workplace than men (F 41% vs. M 28%). They are also more frequently asked about their family plans during formal job interviews and interviews for fellowships and internships (F 39% vs. M 20% answered “once”, “several times”, and “many times”) (fig. 17).

Fig. 17. Experience of being asked about family plans when sitting an interview for a job, scholarship or fellowship



Source: infographic created by the NCN

Respondents of both genders listed many examples of situations in which they felt isolated in their workplace. Most of these were identical to the list of gender equality violations in the academic environment (Table 1 and Table 2). The situations described below give a broader picture of the issue. It is worth emphasising that there were no differences between the two genders in this respect.

Reported exclusionary behaviours included, first and foremost, the organisation work meetings, team-building events and faculty meetings outside of the opening hours of childcare facilities. Respondents of both genders pointed out that their ability to attend such meetings was thus limited because of their childcare responsibilities. The sense of exclusion is compounded by the fact that work meetings, besides housekeeping matters, often end with important decisions, which are communicated to those who were absent with a significant delay or through unofficial channels. Respondents reported situations in which they were denied access to information on the current affairs of the institution or the information was deliberately withheld. Both genders also felt excluded because of the absence of an automatic notification system to inform about any new changes or opportunities. Some respondents also described situations in which their colleagues or superiors blocked their access to equipment, reagents and labs during the opening hours of childcare and education facilities (schools, preschools, and nurseries).

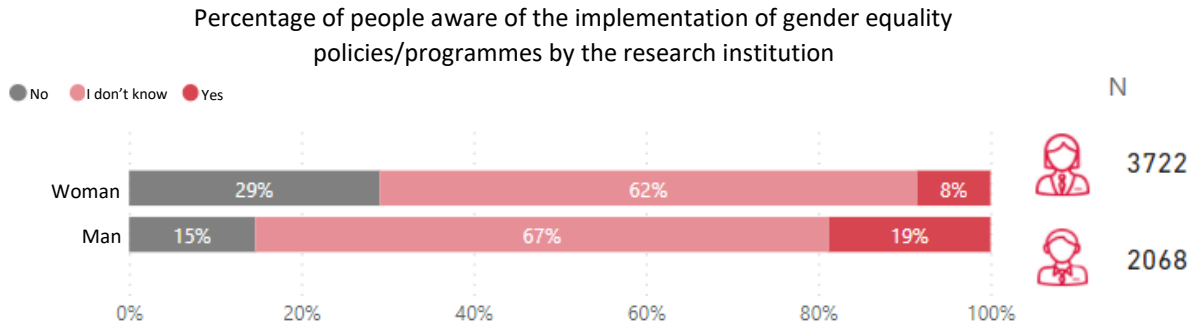
Respondents also commented on the quite common phenomenon of cliques, within which members participate in each other's research projects, while ignoring other colleagues and passing them over for promotion, awards or appointments to various committees and colleges. Some researchers with extensive professional experience and research records favour their proteges or family members, which means that researchers without any links to the privileged clique never receive offers of cooperation.

More often than not, researchers hired at a given research institution under a research grant felt isolated because of discrimination by its full-time employees, who emphasised their temporary status, did not involve them in the daily life of the institution and prevented from fully using its resources.

A certain worldview and sexual orientation likewise caused some respondents to feel alienated and excluded.

Concerning system-level solutions designed to foster equal treatment of men and women in the workplace, more women than men declared that their research institution did not introduce any gender equality mechanisms (F 29% vs. M 15%), although it should be noted that most respondents have a rather limited knowledge on the subject (more than 60% men and women answered “I don’t know”) (fig. 18).

Fig. 18. Gender equality policies/programmes at research institutions



Source: infographic created by the NCN

5. Family situation in the context of job responsibilities

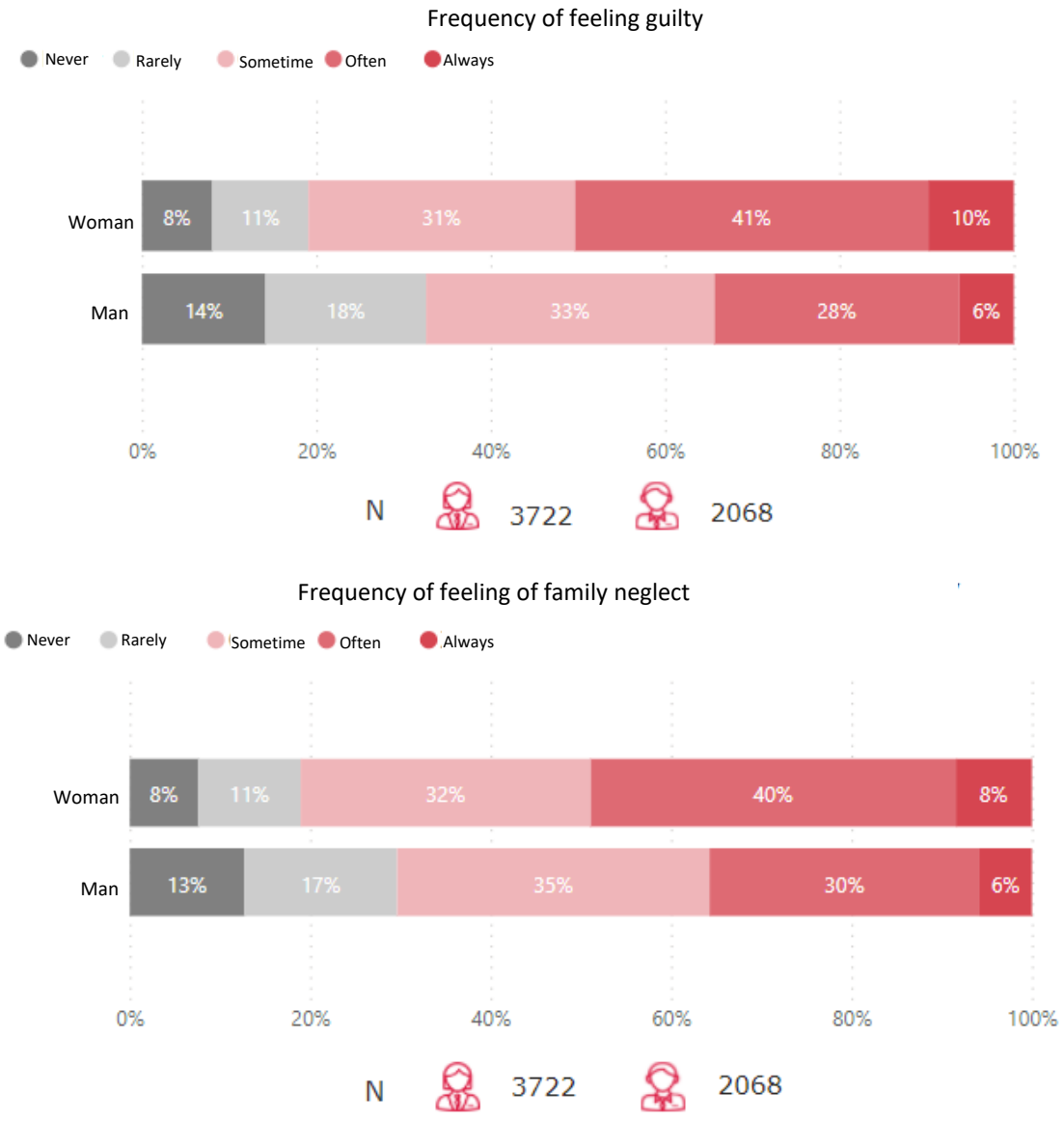
Respondents of both genders reported a similar family situation in terms of how many children they had and how old they were. Both men and women said they experienced feelings of guilt over neglecting their families as a consequence of their job responsibilities. A fundamental difference, however, can be observed in their respective demands for childcare assistance, and especially the availability of parental leave.

Male and female respondents alike frequently reported feelings of guilt over neglecting their families as a consequence of their job responsibilities (F 92% vs. M 87% answered “rarely”, “sometimes’’, “often’’, or “always’’) and working at the expense of time they should spend with their children and/or other family members (F 92% vs. M 86% answered “rarely”, “sometimes’’, “often’’, or “always’’). The frequency with which they experienced these feelings of guilt, however, differed between the two genders. Half of female respondents report that they experience them often or always, as compared to only one third of male respondents (fig.19).

Both men (72%) and women (76%) report that their family members have complained about work responsibilities (the percentage of those who answered “rarely”, “sometimes’’, “often’’, or “always”), with women reporting such situations with a slightly higher frequency (fig. 20).

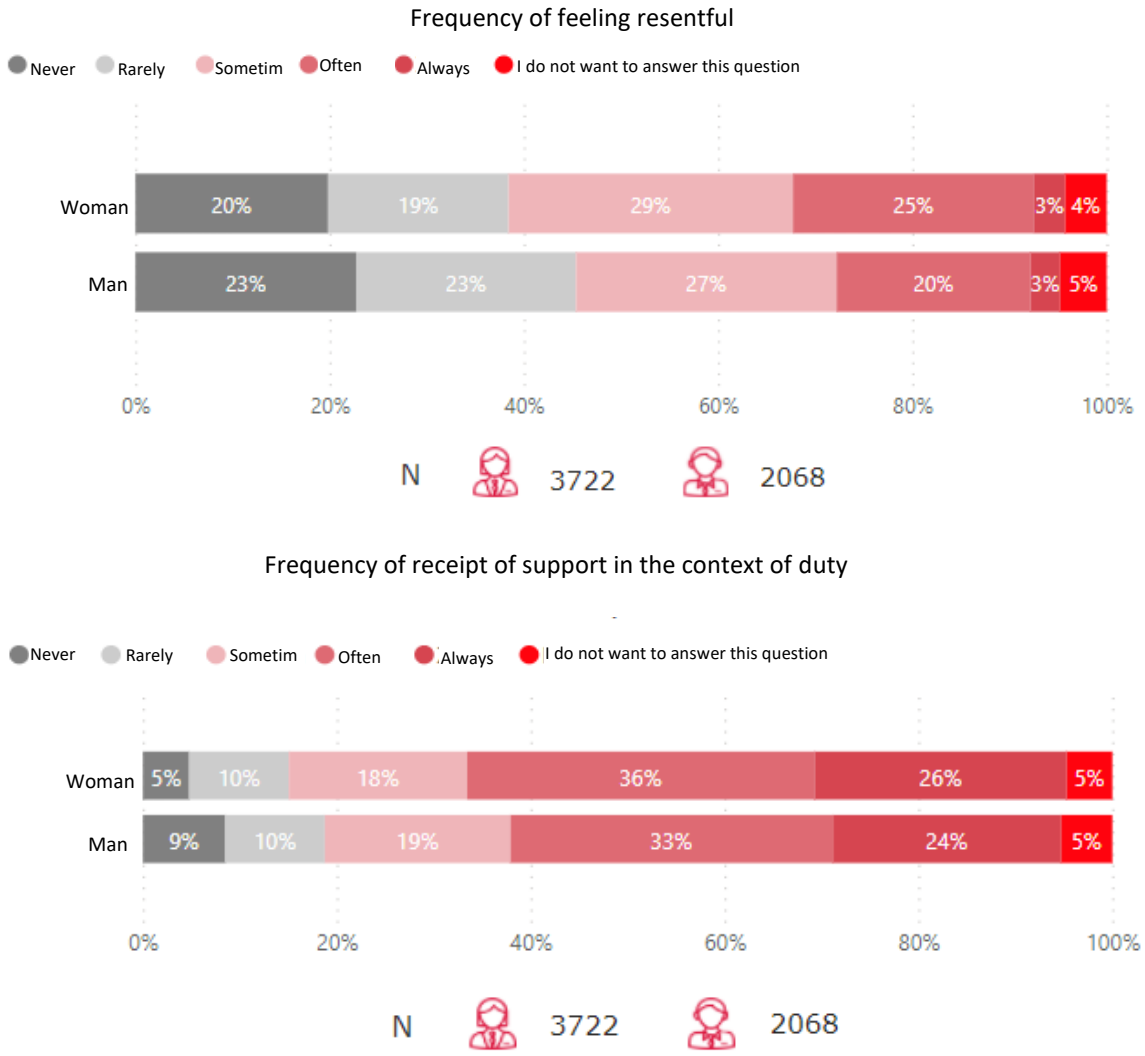
It should be noted that respondents also see their families as a pillar of support in their careers. This is true of 90% of female and 86% of male respondents (the percentage of those who answered “rarely”, “sometimes’’, “often’’, or “always’’). More than half report that they feel supported always or often (F 62% vs. M 57%).

Fig. 19 Feelings of guilt over neglecting the family because of work responsibilities



Source: infographic created by the NCN

Fig. 20. Complaints vs support from family members in the context of job responsibilities



Source: infographic created by the NCN

Respondents who had children[15] reported that the support they received was inadequate. A similar proportion of men and women (F 37%, M 31%) declared that they received no assistance whatsoever despite requesting it. Substantially more women than men (F 23% vs. M 4%) expressed a need for childcare assistance. These data are reflected in the degree to which the two genders take advantage of available parental benefits. The survey shows that 81% of female and 16% of male respondents have used their parental leave. The average total leave time, including breaks related to childcare, as measured in months, was three times as long for women as for men (F 17 months vs. M 5 months). What should be pointed out as well is the huge discrepancy between how respondents of either gender felt that parental leave impacted their careers (fig. 21). Substantially more women than men said that it had a negative

[15] The percentages refer to subgroups – the data represent 1948 female and 1085 male respondents, or 52% of all surveyed women and 52% of all surveyed men.

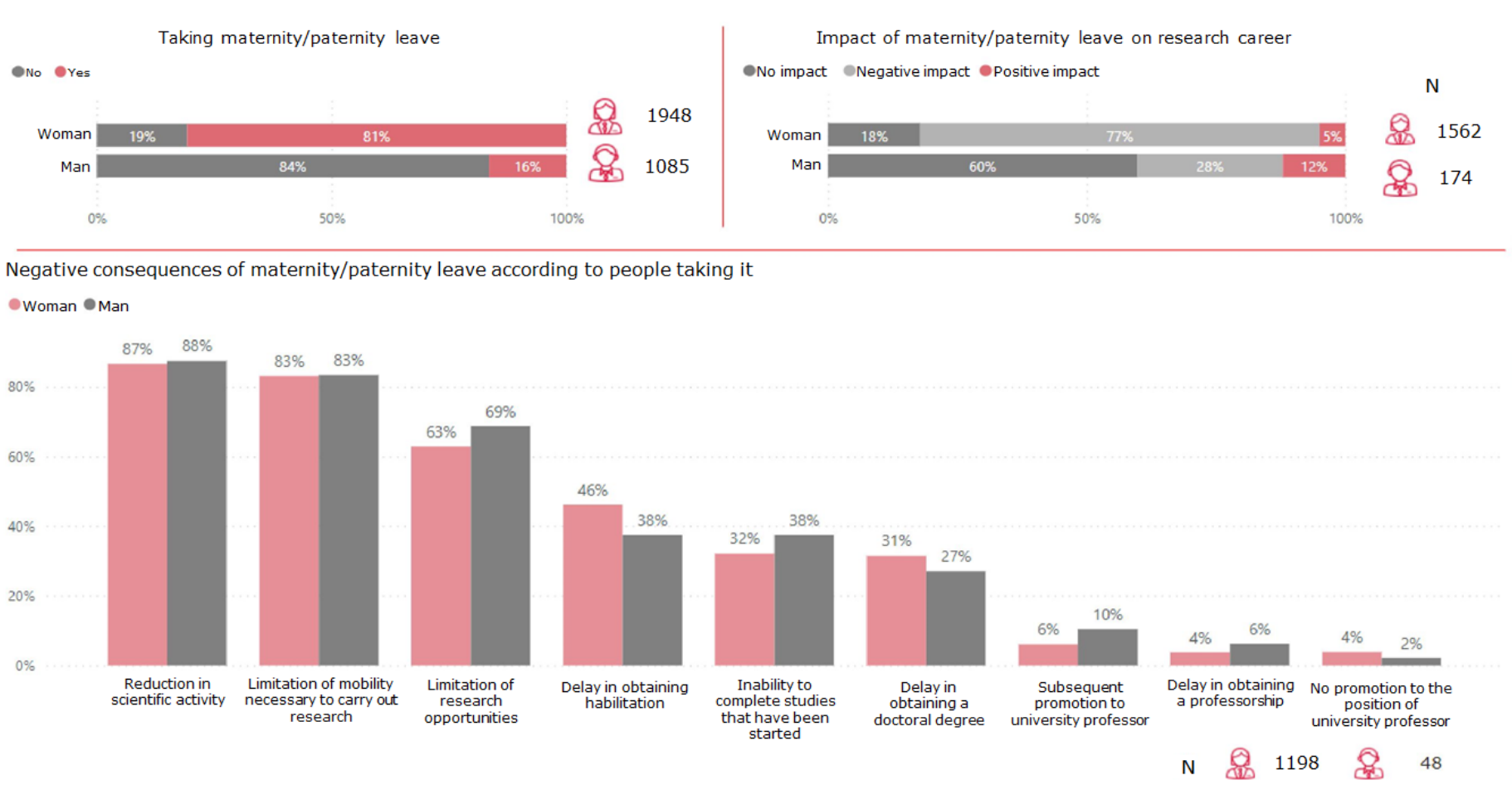
impact on their research career (F 77% vs. M 28%); the main consequences included reduced research activities (F 87%, M 88%[16]) and lower mobility (K 83%, M 83%[17]).

Among those who have not been on parental leave, the assessment of its career impact is even more radical for both genders[18]. Women were significantly more likely than men to point out that such leave may have negative consequences (F 87% vs. M 56%). In analogy to the group described above, these respondents also listed reduced mobility (F 86%, M 78%) and limited research activities (F 80% and M 80%). Particularly telling is the significantly larger proportion of women who mentioned that their promotion was delayed (F 74% vs. M 60%) or never awarded (F 21% vs. M 7%), as a negative effect of parental leave (fig. 22).

The survey indicates that the assessment of the impact of parental leave on research careers depended on whether or not the respondents have taken it themselves. Men who declared that they have been on paternity leave were less likely to report its negative consequences as compared to those who have not. The answer “it had a negative impact” was selected by 28% of men in the former and 56% in the latter group (figs. 21 and 22). Likewise, women who have benefited from maternity leave rated its impact on their research career as less negative than those who have not had that experience. In this case, the differences were less marked, but still significant (77% F vs. 87% F, respectively) (figs. 21 and 22). Due to the small number of men who declared that they had been on paternity leave (174 individuals), the issue requires further study on a more representative sample.

[16] The percentages refer to subgroups – the data represent 1198 female and 48 male respondents who have been on parental leave and answered “it had a negative impact” when asked to evaluate the impact of their maternity/paternity leave on their research career and listed different types negative consequences.
[17] See above.
[18] The percentages refer to subgroups – the data represent 2147 female and 1889 male respondents, or 57% of all surveyed women and 91% of all surveyed men.

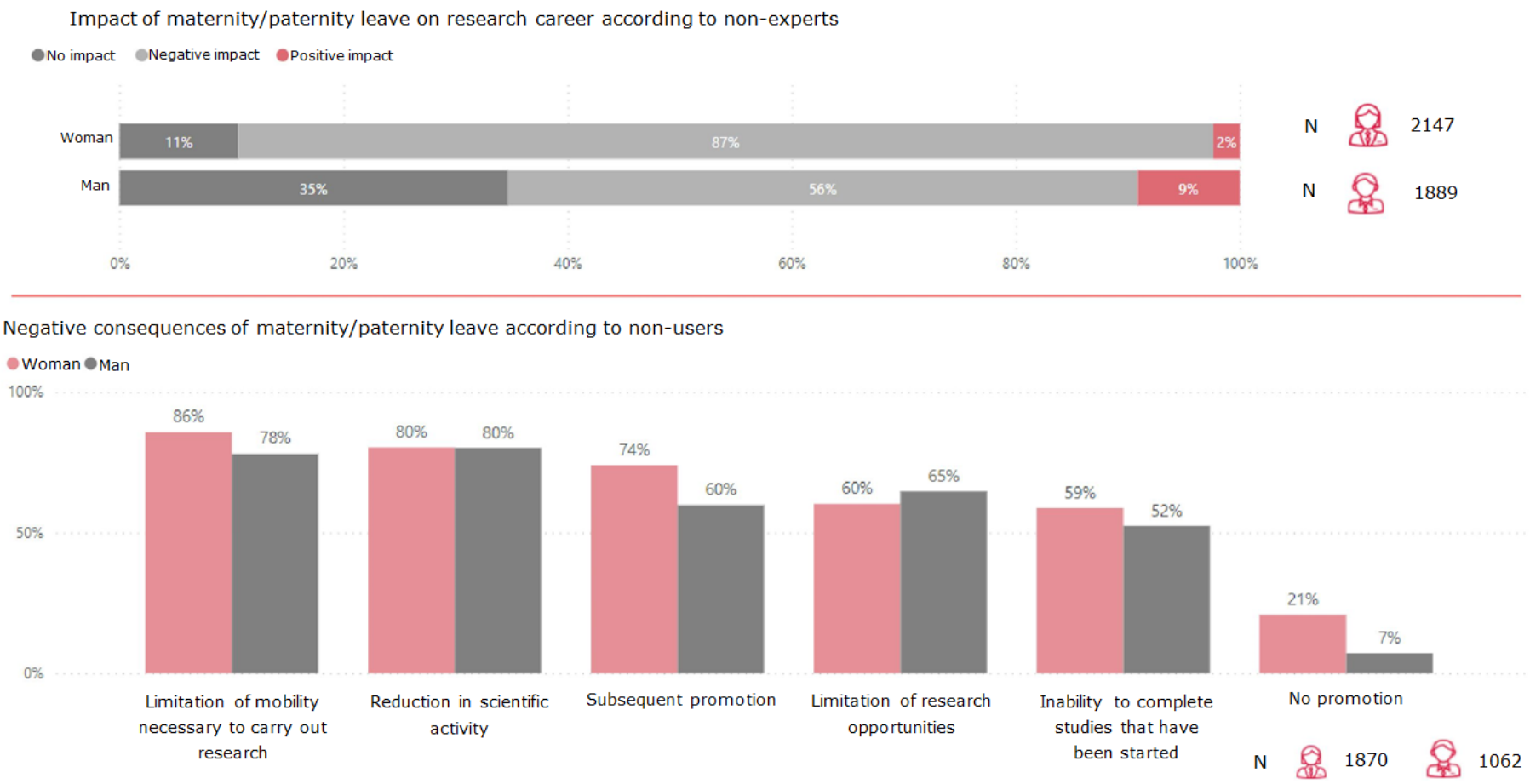
Fig. 21. Use of maternity/paternity leave and the assessment of its career impact among male and female respondents who have had the experience



Respondents could choose more than one answer to the question about the consequences of parental leave, which is why the percentages do not add up to 100%.

Source: infographic created by the NCN

Fig. 22. Assessment of the career impact of a maternity/paternity leave among male and female respondents who have not had the experience

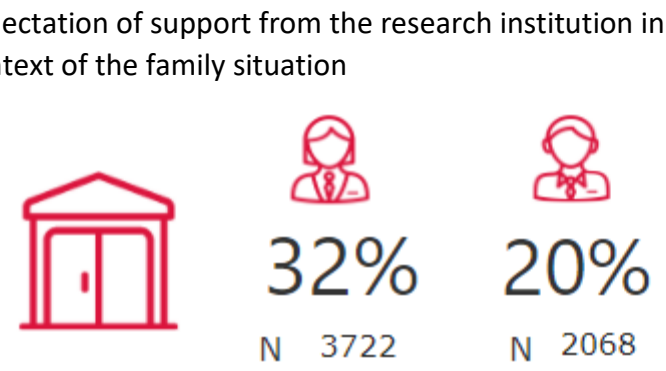


Respondents could choose more than one answer to the question about the consequences of parental leave, which is why the percentages do not add up to 100%.

Source: infographic created by the NCN

Women more frequently expect support from their institution on account of their family situation (F 32% vs. M 20%) in the context of family responsibilities (fig. 23).

Fig. 23. Demand for system-level measures at research institutions to assist researchers in the context of their family obligations

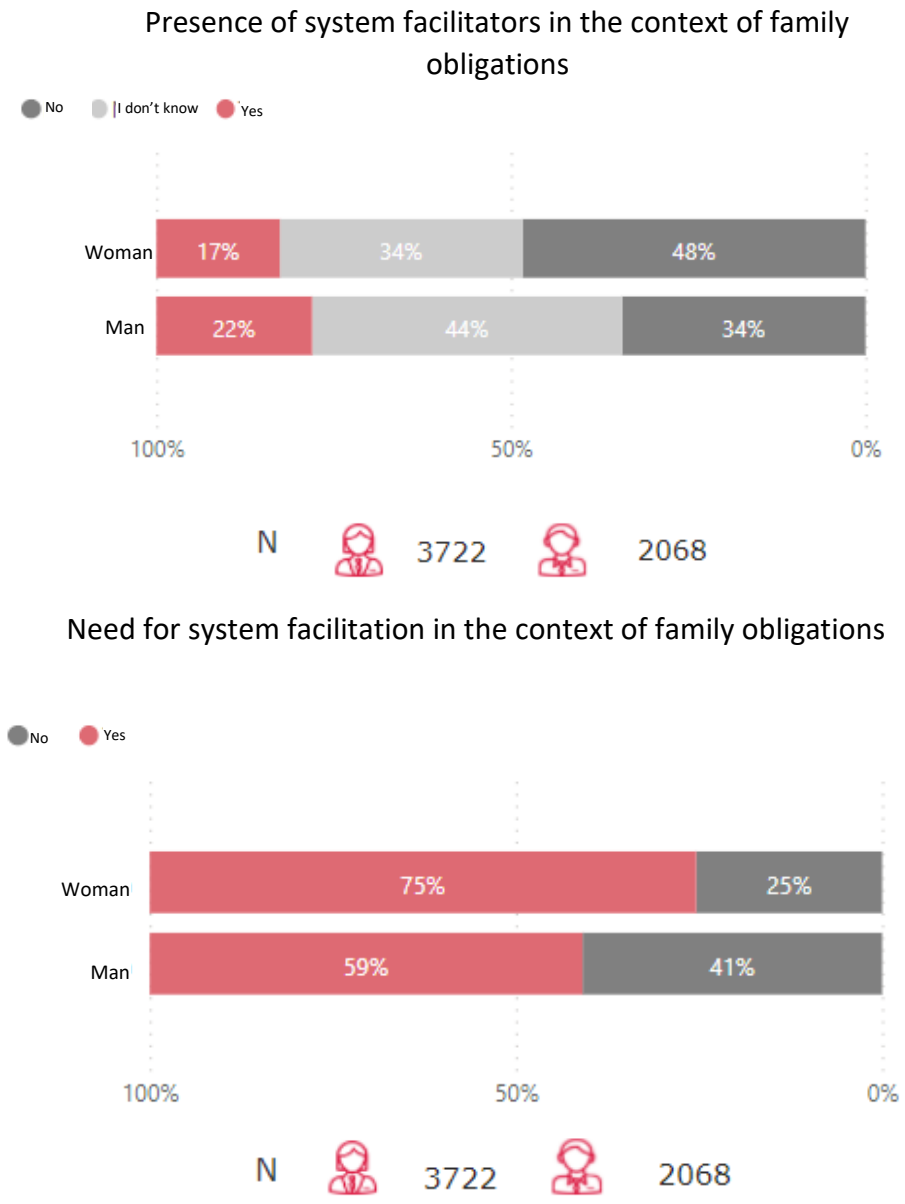


Source: infographic created by the NCN

The highest rated and most frequently mentioned form of support in the survey was empathy. Respondents particularly appreciated when their superiors showed an attitude of understanding toward individuals in a difficult personal situation. Some respondents of both gender could count on their colleagues, who agreed to modify the teaching schedule, as well as superiors, who granted them extra leave when needed, agreed to reduce teaching hours and extended publication deadlines. Highly rated formal solutions included flexible work hours and the opportunity to work online, as well as leave extensions and financial support, e.g. economic aid. Survey respondents who had children also appreciated having a convenient work schedule, where they could teach during hours when childcare facilities are open.

A significantly greater proportion of women than men commented on the lack of system-level solutions to address family responsibilities (F 48% vs. M 34%) and acknowledged the need for such measures (F 75% vs. M 59%) (fig. 24). Respondents of both genders listed a number of solutions they thought should be introduced to create the optimal conditions for research and allow researchers to maintain a good work-life balance.

Fig. 24. Presence and perceived need for system-level solutions at the research institution to assist researchers in the context of their family responsibilities



Source: infographic created by the NCN

One of the key postulates of our respondents was that the research institution should set up and fund a nursery and/or preschool facility. Both genders pointed out that public facilities were often too remotely located or did not have the capacity to accept more children. As a consequence, they frequently had to hire a professional to take care of their children or sign them into private childcare centres. In both cases, the costs were prohibitive.

Another expectation that they raised, and which has already been partially addressed, was the opportunity to work flexible hours. Respondents of both genders emphasised the importance

of this solution, arguing that teaching hours should be allocated within a specific time frame, while research, the evaluation of which could be task-based, should follow an individually agreed plan. Respondents reported that they commonly had to work extra hours, even though both class preparation and teaching should be confined to the legal 40-hour work week. They also said that the opportunity to work online should be maintained.

Respondents argued that women who return to work after maternity leave or provide care for small children should have a reduced teaching load so as to be able to achieve a work and life balance. Under the current system, research projects are usually conducted at the expense of family life.

The hoped-for solutions also included a postulate that maternity leave should be accounted for in the assessment of the research record of female researchers. According to respondents, not doing so discriminates against women on maternity leave, who naturally cannot simultaneously conduct research. Other discriminatory practices include freezing scholarship pay-outs for the duration of the leave and respondents also expect important changes in that area.

Researchers who earn a PhD degree often need to move to another institution and place of residence. System-level measures that would make it possible to pay for the maintenance of accompanying family members would help them take decisions of this kind.

Some respondents who answered the men’s questionnaire also called for special measures aimed at fathers who are actively involved in providing childcare or live as single parents.

They also drew attention to the fact that the solutions should be targeted not only at parents but also at those researchers who have family members under their care.

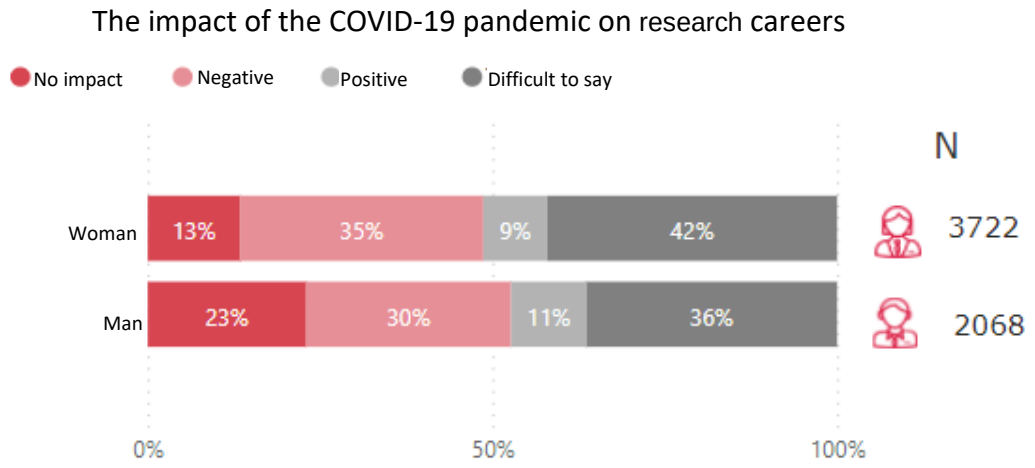
Key solutions listed in the survey included support shown by superiors to employees in a difficult family situation, which manifested as tolerance, empathy, as well as the system-level measures mentioned above.

6. Research during the COVID-19 pandemic

The COVID-19 pandemic has had an impact on our respondents' research activities. Both genders observed negative and positive consequences, but their perception of the measures adopted in their workplace differ, as does their assessment of the reasons behind their own reduced research performance.

According to around one in three respondents of either gender, the COVID-19 pandemic has negatively affected their research career (F 35% and M 30%), while only 13% of women and 23% of men claim that it has had no effect whatsoever (fig. 25).

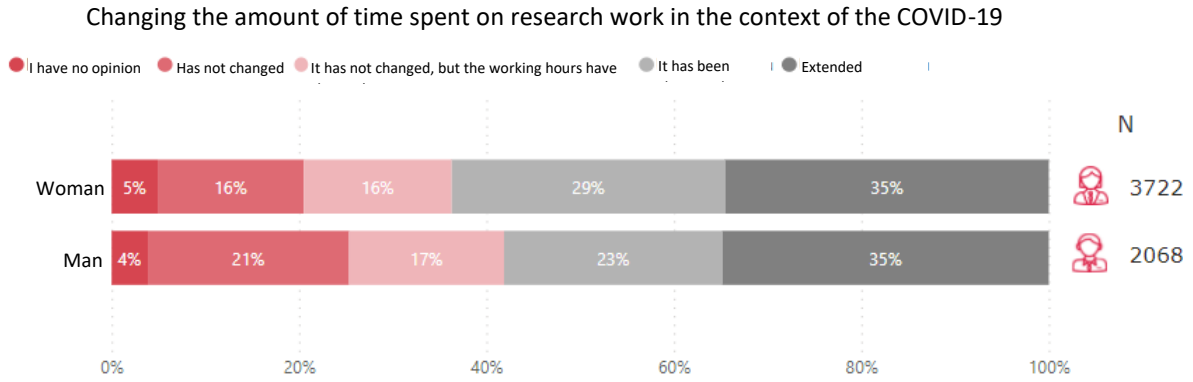
Fig. 25. Career impact of the COVID-19 pandemic



Source: infographic created by the NCN

Around one in four female and male respondents (F 29% and M 23%) reported that the pandemic reduced the time they could devote to research; conversely, one in three said that it increased it (F 35% and M 35%) (fig. 26).

Fig. 26. Time devoted to research in the context of the COVID-19 pandemic



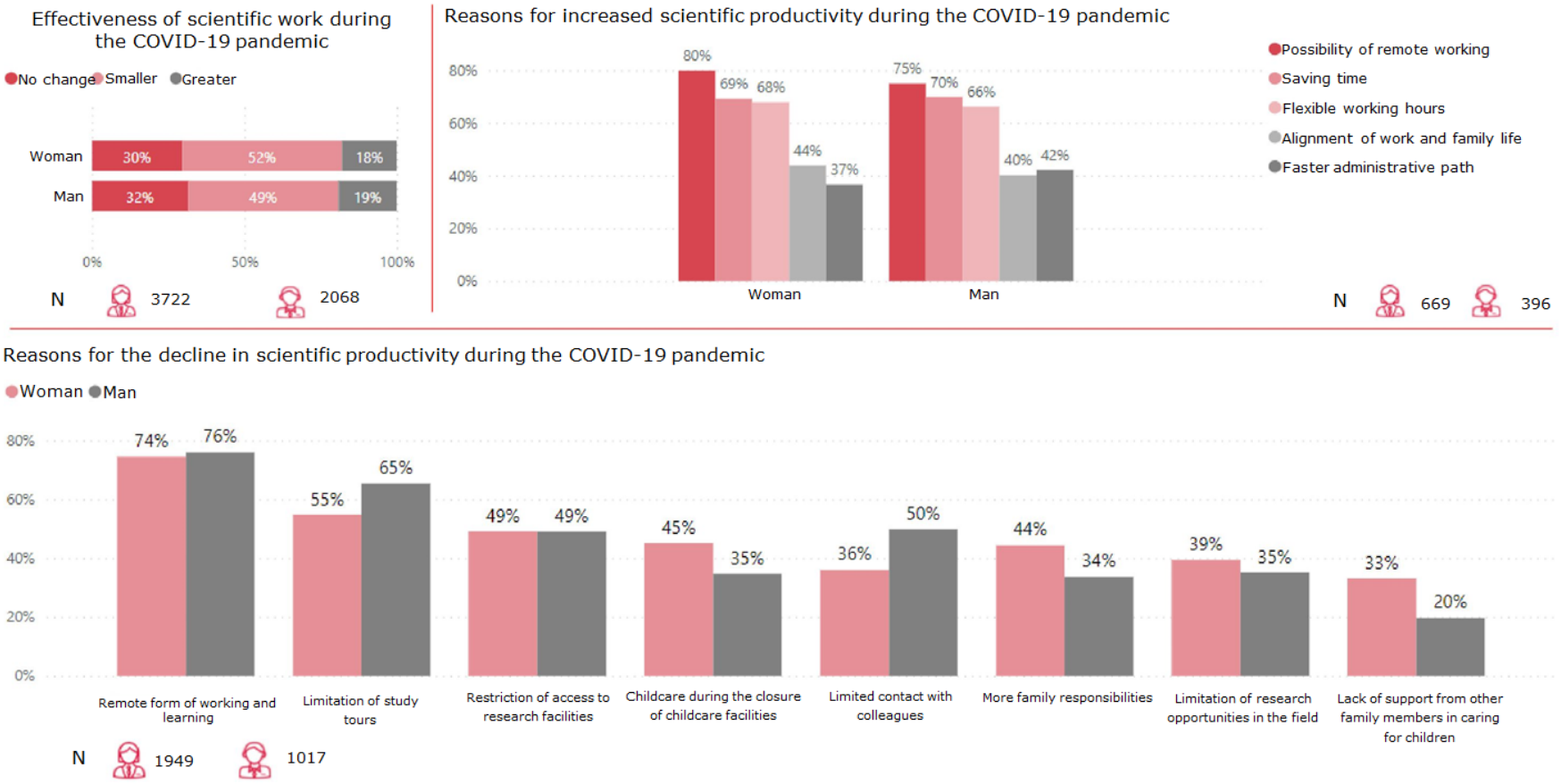
Source: infographic created by the NCN

Both men and women acknowledged the problem of reduced research performance during the pandemic. The phenomenon was reported by 52% of female and 49% of male respondents; one in three men and women observed no differences, while one in five reported that their research efficiency actually increased (fig. 27). The main factors that our respondents listed as reducing their efficiency during the pandemic included the need to shift to online teaching (this was reported by 3/4 of respondents of both genders who observed reduced performance[19]). They clarified that the proportion of time allocated to teaching and research has changed, as class preparation and teaching required a much greater time commitment than before. Practical arrangements also consumed more work. For some respondents, online work meant that they also had to take on additional responsibilities, such as training their colleagues to shift to this mode. Respondents argued that online work blurred the boundaries between work and family life. Because some superiors refused to respect established work hours and expected their employees to perform duties in the evening, respondents reported that they were chronically tired and felt overworked, which, in turn, lowered their motivation and reduced the quality of their work.

Other reasons given for the slump in work efficiency included restrictions on research visits (more important for men) and access to research equipment (equally important for both genders: F 49% and M 49%). Efficiency was also reduced by limited access to the workplace and, at the same time, inadequate conditions at home. For many respondents who engaged in experimental studies, research proved practically impossible.

[19] 1949 women and 1017 men, i.e. 52% of all female and 49% of all male respondents, answered the question about the reasons behind their reduced research performance during the pandemic. They could select multiple answers, which is why the percentages presented do not add up to 100%.

Fig. 27. Assessment of research efficiency during the COVID-19 and reasons for increased or decreased performance



The question about reasons of increased and/or decreased research performance allowed multiple answers, which is why the percentages presented above do not add up to 100%.

Source: infographic created by the NCN

The need to take care of children when childcare and education facilities (schools, preschools, nurseries) were under lockdown affected women more than men (F 45% vs. M 35%). Likewise, more women than men reported that family responsibilities reduced their performance at work (F 44% vs. M 34%). On the other hand, problems related to the absence of colleagues proved more limiting for men (M 50% and F 36%), who argued that direct interactions, during which important aspects of research can be discussed on an ongoing basis, are key for good work performance, and the prolonged restrictions significantly reduced their number

Performance, respondents argued, also dropped due to the mental health issues brought about by forced isolation. Both genders reported episodes of depression and anxiety that directly affected the quality of their work. Administrative and informational chaos, as well as the disorientation that accompanied forced quarantine, likewise affected work performance. Some respondents said that the quality of their own research also suffered because they had to work on projects focused on preventing the spread of the SARS-CoV2 virus at the expense of their own research problem.

One in five respondents (F 18%, M 19%), however, reported that their research performance actually improved during the pandemic.

When asked about the factors that contributed to increasing the efficiency of their research, they often mentioned online work[20] (F 80% and M 75%). The growing popularity of online meetings also created greater opportunities for attending conferences, seminars, and workshops, which helped respondents to expand their network and establish links of cooperation, including with researchers in other countries. Before the pandemic, some researchers could not take part in all the events they were interested in due to time limitations.

According to our respondents, the positive aspects also included more flexible schedules (F 68% and M 66%). Both men and women appreciated the time savings made possible thanks to online classes and meetings (F 69% and M 70%). Limited access to the workplace also meant that they had to organise their work better and work harder at home. The absence of direct contact with colleagues meant that the time saved could be exclusively devoted to research. On the other hand, new challenges associated with the SARS-CoV-2 virus encouraged participation in research projects that dealt with the pandemic.

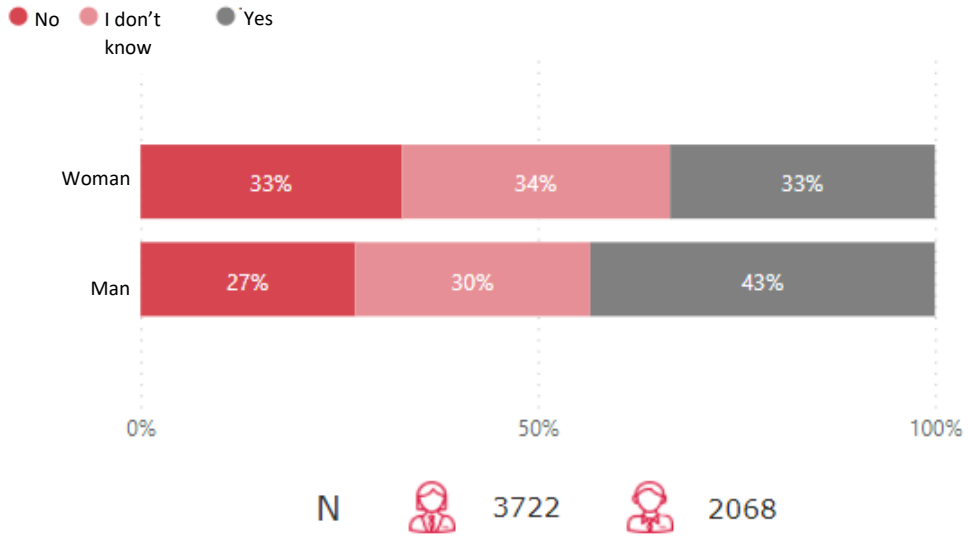
Respondents also agreed that it was a good decision to offer free access to online databases, which charged a fee before the pandemic.

A greater proportion of men than women acknowledged that their research institution took measures to assist them in the context of the COVID-19 pandemic (M 43% vs. F 33%) (fig. 28), but among respondents who did, both groups rated their usefulness very highly (on a 5-point scale, the average rating was 4.3 among women and 4.2 among men).

Fig. 28. Measures to assist researchers adopted by research institutions on account of the COVID-19 pandemic

[20] 669 women and 369 men answered the question about the reasons behind their improved research performance during the pandemic. They could select multiple answers, which is why the percentages presented do not add up to 100%.

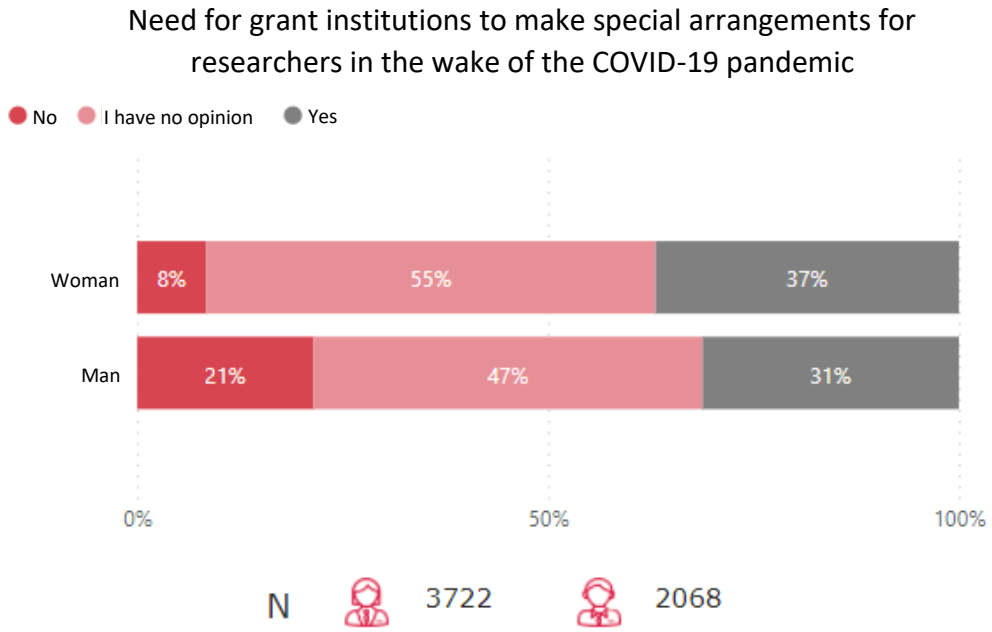
Occurrence of facilities for workers in connection with the COVID-19 pandemic



Source: infographic created by the NCN

Asked whether project-funding institutions should introduce any specific solutions to address the pandemic, one in three respondents of either gender said yes (F 37% and M 31%). However, it is important to emphasise that a large proportion of respondents expressed no opinion on the matter (F 55% and M 47%) (fig. 29).

Fig. 29. Assessment of the need for specific solutions for researchers to be introduced by grant-funding institutions during the COVID-19 pandemic



Source: infographic created by the NCN

Appendix 1.

The survey was answered by 3722 respondents who filled out the women's survey (64%) and 2068 respondents who filled out the men's survey (36%).

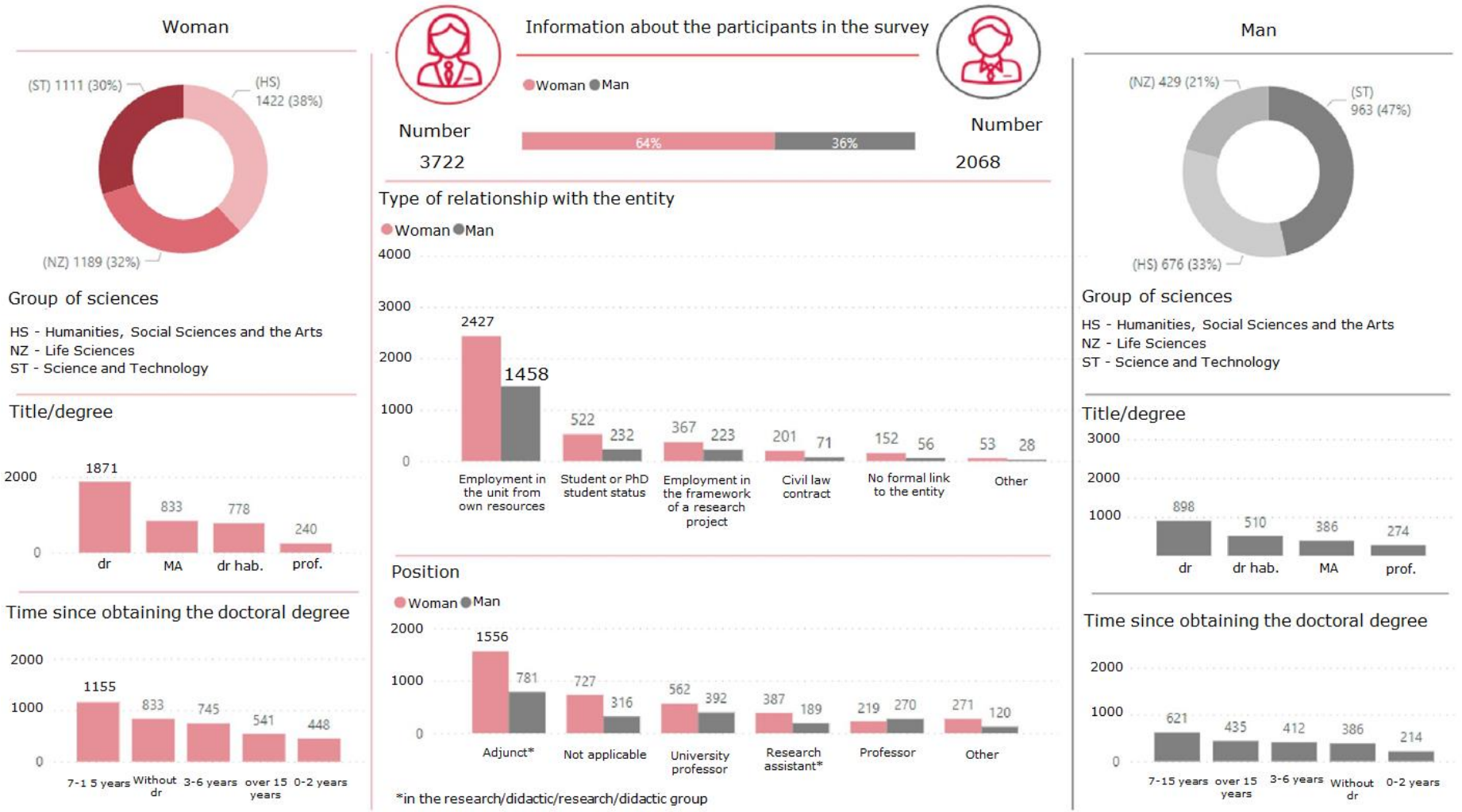
The women's survey was more frequently filled out by women who worked in art, humanities and social sciences (38%), while male respondents mostly represented physical sciences and engineering (47%). PhD holders had the strongest representation both among women (c. 50%) and men (43%) and had usually earned their degree 7 to 15 years earlier. The majority of male and female respondents alike were employed at their institutions from statutory resources, predominantly in the role of Assistant Professor. The exact data breakdown is shown in figure A1.

Most respondents worked in large cities with a population of more than 500,000. This was true of 73% of women and 74% of men. In their majority, both genders were formally affiliated with centres in Poland (93% of women and 95% of men). Only 1% of female and 1% of male respondents reported being affiliated with foreign institutions. Importantly, however, some did not formally belong to any institution. Among those who were affiliated with Polish research centres, most worked at institutions in the voivodeships of Masovia, Lesser Poland and Greater Poland.

The majority of respondents (92% of women and 94% of men) represented public institutions and typically worked at universities (62% of women and 61% of men).

The type of international experience most commonly reported by both genders (F 51% and M 62%) was cooperation with foreign centres on joint projects and/or publications. It is worth noting, however, that 24% of women and 15% of men reported that they had no experience of this kind at all. Fellowships at foreign centres tended to be short, from 3 to 6 months, while periods of employment abroad typically lasted at least 13 months.

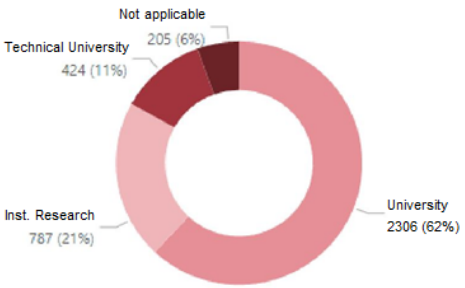
Fig.A1.Respondent data



Information about the participants in the survey

Woman

Type of scientific unit



Unit in Poland: 93% N 3722

Unit abroad: 1% N 3722

Size of locality	N	%
over 500,000 inhabitants	2717	73%
Between 251,000 and 500,000 inhabitants	494	13%
Between 101,000 and 250,000 inhabitants	401	11%
up to 100,000 inhabitants	110	3%
Total	**3722**	**100%**

Province	Number (N)	%
Mazowieckie	1159	33%
Małopolskie	484	14%
Wielkopolskie	350	10%
Dolnośląskie	267	8%
Śląskie	216	6%
Pomorskie	197	6%
Łódzkie	183	5%
Kujawsko-pomorskie	126	4%
Lubelskie	125	4%
No data available	74	2%
Warmińsko-mazurskie	66	2%
Podkarpackie	63	2%
Podlaskie	63	2%
Zachodniopomorskie	47	1%
Opolskie	29	1%
Świętokrzyskie	19	1%
Lubuskie	9	0%
Total	**3477**	**100%**

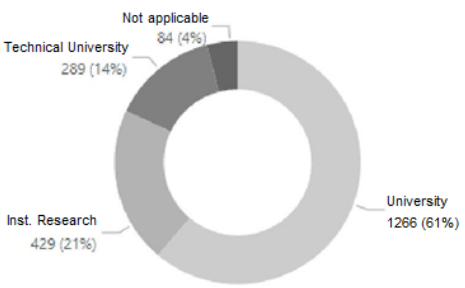
*245 persons are related to the foreign entity or have no formal relationship with the entity

Public entity: 92% N 3722

Private entity: 3% N 3722

Man

Type of scientific unit



Unit in Poland: 95% N 2068

Unit abroad: 1% N 2068

Size of locality	N	%
over 500,000 inhabitants	1534	74%
Between 251,000 and 500,000 inhabitants	251	12%
Between 101,000 and 250,000 inhabitants	230	11%
up to 100,000 inhabitants	53	3%
Total	**2068**	**100%**

Province	Number (N)	%
Mazowieckie	711	36%
Małopolskie	295	15%
Wielkopolskie	208	11%
Dolnośląskie	167	9%
Pomorskie	99	5%
Śląskie	91	5%
Łódzkie	75	4%
Kujawsko-pomorskie	64	3%
Lubelskie	63	3%
Podlaskie	32	2%
Warminsko-mazurskie	32	2%
Zachodniopomorskie	31	2%
Podkarpackie	29	1%
No data available	25	1%
Opolskie	20	1%
Lubuskie	9	0%
Świętokrzyskie	6	0%
Total	**1957**	**100%**

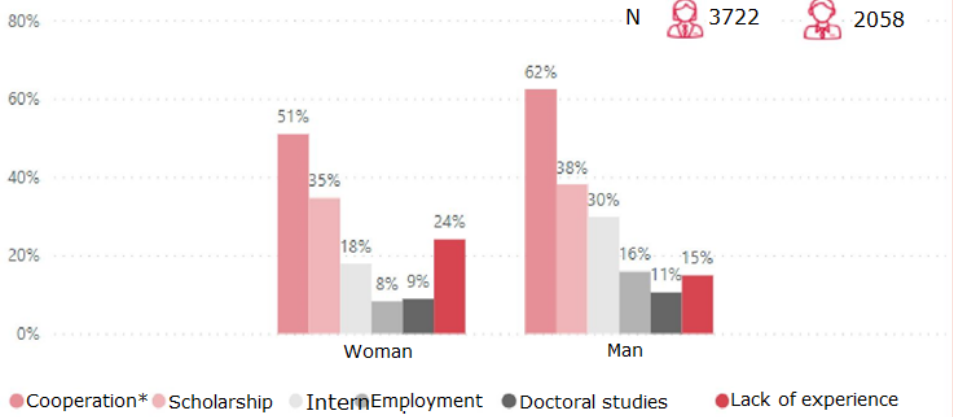
*111 persons are related to the foreign entity or have no formal relationship with the entity

Public entity: 94% N 2068

Private entity: 2% N 2068

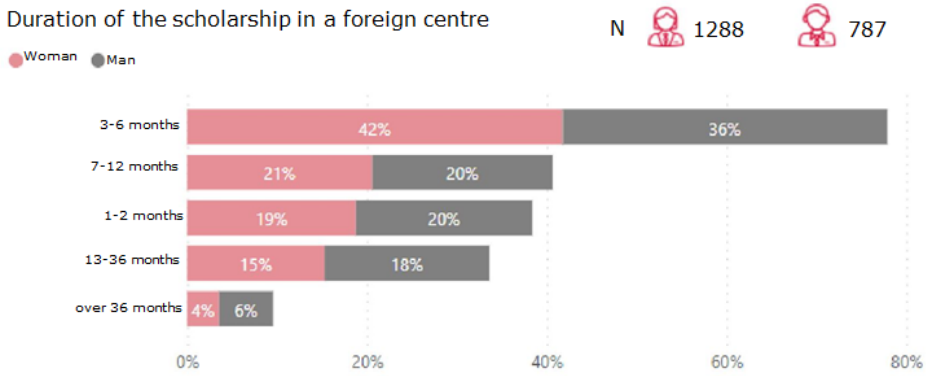
Survey participants' foreign experience

Foreign experience

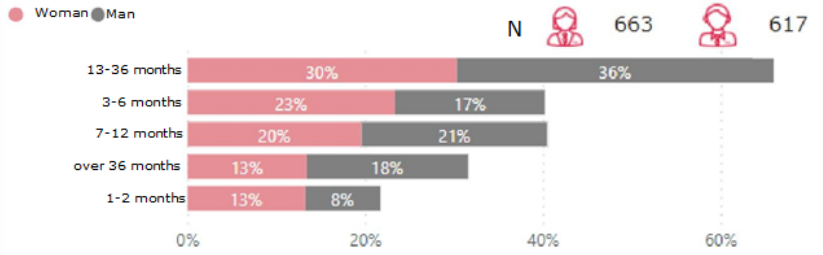


*cooperation with a foreign centre confirmed by joint projects and/or publications

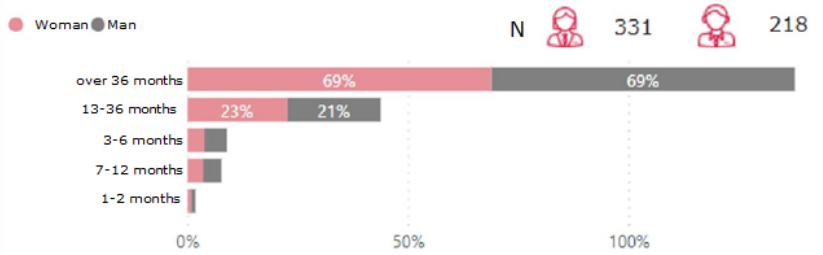
Duration of the scholarship in a foreign centre



Duration of postdoctoral fellowship in a foreign centre



Duration of doctoral studies



Duration of employment in a foreign centre