

## STATISTICAL ANALYSIS

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# The consequences of the coronavirus pandemic on research

**The Swedish Higher Education Authority's survey of researchers has captured both positive and negative comments on how the pandemic has impacted research. Many also responded that they have not noticed any significant changes. One finding that stands out is that data collection for research has become considerably more difficult for a majority of respondents. The time spent remote teaching has also taken time away from research for nearly a third of respondents. A majority report that the lack of physical meetings has led to lower motivation and diminished creativity. The pandemic has caused a fourth of the researchers to make many or very many changes to their research.<sup>1</sup>**

It is well known that the coronavirus pandemic has created and continues to create great challenges for staff and students at the country's higher education institutions. The long-term consequences of the pandemic for higher education, however, are still to be determined. Within the framework of the Swedish Higher Education Authority's (UKÄ) government assignment to follow up the consequences of the novel coronavirus for higher education, we conducted a survey of staff at higher education institutions (HEI) that have research as part of their jobs. The purpose of the survey is to gain an understanding of the coronavirus pandemic's consequences on research, both in the short-term and long term.

## The survey

The survey was conducted 23 March to 20 April 2021 and was intended for staff that have research as part of the jobs. The following seven higher education institutions (in alphabetical order) are included in the study. Chalmers University of Technology, Kristianstad University, Karolinska Institutet, Luleå University of Technology, Mälardalen University, Stockholm University and

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<sup>1</sup> This statistical analysis is a translated version of "Coronapandemins konsekvenser på forskningen" from 2021-06-01. The translation was done by Accent Språkservice.

Uppsala University. The survey consisted of 21 multiple-choice questions and 1 open-ended question.

It was available in both Swedish and English as an online survey. See Annex 1 for the full survey. To present the most up-to-date picture of the situation as possible, we chose an approach that reduced the time between survey design and publication. This was done by basing the survey on a self-recruiting selection of respondents and not on the representative selection used by more conventional methods but that require more resources. The link to the online survey was emailed to contacts at the HEIs, who then distributed the link to the relevant recipients.

This approach does have certain limitations in what conclusions can be drawn. This is, in part, because the results are not based on a representative selection of researchers and, in part, because the risk exists of other people than researchers responding to the survey. The results should therefore be interpreted with care and do not provide a general picture of the views of researchers. Instead, it provides a picture based on those who answered the questions in the survey.

The responses indicate, however, that the survey has served its purpose well, since the generated responses are reasonable in our judgement based on the interaction we have with HEI representatives. An example of this is career-development of employees with career development positions, which are temporary positions. This has been particularly problematic during the pandemic and the time devoted to teaching, in particular, has increased for senior lecturers who have substantial amounts of teaching as part of their positions. In addition to highlighting this area as particularly effected by the pandemic, the results can also be used to identify areas for additional investigation or to confirm the results of other studies. There were 1,356 responses. Information about the respondents is provided in Annex 2.

## Presentation of the results

We present the results in five sections dealing with

- Remote work and consequences for research;
- Data collection, funding, publication, recruitment and the rate of study for doctoral students;
- Working time spent on research and career development;
- Research specialisation, cooperation and collaboration;
- Experience of different types of online meetings.

For each multiple-choice question, we provide the percentage of responses per response alternative in total (i.e., all responses together) and the percentage of responses by women and men divided by fields of research (except for Figure 18 where we show the total number of responses divided by gender). The response alternative “Not relevant” is not included in the analyses. For questions about work time used for research and about career development, we also show the responses divided by

main employment category at the HEI. The assignment's website *Coronaviruset och högskolan* (The Coronavirus and Higher Education) lists percentages for each multiple choice question divided by field of research and main employment category for women and men. The minimum number of reported responses is 50. This means that percentages are not always reported by gender.

The results from the multiple-choice questions include a wide diversity in how respondents experienced the way different aspects of research have been impacted during the pandemic. We include quotations from the open-ended question in an attempt to capture this diversity: *Do you have any comments about what short-term and long-term effects the coronavirus pandemic may have on your research?* The answers were categorised by sorting them based on the subject of the multiple-choice questions. We present a selection of quotations after each figure.

## Remote work and consequences for research

- About half of respondents indicate that they do much of their work remotely.
- It is most common for respondents in the humanities and fine arts and the social sciences to largely work remotely. It is least common within the medical and health sciences.
- About half indicated that remote research was worse or much worse, while just under half indicated that there was little difference, that it was better or even that it was much better.
- A majority responded that it has been worse to supervise remotely.
- Just over half responded that it was worse or much worse to research when colleagues worked remotely. Just under half indicated that there was little difference, that it was better or even that it was much better.

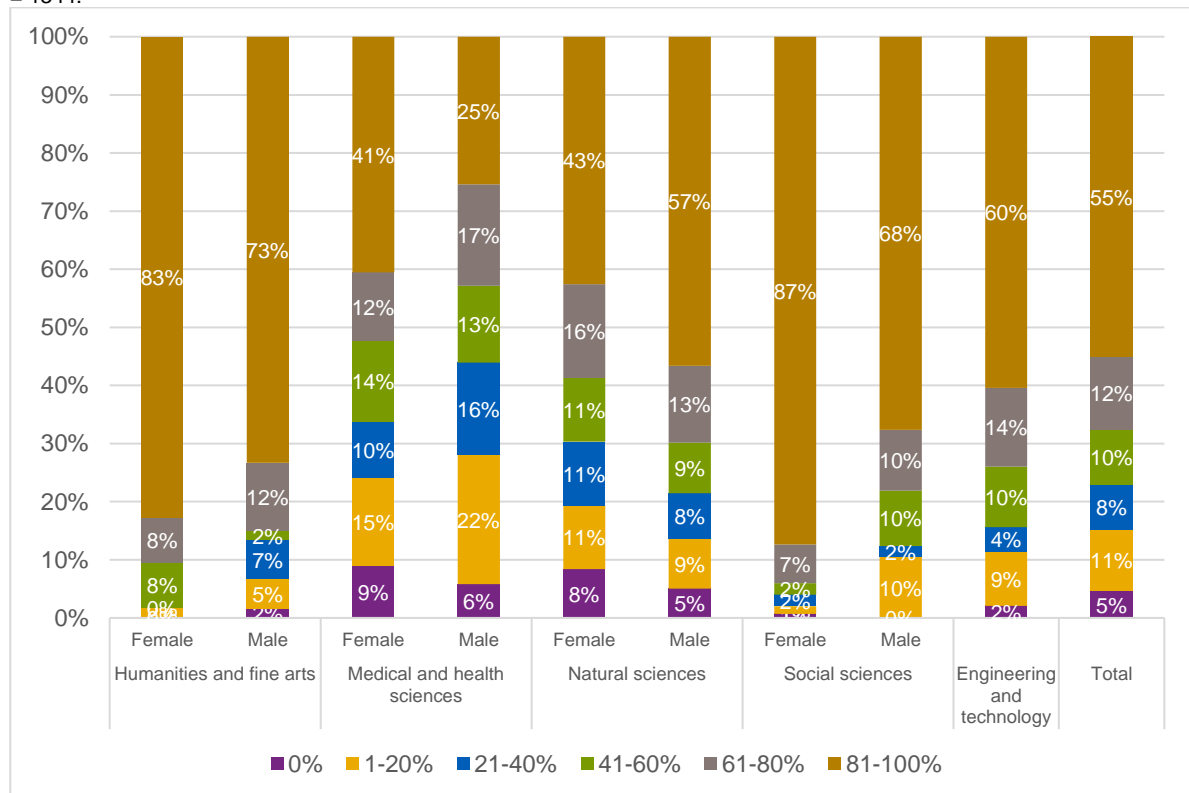
### Most remote work for women in the humanities and fine arts and the social sciences

With the first question, we examined the degree to which the respondents worked remotely an average week during the pandemic (see Figure 1). About half (55 per cent) indicated that they worked remotely much of their work time, i.e., 81–100 per cent of an average week. Sixteen per cent responded that they never (0 per cent) or to a small degree worked remotely (1–20 per cent).

There are relatively large differences between fields of research in the percentage that responded that they worked 81–100 per cent remotely. Respondents in the social sciences and the humanities and fine arts were the largest group in this category and respondents in the medical and health sciences were the smallest group.

The results show that within the same field of research, women worked remotely to a higher degree than men. For three of the four fields of research with a sufficient number of responses to allow separate analyses by gender (at least 50), it is more common for women than men to spend a large part of their work time working remotely during the pandemic. These fields are the humanities and fine arts, the medical and health sciences and the social sciences. Within the natural sciences, men were more likely to have worked remotely for a large part of their work time.

Figure 1. About what percentage of your work time has been done remotely during an average week during the pandemic? N = 1344.



**Quotes about remote work**

*“I have worked from home 100%, and it has worked very well and I cannot image going back to how it was previously. I have a very long commute that takes time and is tiring.”* Woman/Medical and health sciences.

*“Working from home while small children have had to be home for longer periods has impacted my productivity negatively.”* Man/Natural sciences.

*“It has been a wonderful and productive period, and I do not miss the physical presences really.”* Woman/Social sciences.

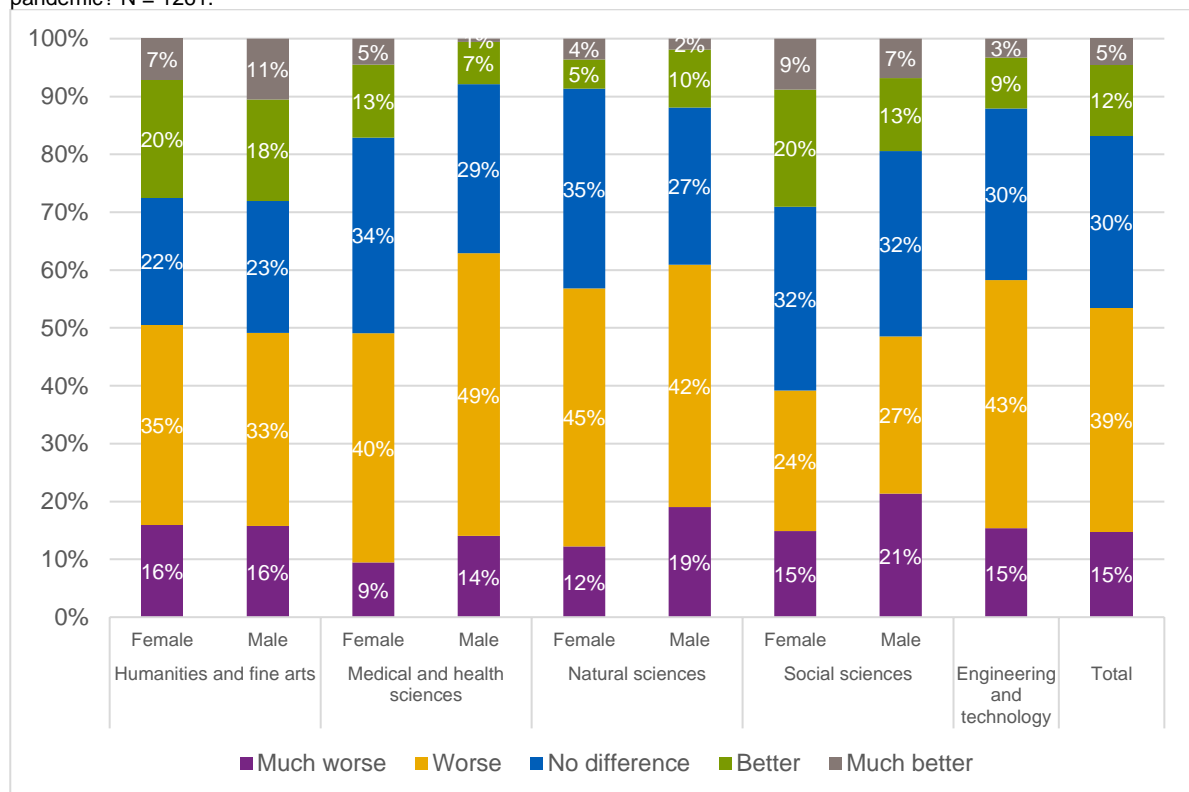
### How well researching remotely has worked varies

The next question examines how well researching remotely has worked (see Figure 2). The negative responses dominate somewhat – 54 per cent indicate it has worked worse or much worse to research remotely compared with researching at the workplace. The other 46 per cent responded that there was little difference, that it was better or even that it was much better.

There are certain differences between the fields of research. Women and men in the social sciences are most positive to remote research – 61 per cent and 52 per cent, respectively, indicated that there was little difference, it worked better or it worked much better compared with researching at the workplace. They are also more likely to have worked remotely (see the previous question).

Men within the medical and health sciences and the natural sciences were most negative – 63 and 61 per cent, respectively, responded that it has been worse or much worse to research remotely. They are also least likely to have worked remotely (see the previous question).

Figure 2. Compared with researching at the workplace. How well has research worked when working remotely during the pandemic? N = 1261.



#### Quotations about researching remotely

*"Decreased productivity due to lack of workspace and thus proper working environment at home."*  
Woman/Social sciences.

*"Lack of short conversations in the hallway/at the coffee machine/opportunity to ask quick questions/opportunity to 'think aloud' together with someone during coffee break/lunch, all this has*

*impacted my research, in my opinion, negatively. On the other hand, it has been possible to develop a calmness, no interruptions, you can organise the day as you like (accounting for meetings and so on, of course), you have less logistics to consider, less commuting, less stress. It is hard to say whether the disadvantages or the advantages predominate.” Woman/Humanities and fine arts*

*”From my perspective there has been little impact. Most people in my group simply switched to working from home for computer-based research such as manuscript preparation, funding application or image processing. On that side, it has actually improved as I find writing from home easier without distractions from office noise.” Man/Natural sciences.*

*”In the beginning, I experienced an increase in productivity when working remotely. In the long term however, I have been very much affected. Perceived productivity has decreased, motivation decreased, interaction decreased, creativity has dropped. I believe we need interactions to simulate the process of generating new hypothesis and significantly advance in science.” Man/Medical and health sciences*

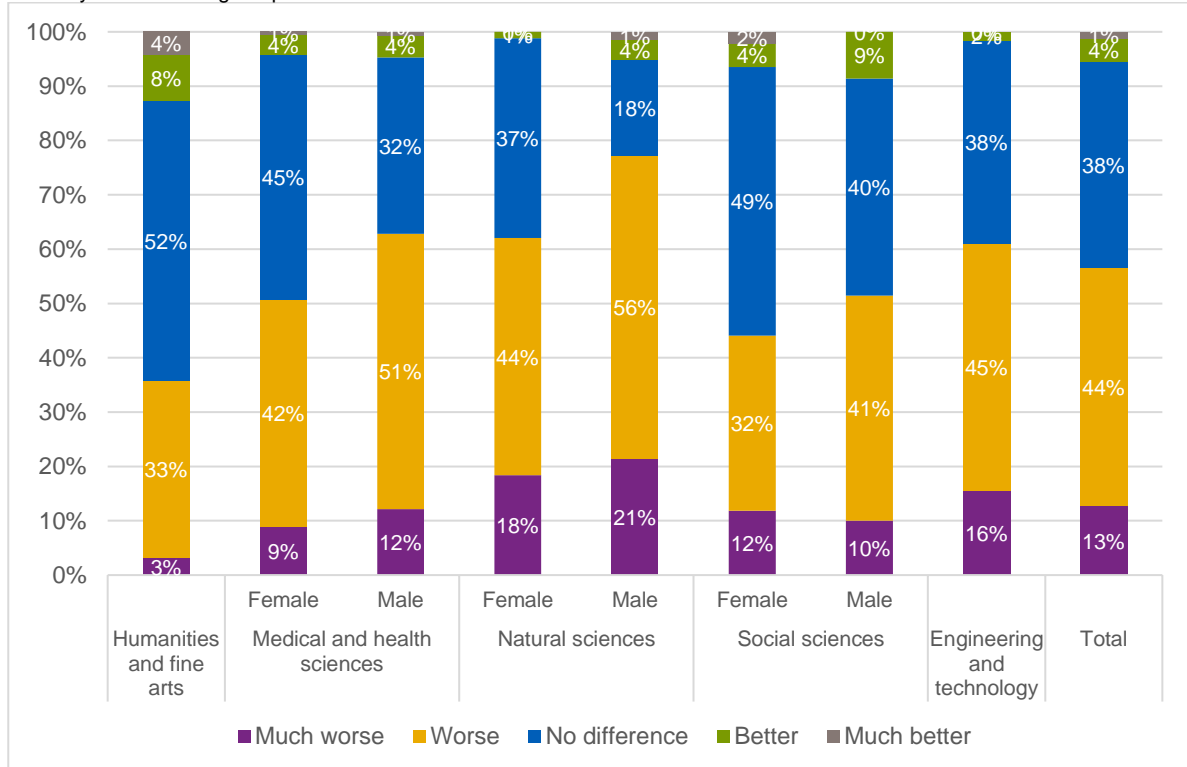
### **Six of 10 feel that remote supervision works worse**

For the question on how remote supervision of doctoral students has worked, the negative responses dominate – 57 per cent respond that it has worked worse or much worse to supervise doctoral students remotely compared with supervising at the workplace (see Figure 3). The other 43 per cent responded that there was little difference, that it was better or even that it was much better.

There are certain differences between the fields of research but also between women and men. For the medical and health sciences, natural sciences and social sciences, where the number of responses from women and men, respectively, was sufficient for a comparison, men were more negative to remote supervision than women. Men in the natural sciences were most negative with 77 per cent answering that it has been worse or much worse with remote supervision.

Most positive to remote supervision are respondents in the humanities and fine arts – 64 per cent indicated that there was little difference, it worked better or it worked much better compared with supervising doctoral students at the workplace.

Figure 3. Compared with supervising doctoral students remotely at the workplace, how well has supervising doctoral students remotely worked during the pandemic? N = 861.



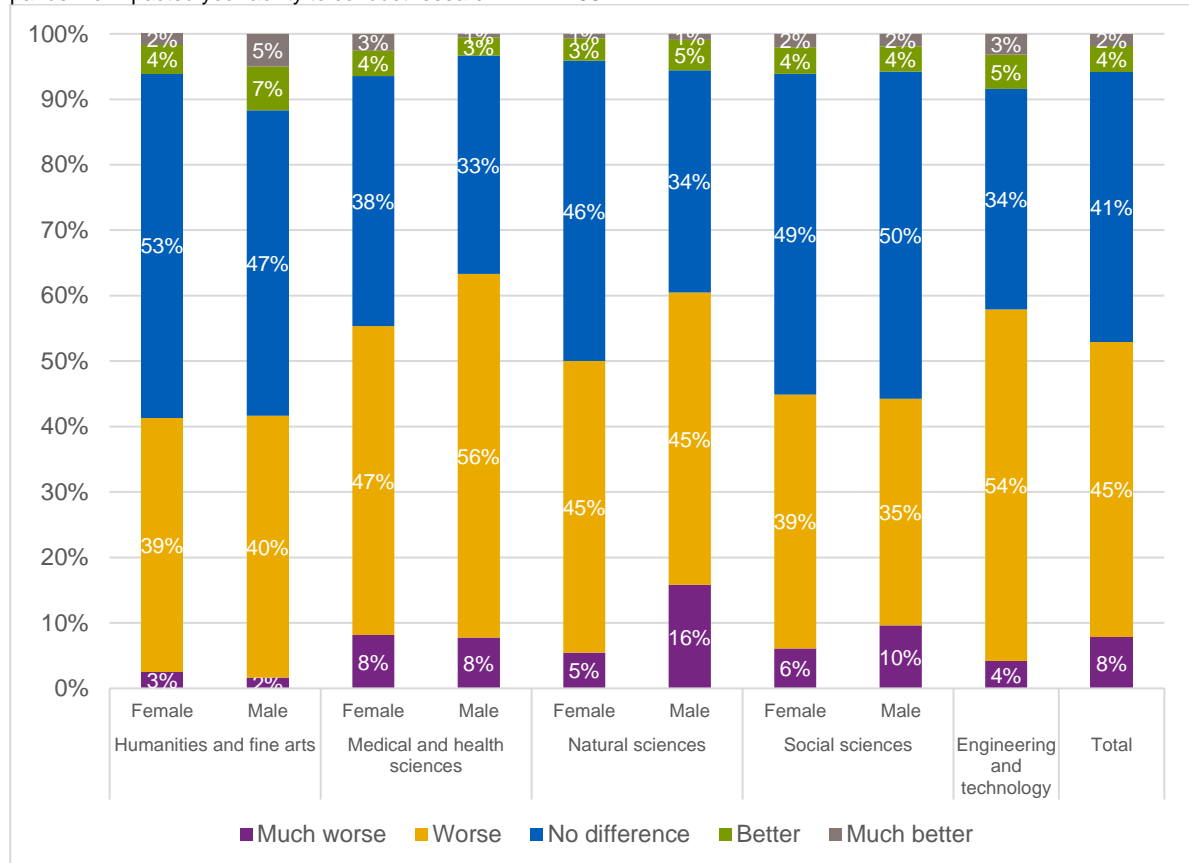
**Quotations about remote supervision**  
*“Difficulties for staff with children in pre-school who have needed to be home much more often during the pandemic. Extreme amounts of stress with deadlines, teaching, supervision while having to take care of (mostly) healthy children at home, with evening and night work to try to manage.”* Woman/Medical and health sciences.

**The impact of remote work by colleagues on research varies**

The next question is about how remote work by colleagues has impacted the ability to research (see Figure 4). The negative responses dominate somewhat – just over half (53 per cent) indicate it has worked worse or much worse when colleagues have worked remotely. The other 47 per cent responded that there was little difference, that it was better or even that it was much better. There are certain differences between the fields of research.

Respondents in the medical and health sciences, the natural sciences, and engineering and technology are more negative than respondents in the humanities and fine arts and the social sciences.

Figure 4. Compared with when your colleagues worked at the workplace, how has your colleagues' remote work during the pandemic impacted your ability to conduct research? N = 1296.



#### Quotations about remote work by colleagues

*"I miss spontaneous meetings that provide input on my own research/teaching, which impacts quality."*  
Woman/Social sciences.

*"Not meeting colleagues as often as before in informal meetings, when you meet in seminars, in the hallway or in the coffee room, has impacted creativity and inspiration. Fewer new studies have begun in the last year and efficiency has fallen since more participants in groups are less inspired."* Woman/Medical and health sciences.

### Consequences of the pandemic on data collection, funding, publication and recruitment

- A majority within in all studied fields of research responded that data collection, which is the basis of research, has been negatively impacted.

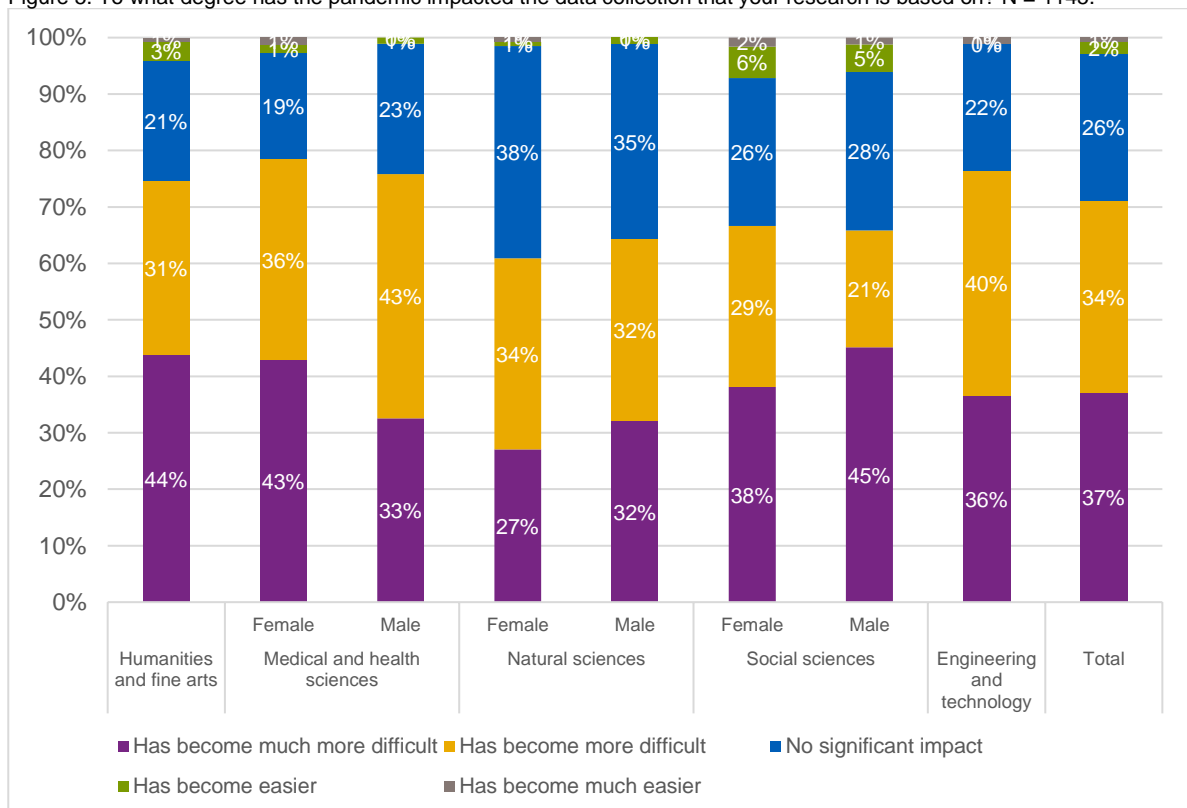


- The majority have not noticed any impact on results from applications for external research funding or opportunities for publishing research results.
- Just under half responded that they have used less external research funding. Just as many have not noticed any significant impact on use of funding.
- How well recruitment of staff has worked varies among the different fields of research. It has worked worse for respondents within the natural sciences and best for respondents in the humanities and fine arts and the social sciences.
- The majority of doctoral student supervisors say that doctoral studies are progressing slower than planned.

### Seven of 10 feel that data collection has been negatively impacted

A majority responded that the pandemic has negatively impacted data collection, which is the basis of research – 71 per cent responded that it has become more difficult or much more difficult to collect data during the pandemic (see Figure 5). The rest, just under a third, indicated that data collection has not been impacted or that it has become easier or much easier. There are no great differences between the fields of research. Data collection has been impacted most negatively for respondents within the medical and health sciences and engineering and technology.

Figure 5. To what degree has the pandemic impacted the data collection that your research is based on? N = 1145.



**Quotations about data collection**

*“Clinical research stopped – major impact!”* Woman/Medical and health sciences.

*“We have not been able to collect any data at all. The planned research has thus been put on hold.”*  
Man/Social sciences.

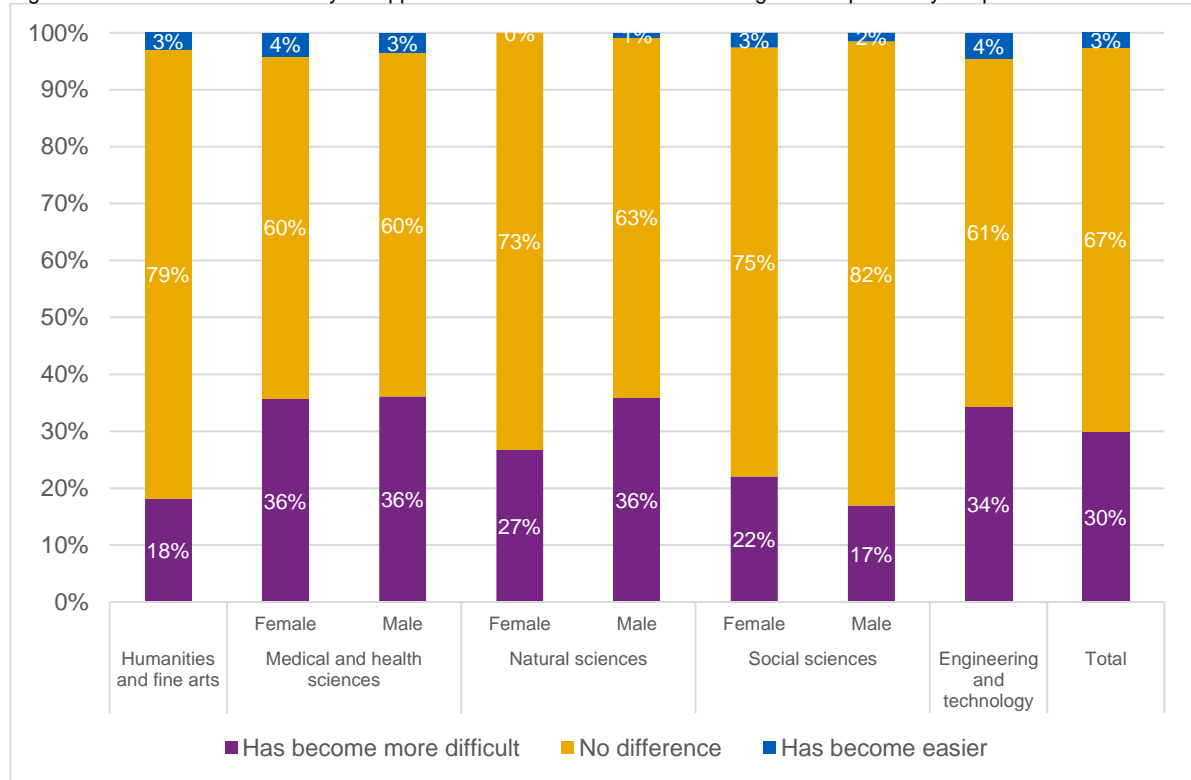
*“Coronavirus related shutdowns at the hospital have led to serious impacts on research (i.e., we have not been able to conduct critical experiments) but salary costs have remained. I’d say that about 2 years of worktime was lost just during Q2–Q4 2020. That’s more than my annual grant from the Swedish Research Council.”* Man/Medical and health sciences

*“For those of us working with archive research – and particularly internationally – the pandemic has had huge consequences. It is also shocking how far behind Sweden is in digitalisation of collections.”*  
Man/Humanities and fine arts.

**Most have not seen any impact from the pandemic on the results of applications**

The next question looks at the results from applications for external research funding (see Figure 6). Just under seven of 10 indicate that they have not noticed any difference, i.e., the pandemic has not impacted the results of applications. A third responded negatively, i.e., that it has become more difficult to win external research funding during the pandemic. Respondents within the humanities and fine arts and the social sciences were most likely to respond that they have not notice any difference. Respondents within the medical and health sciences, the natural sciences and engineering and technology were most negative. Note that many responded that they have not applied for external research funding during the pandemic.

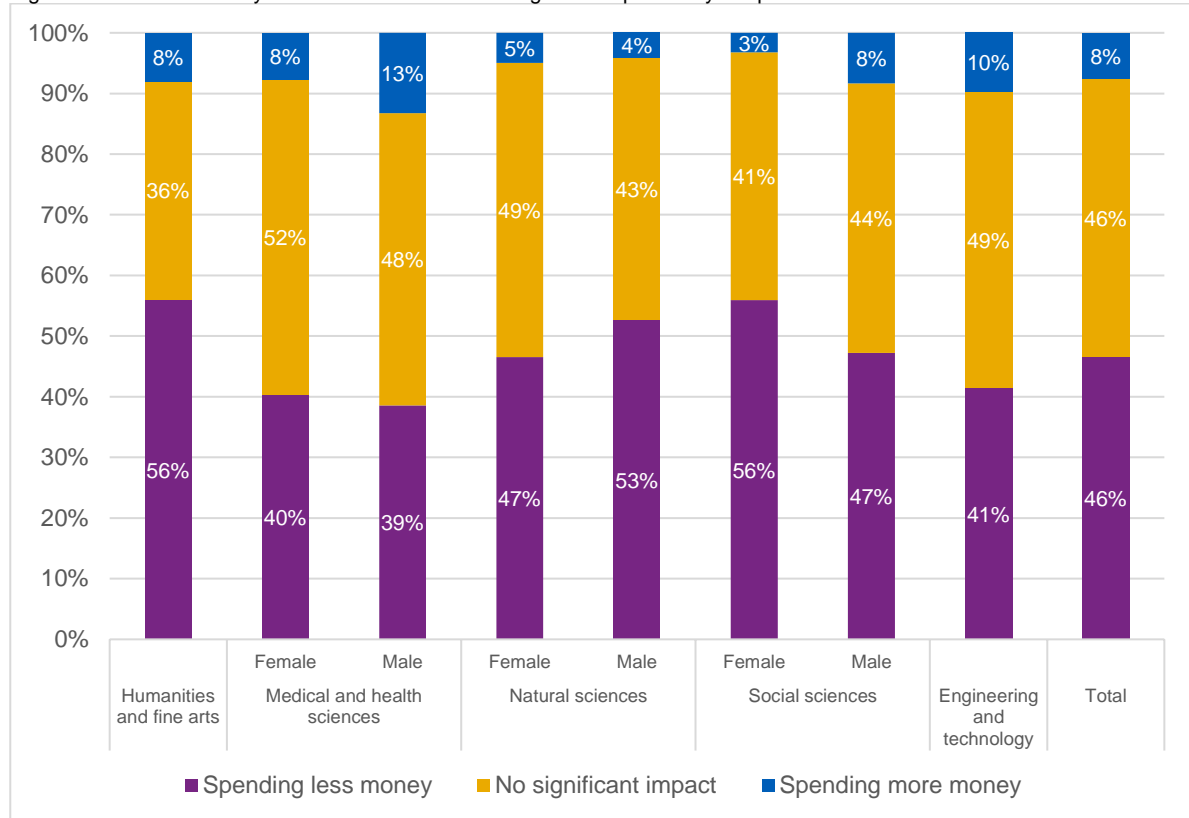
Figure 6. How have the results of your applications for external research funding been impacted by the pandemic? N = 840.



### The impact of the pandemic on the use of research funding has varied

For the question of how the pandemic has impacted the use of external research funding, 46 per cent responded that they used less research funding and 46 per cent that they did not notice any significant impact (see Figure 7). The other 8 per cent responded that they spent more research funding. There are no great differences among the fields of research. Respondents in the humanities and fine arts and the social sciences are the most likely to report using less funding. Respondents in the medical and health sciences are least likely to report this.

Figure 7. How has use of your external research funding been impacted by the pandemic? N = 979.



#### Quotations about use of external research funding

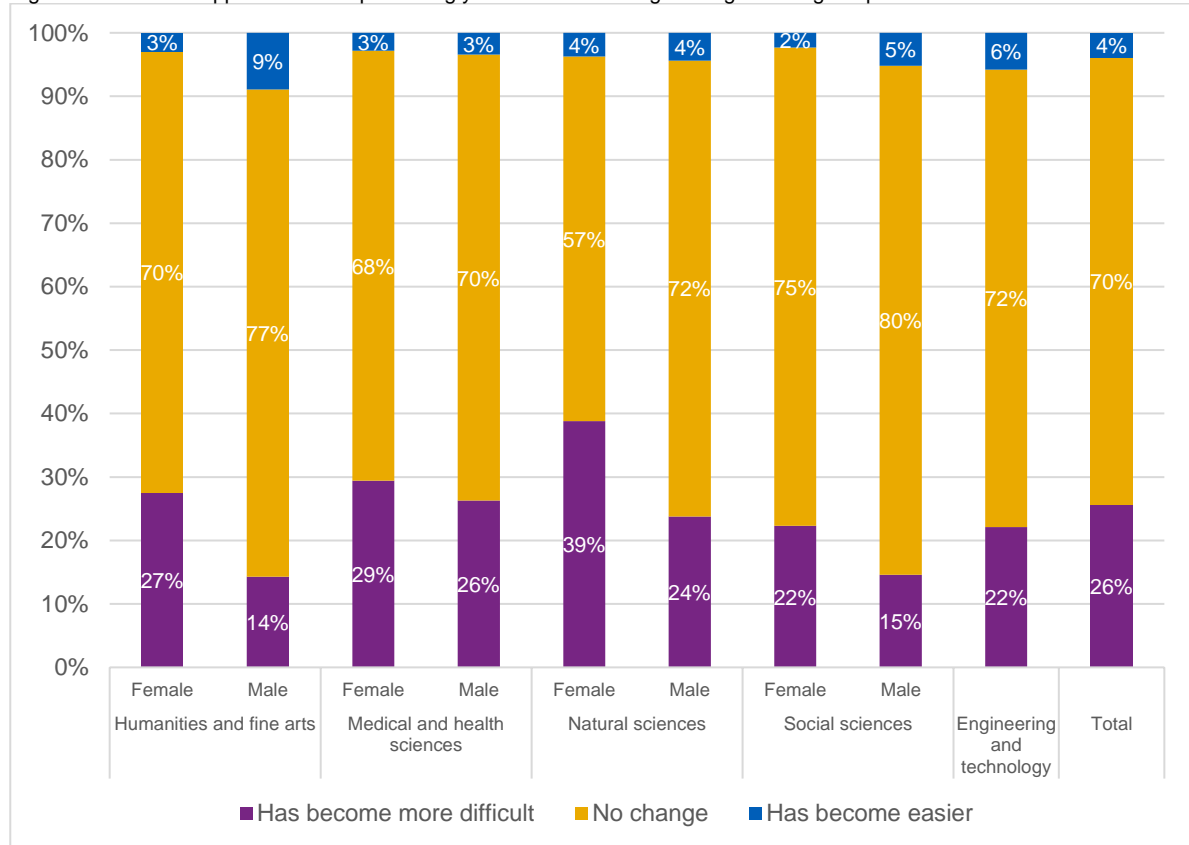
*“Grant money is being used for salaries, but you cannot collect the data that the money was granted for. That naturally becomes a problem.”* Woman/Social sciences.

*“Family situations and home environment have a big impact. I have been home with small children a lot during the pandemic. Since I’m primarily funded through scholarships, this means that I have lost a lot of research time (or I need to conduct the same amount of research in a shorter time). I need to use my funding, which is for cost of living regardless of whether I can research or not.”* Woman/Humanities and fine arts

#### Most have not seen any change to opportunities to publish

On the question of whether the pandemic has changed opportunities for publishing research results, seven of 10 respond that they have not notice any change (see Figure 8). About a fourth say it has become more difficult. There are certain differences between the fields of research but particularly between women and men in the same field of research. Within the four fields where the number of responses was sufficient to allow a division by gender, women were more likely than men to respond that it had become more difficult to publish their research. The percentage was highest among women in the natural sciences (39 per cent) and lowest among men in the humanities and fine arts (14 per cent.).

Figure 8. How have opportunities for publishing your research findings changed during the pandemic? N = 1199.



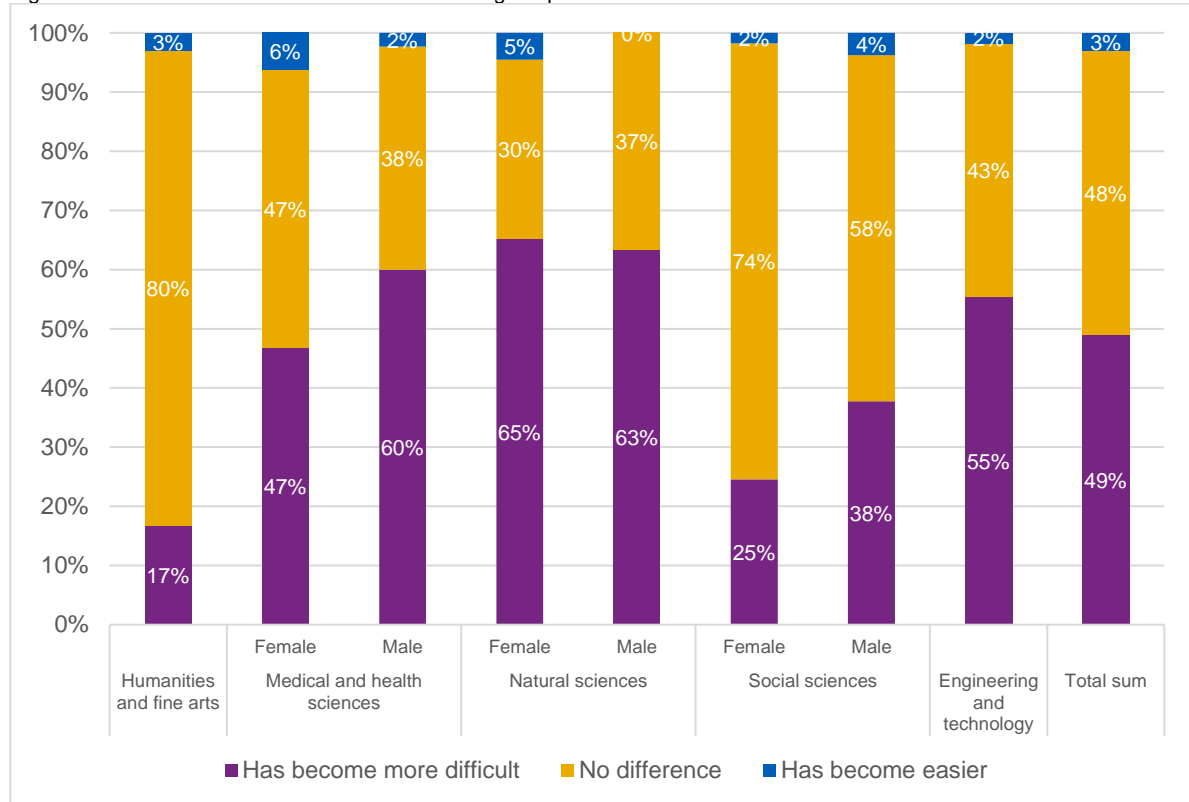
### Quotations about publishing

*“The coronavirus pandemic will significantly delay publication of research since collection of materials has been impacted because it has been impossible to travel and relevant archives and libraries have been closed.”* Woman/Humanities and fine arts

### The impact of the pandemic on staff recruitment varies

The impact on staff recruitment during the pandemic varies among the different fields of research (see Figure 9). Overall, the negative responses dominate with just under half (49 per cent) indicating that it has become more difficult. But almost the same percentage (48 per cent) responded that they have not noticed any difference. The largest percentage of negative responses came from respondents in the natural sciences – just over 60 per cent feel that it has become more difficult. The medical and health sciences and engineering and technology also have high percentages of negative responses. The percentage of negative responses is much lower in the humanities and fine arts and the social sciences, where the majority have not noticed any difference. Note that many responded that they have not recruited during the pandemic.

Figure 9. How has recruitment of staff worked during the pandemic? N = 665.



#### Quotations about recruitment

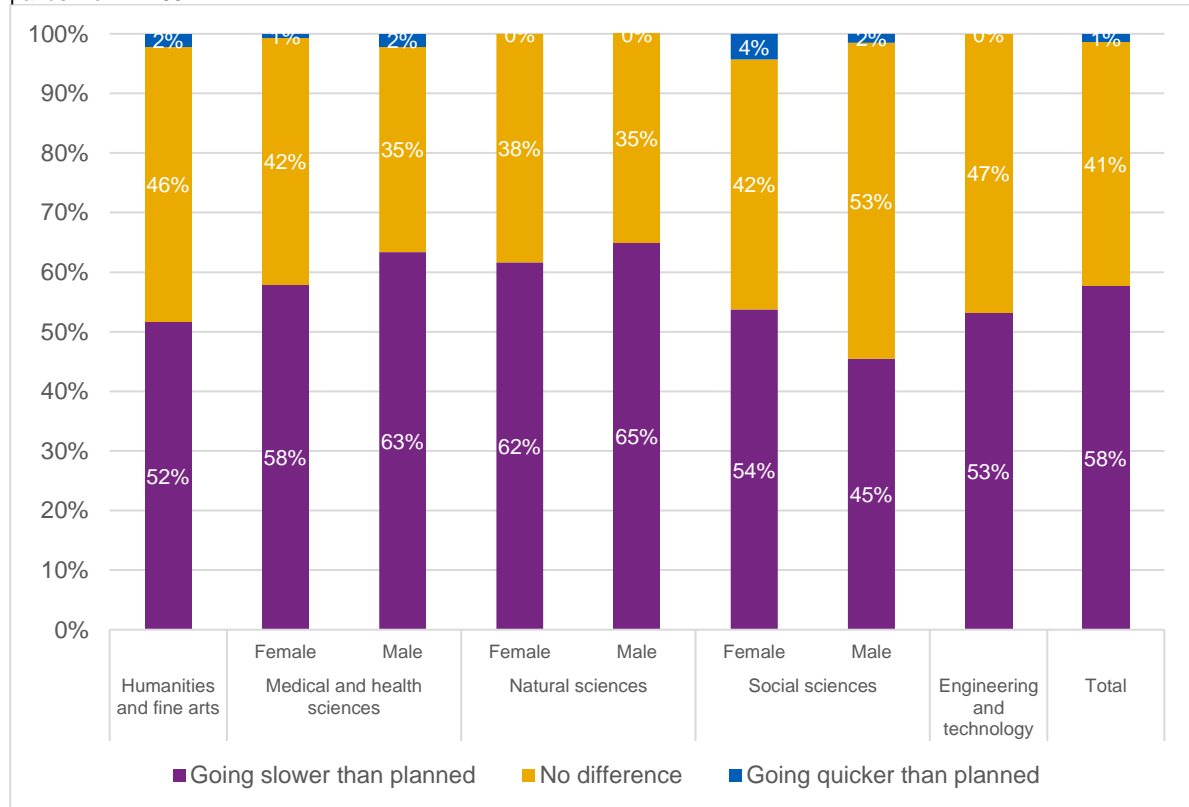
*"I have delayed field work and recruitment of new postdocs. Conferences and workshops have been cancelled, which has halted new collaborations. Teaching has taken a crazy amount of time."*

Woman/Natural sciences.

#### Doctoral studies take longer than planned for 6 of 10

This question asks supervisors the degree to which their doctoral students have completed their studies according to the study plan during the pandemic (see Figure 10). The negative responses dominated – 58 per cent of supervisors indicated that progress is slower than planned. Forty-one per cent indicated that there is no difference, i.e., that it is progressing according to plan. There are no dramatic differences between the fields of research. Supervisors within the medical and health sciences and the natural sciences were most negative. Note that many responded that they do not supervise doctoral students.

Figure 10. To what degree have your doctoral students completed their studies according to the study plan during the pandemic? N = 831.



## Consequences of the pandemic on working time spent on research and career development

- Just under three of 10 responded that teaching has taken away from research time during the pandemic. This has meant that they have either researched less or have worked overtime to research as much as before the pandemic.
- Senior lecturers are most likely to respond that the work time they put into research has suffered, since teaching has taken more time.
- Just under half responded that they have not noticed any impact on career development during the pandemic.
- Four of 10 responded that career development has not worked well during the pandemic.
- Employees with career development positions largely responded that career development has not worked well.

### **Senior lecturers in particular feel that teaching has taken away from research**

With this question, we examine how working time for research has changed because of the pandemic. Forty-two per cent use as much time on research as before the pandemic and 23 per cent use more time (see Figure 11). The remaining (36 per cent) use less time on research during the pandemic compared with before, or they use as much time but they work overtime since teaching takes more time. Of these, 28 per cent respond that teaching has taken time away from research during the pandemic, which means that they either research less (14 per cent) or have worked overtime to research as much as before the pandemic (14 per cent).

There are certain differences between the fields of research. For example, the percentage that responded that they use less time for research since teaching takes more time is highest in the humanities and fine arts and in the social sciences. The lowest percentage was in the medical and health sciences.

Within three of the four fields where the number of responses was sufficient to allow a division by gender, women were more likely than men to respond that research time had suffered because teaching takes more time. This was true in the humanities and fine arts, the medical and health sciences, and the social sciences. A similar gender difference, however, is not seen in the natural sciences.

In the various employment categories, senior lecturers were most likely to respond that their research time has suffered since teaching takes more time (see Figure 12).



Figure 11. Compared to before the pandemic, how has the amount of time you research changed during the pandemic? N = 1344.

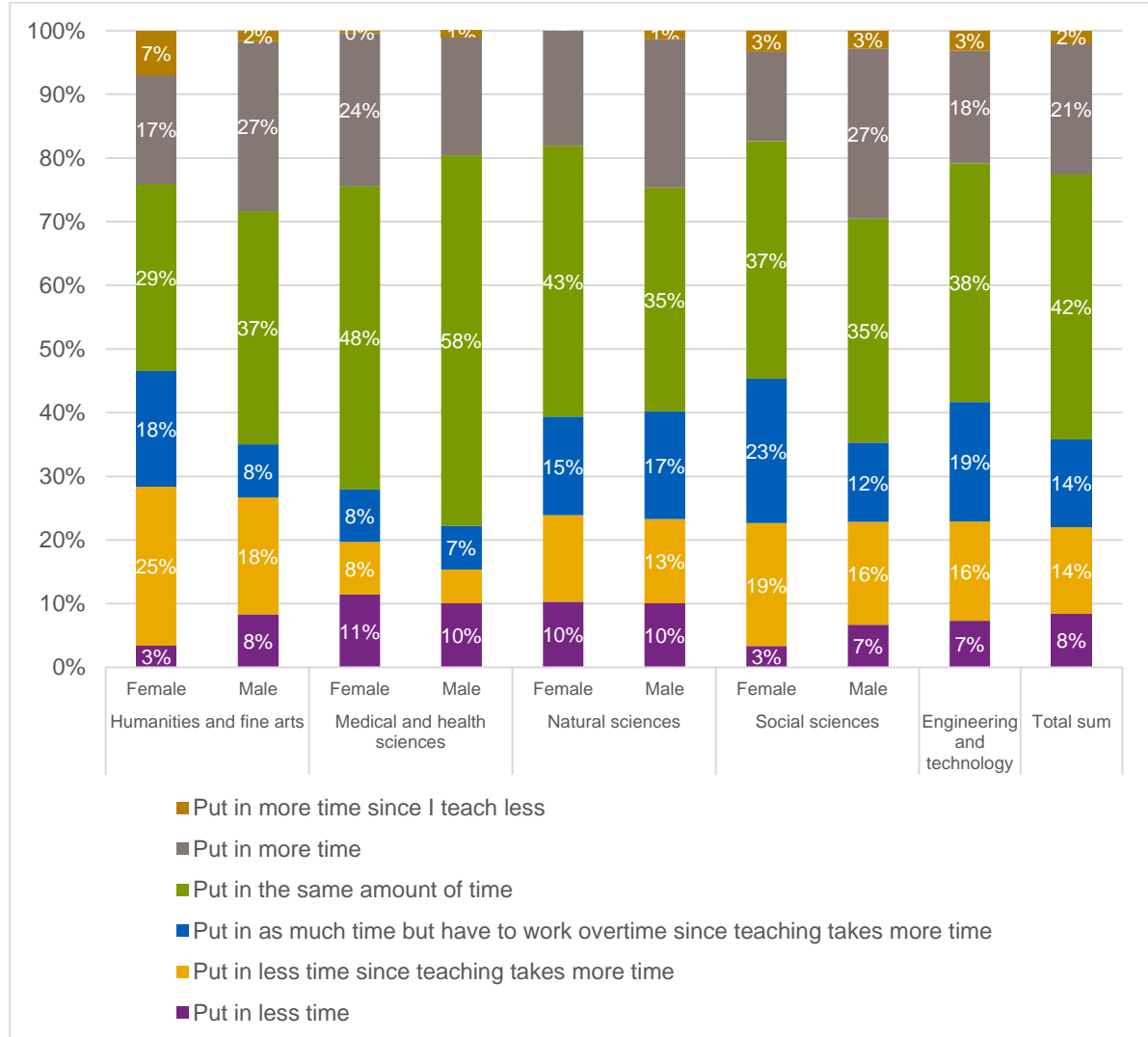
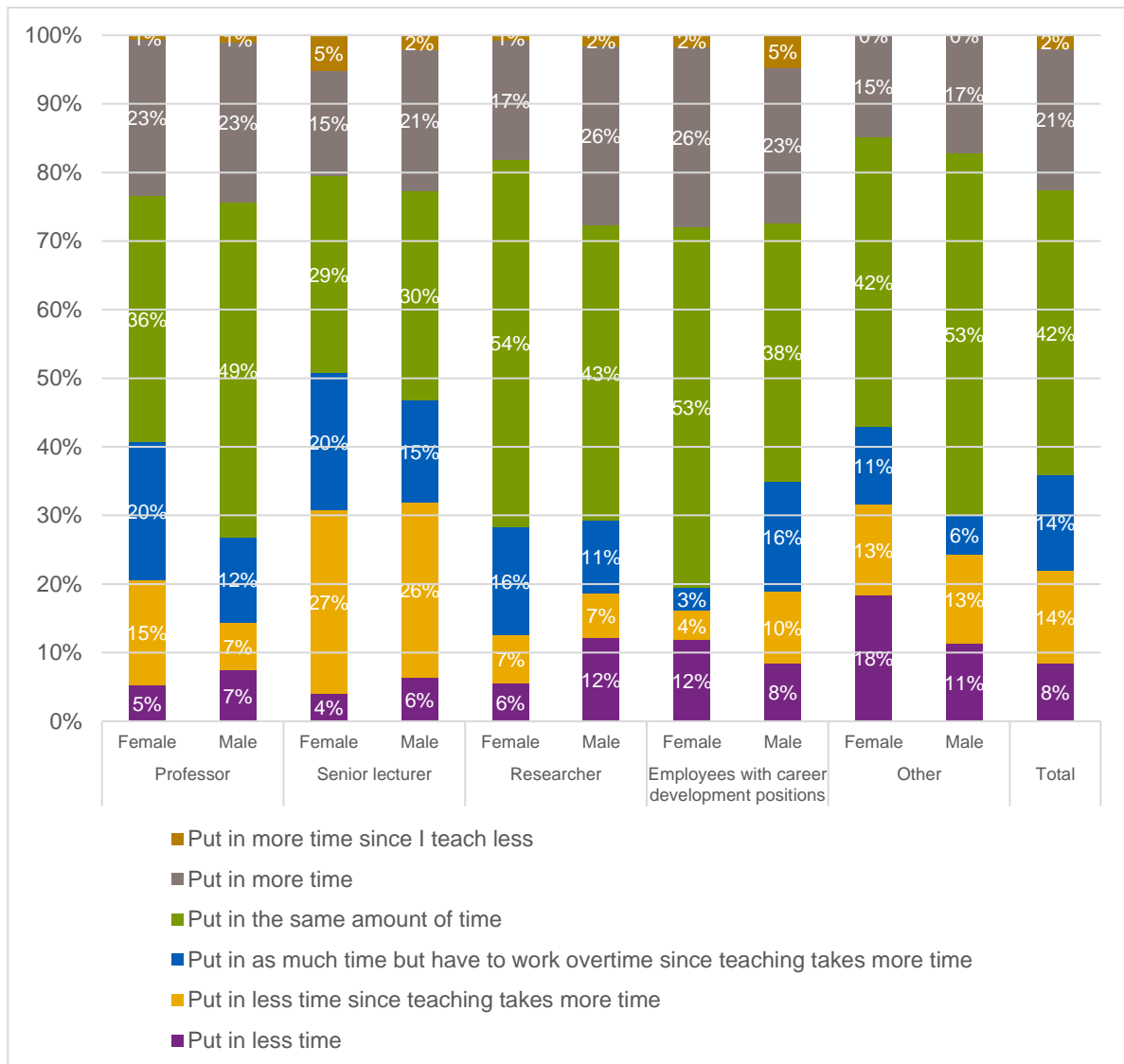


Figure 12. Compared to before the pandemic, how has the amount of time you research changed during the pandemic? Divided by main employment category at the higher education institution. N = 1345.



**Quotations about work time used for research**

*“Research always gets down-prioritised when remote teaching demands your attention. This has led to major delays in research.”* Man/Social sciences.

*“The amount of teaching has dramatically increased for me, and on line teaching requires far more time than in class learning, especially for the first transitions. There has been no compensation for this in my time paid for teaching nor for the amount of time it takes away from my primary position which is research. This cannot be explained to a funding agency.”* Woman/Natural sciences.

*"It has not impacted me so much timewise as it has impacted colleagues in my research projects who have had lots of teaching, because they have put in much more time on teaching and have not done the research that was planned. Which naturally means lower productivity in the project I am responsible for. That creates a lot of stress for me."* Woman/Social sciences.

*"I work as a senior lecturer with 30 per cent research as part of the position. During the pandemic, teaching has eaten up large parts of my work time, which has led me to use evenings and weekends for my research. It doesn't feel sustainable in the long term."* Woman/Humanities and fine arts

*"Teachers were given huge responsibility for teaching and examinations when teaching shifted to online. This naturally eats into research or free time and can eventually lead to exhaustion or that research funding being used for teaching."* Woman/Engineering and technology

### **Employees with career development positions in particularly feel that career development has not worked well**

On the question of how career development for researchers has worked during the pandemic, 47 per cent responded that they have not noticed any impact. Forty per cent responded that career development has not worked well and a smaller percentage (14 per cent) responded that career development has worked well (see Figure 13). Women and men in the natural sciences were the most negative – 51 per cent and 46 per cent, respectively, indicated that it has not worked well. Women and men in the humanities and fine arts and in the social sciences are most positive – 18 per cent and 20 per cent, respectively, indicated that it has worked well.

Among the different employment categories, employees with career development positions were most likely to respond that career development has worked poorly during the pandemic – 63 per cent of women and 56 per cent of men (see Figure 14). Professors are most likely to respond that they have not noticed any impact on career development during the pandemic.

Figure 13. What is your assessment of your career development as a researcher during the pandemic? N = 1170.

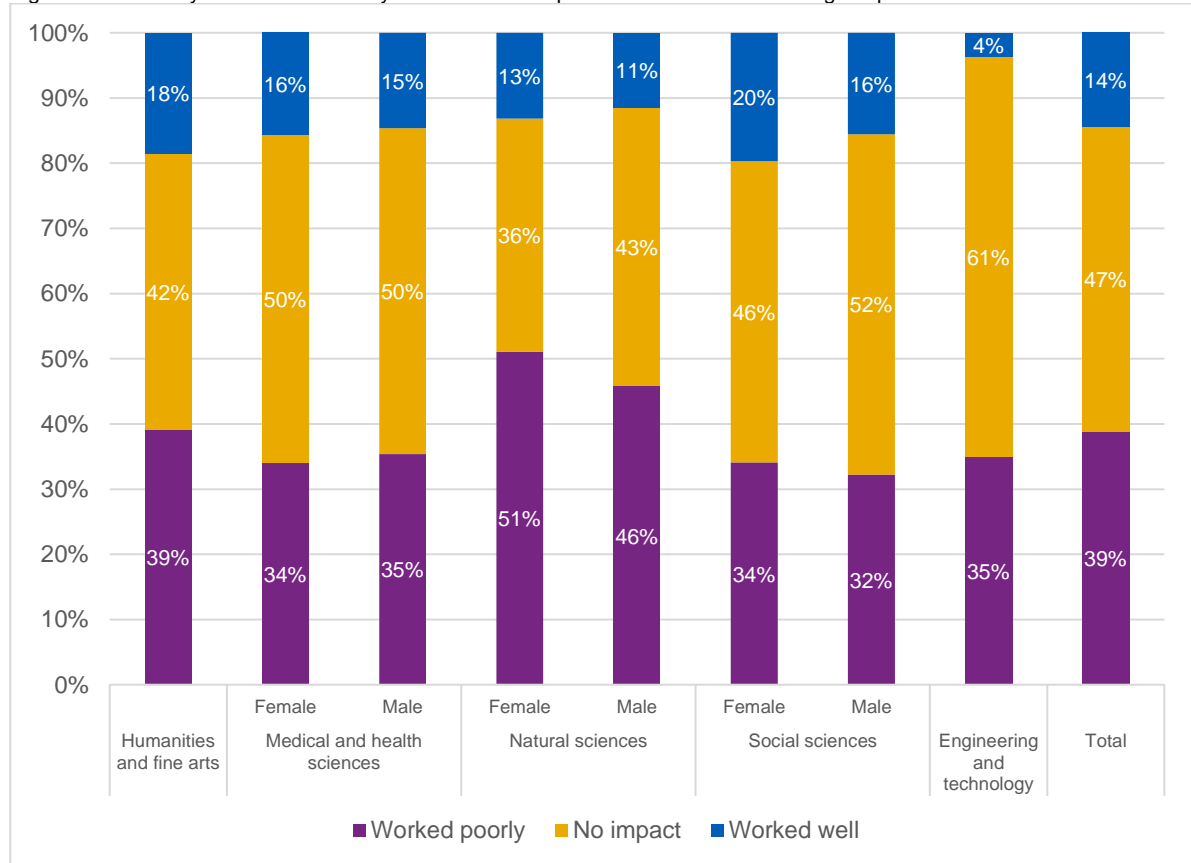
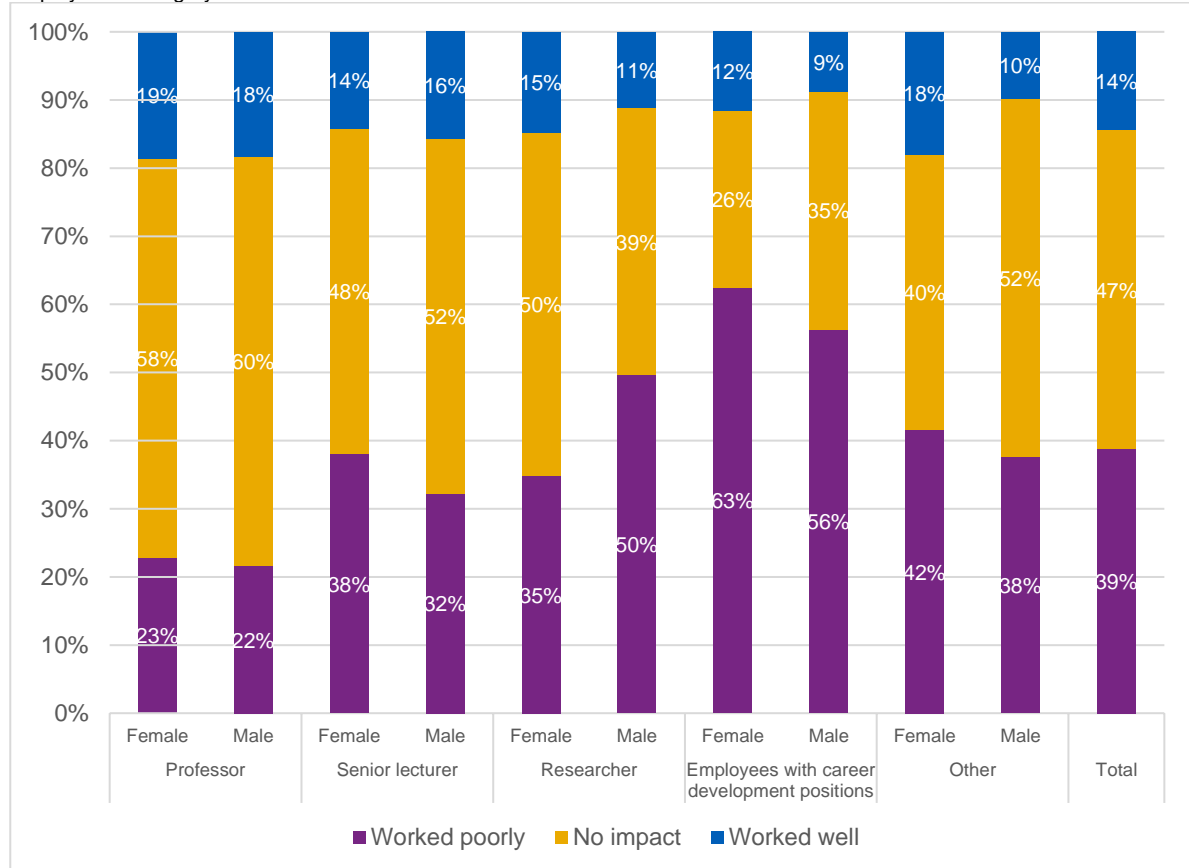


Figure 14. What is your assessment of your career development as a researcher during the pandemic? Divided by main employment category. N = 1171.



### Quotations about career development

*"Had to completely change my topic of research while I have a 2 year postdoc stipend. Impacting negatively career prospects."* Woman/Medical and health sciences

*"Being a newly employed postdoc at xx, I feel that the pandemic has decreased my chances for networking with new colleagues as well as planning for future collaborations. Having to book digital meetings for networking or eventual cooperations is in my experience much more difficult than talking casually about such things over a lunch for example. Thus, I expect the pandemic to have longer-term impacts on my future research."* Woman/Natural sciences.

*"Have completely lost the academic environment, i.e., discussions with colleagues that can lead to collaboration and research ideas. Since I don't have a tenure track position, I am assuming my career is over (even though I have received a new Research Council grant for four years), since I'm dependent on functioning collaboration and interactions."* Man/Natural sciences.

*"I have had to go down to half time since the municipality only offers 25 hours of childcare a week and it doesn't work well to work from home outside of these times. In practice, working halftime means that everything else (administration, email, student cases, surveys, other things that don't exist on paper take a*

*greater part of work time, and since I can't skip teaching, research is the only thing to cut back. In practice, I've not gotten anything done on my xxx project since the pandemic began." Man/Natural sciences.*

## **Consequences on research specialisation, cooperation and collaboration**

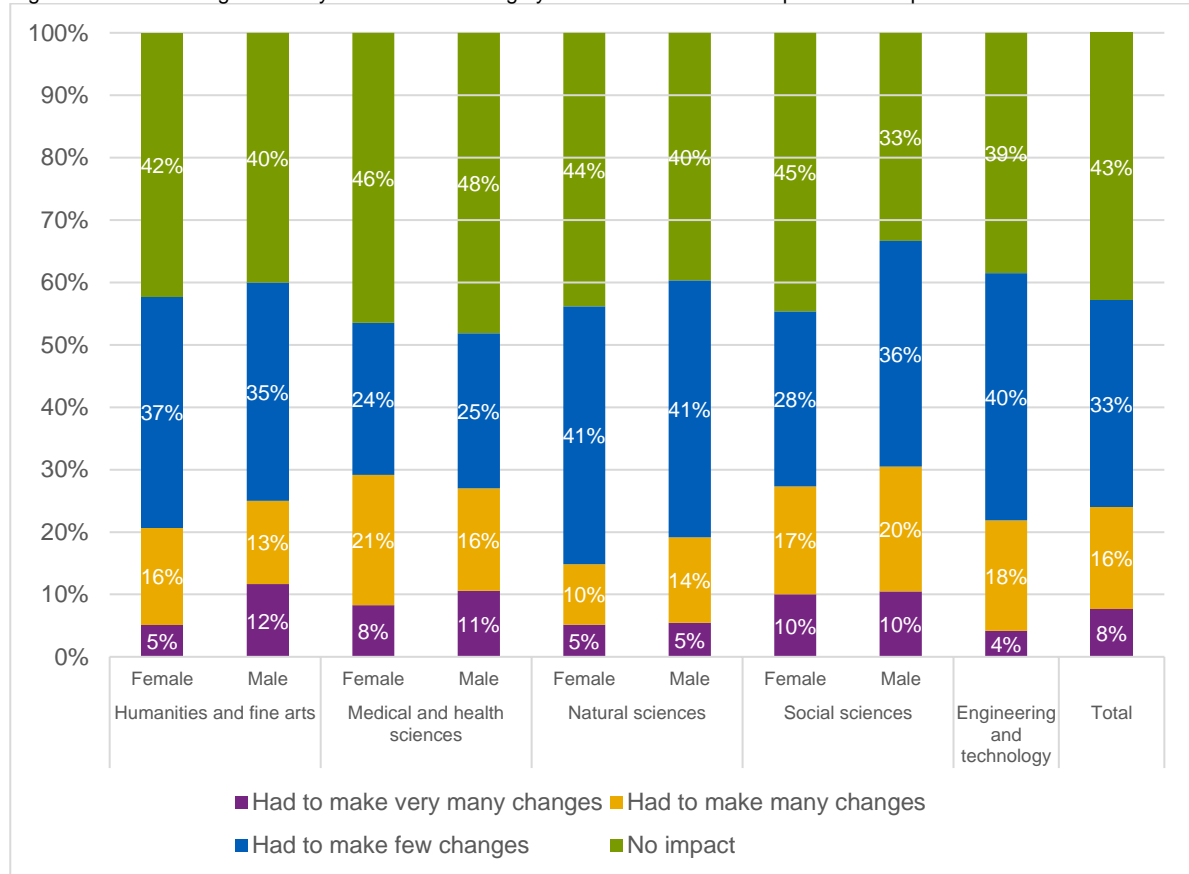
- A third responded that they have not needed to change their research and just under 25 per cent responded that they have had to make many or very many changes to their research.
- International cooperations decreased or practically came to an end for six of 10.
- For just under six of 10, collaborations have decreased or practically come to an end.

### **Some have changed their research, others have not**

With this question, we examine if the pandemic has led to changes in research (see Figure 15). For example, the pandemic may have raised new research questions, forced changes to data collection methods, or changed the focus of the research. Forty-three per cent responded that they have had to make few changes and 33 per cent that the pandemic has not impacted their research. The remaining (just under 25 per cent) responded that they have had to make many or very many changes.

There are certain differences between the fields of research. The percentage that responded they have had to make many or very many changes is highest within the medical and health sciences and the social sciences. It is lowest in the natural sciences.

Figure 15. To what degree have you needed to change your research as a consequence of the pandemic? N = 1344.



### Quotations about changes to research

*“Due to the pandemic I have had to temporarily change my research topic (to COVID related). This will have consequences later on when I have to show my results in my own topic.”* Woman/Medical and health sciences

*“I have started new projects related to coronavirus that may affect the long-term focus of my research group.”* Man/Medical and health sciences

*“The pandemic has forced finding other solutions for data collection and naturally there can be other consequences because of the pandemic.”* Woman/Medical and health sciences

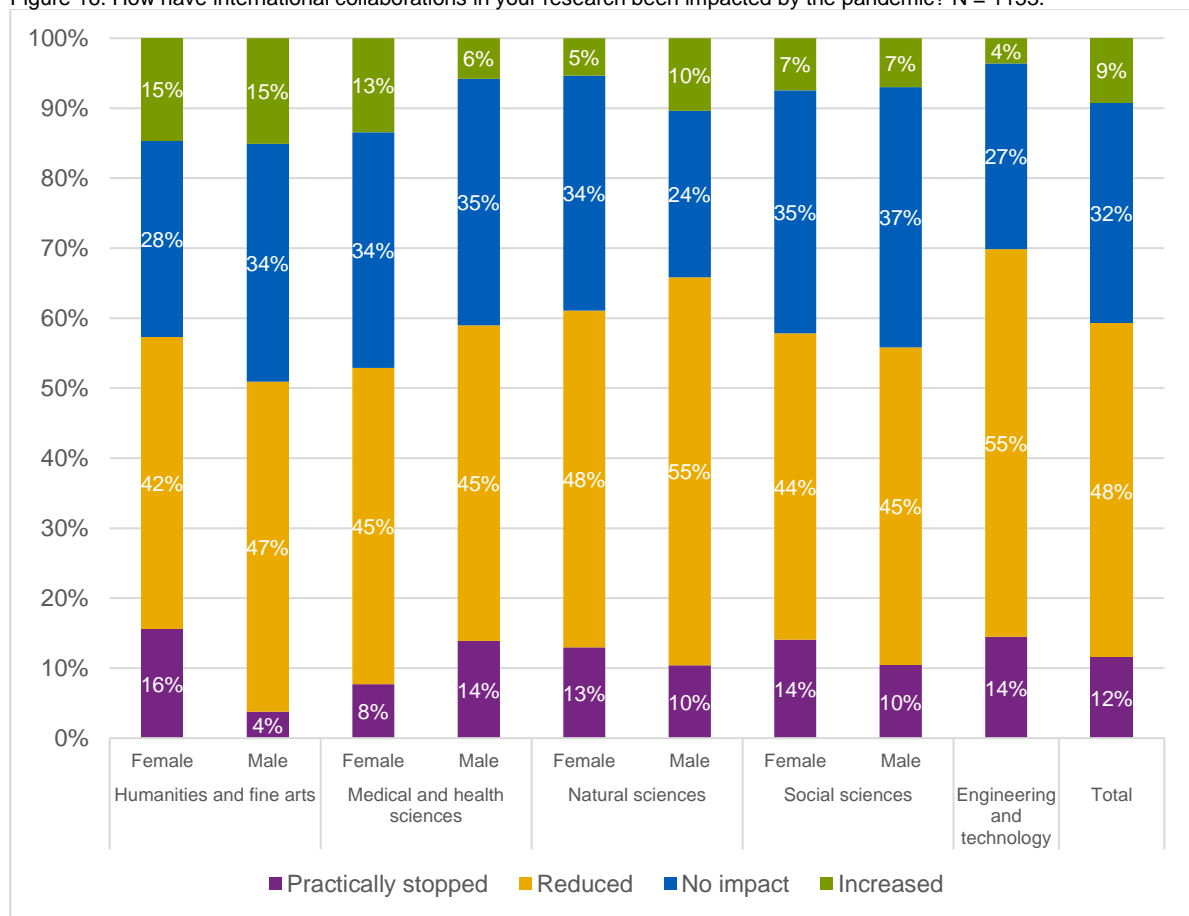
*“A long-term benefit is that the coronavirus pandemic forced me to identify activities that can be carried out far more efficiently on-line.”* Man/Humanities and fine arts.

*“We have had to find alternative solutions for collecting informed consents and hope that this does not cause problems later own.”* Woman/Humanities and fine arts

### International cooperation have decreased for 6 of 10

On the question of how international cooperation has been impacted during the pandemic, the negative responses dominate (see Figure 16). In total, 12 per cent responded that they have practically come to an end and 48 per cent said they have decreased. The other 41 per cent responded that they have not been impacted or have increased. There are no clear differences between the fields of research. Respondents from engineering and technology were most likely to respond negatively – 69 per cent responded that international collaborations have practically come to an end or decreased.

Figure 16. How have international collaborations in your research been impacted by the pandemic? N = 1153.



#### Quotations about international cooperation

*"Above all, the international contacts have decreased."* Man/Engineering and technology.

*"I believe that the most noticeable effect is on the social interaction/communication/collaboration with other researchers abroad. Online meetings etc. hardly substitute casual conversations and allow to strike up new collaborative efforts."* Woman/Medical and health sciences.

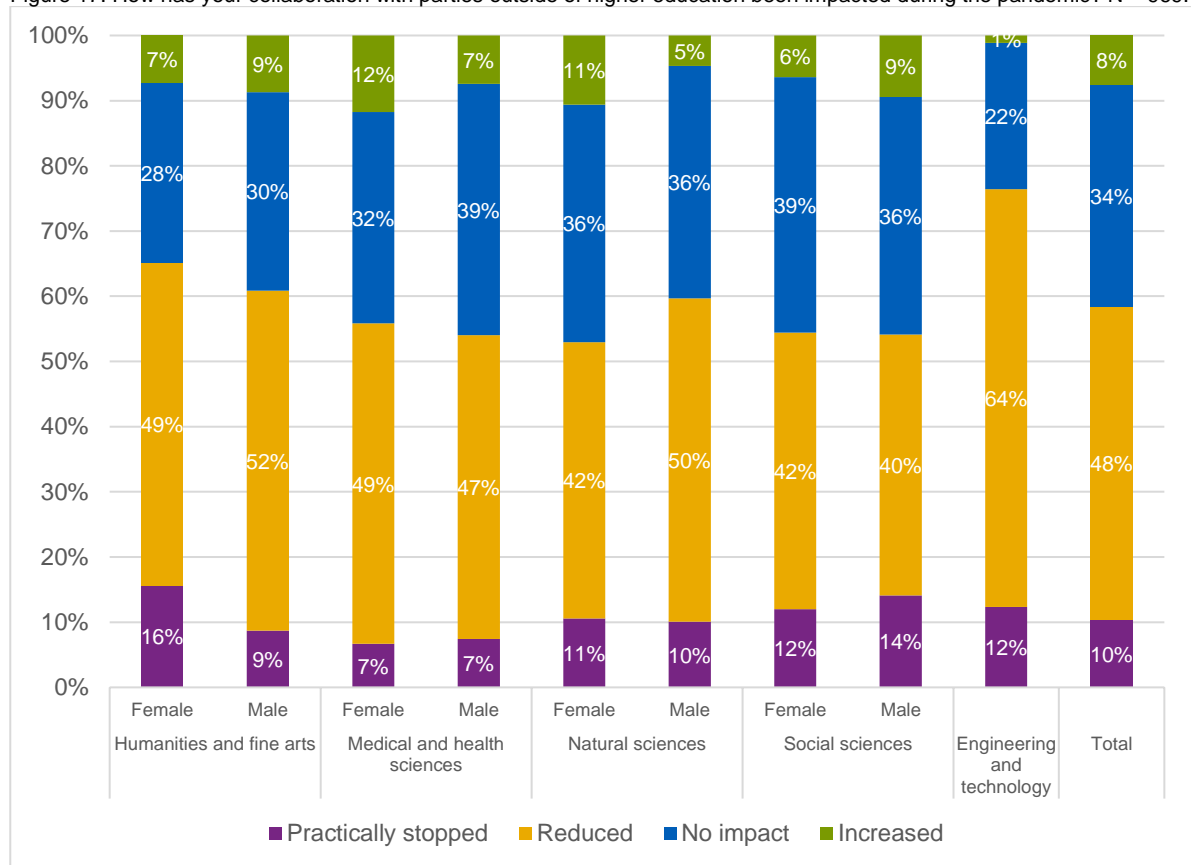


*“The international contacts and contacts with other higher education institutions work better when everyone accepts having digital meetings.”* Woman/Humanities and fine arts

**Collaboration has decreased for 6 of 10**

The next question deals with the impact on collaboration with parties outside of higher education during the pandemic? Like with the previous question, the negative responses dominate (see Figure 17). Ten per cent responded that collaboration has practically come to an end and 48 per cent that it has decreased. The remaining 42 per cent responded that it has not been impacted or has increased. There are certain differences between the fields of research. Engineering and technology stands out with a high percentage of negative responses – just over 75 per cent responded that collaboration with parties outside the higher education sector has practically come to an end or decreased.

Figure 17. How has your collaboration with parties outside of higher education been impacted during the pandemic? N = 969.



**Quotes about collaboration**

*“Our research subject has been hit hard during the pandemic since we work with innovation and applied research. Our research partners are often medium-sized and large companies in Europe that have furloughed staff, which makes it difficult to contact people. They are also not willing to join research projects but instead are busy keeping their business going. We need more government funding for basic research within the subject to maintain the research and operations we have created over many years. In*

*the long run, we risk having to cut back large parts of our operations and let many researchers/teachers go.” Man/Engineering and technology.*

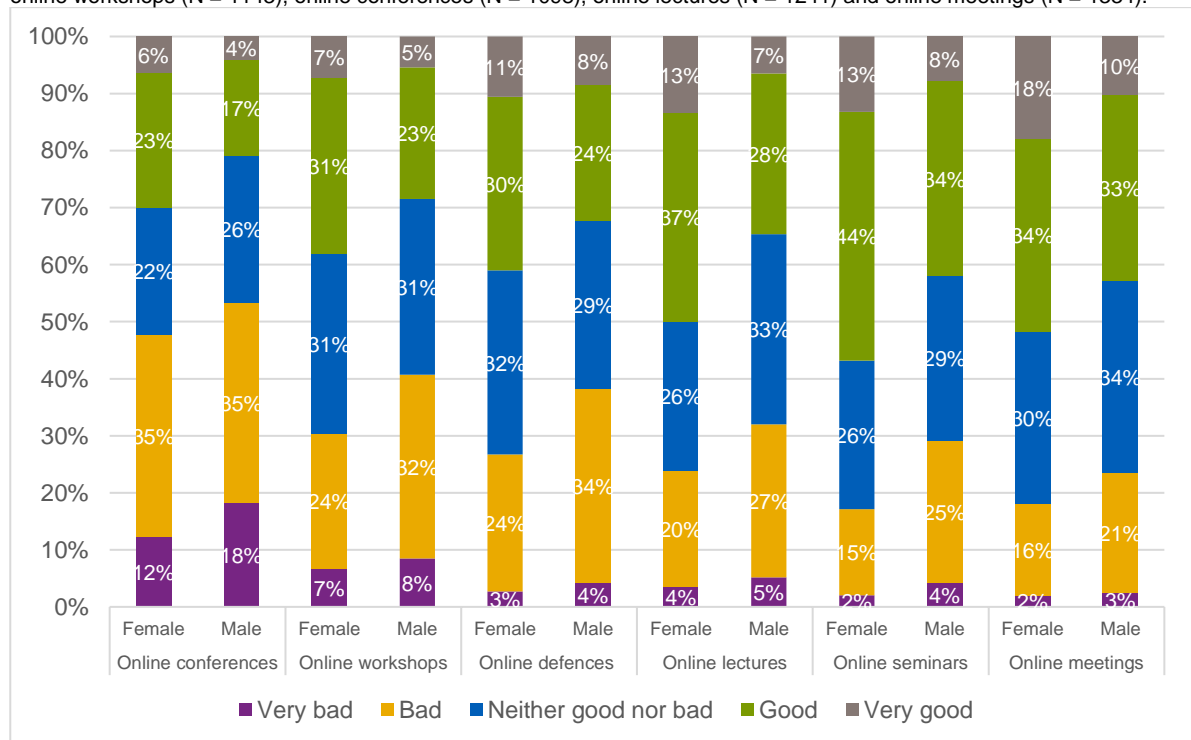
## Experience from online meetings

- The respondents were most satisfied with online meetings and online seminars.
- They were least satisfied with online conferences.
- Female respondents were more positive to online meetings than male respondents.

### Women are more positive to online meetings than men

As a consequence of the pandemic, physical meetings have been cancelled and moved online. We asked questions on experience from some common physical meetings within higher education: online defences of theses, online seminars, online workshops, online conferences, online lectures and online meetings. We present the results divided by gender in Figure 18, sorted in decreasing order from left based on percentage that responded that they experience online meetings as very bad or bad. The respondents were most satisfied with online meetings and online seminars and least satisfied with online conferences. Throughout, women are more positive to online meetings than men.

Figure 18. Describe your experience of online public defences of dissertations, (N = 1125), online seminars (N = 1320), online workshops (N = 1143), online conferences (N = 1098), online lectures (N = 1241) and online meetings (N = 1334).



### Quotations about online meetings

*"I would say that I am mostly negatively affected by international conferences not running in person and thus collaborations and networking opportunities were lost/never got started. I expect this to impact my productivity and career for at least next 5 years."* Woman/Natural sciences.

*"More efficient meetings when held remotely."* Woman/Medical and health sciences

*"Conferences are completely lacking any value it would make them worth attending, for instance, the spontaneous discussions colleagues you haven't talked to for a while, bumping into interesting posters/talks, developing scientific network, getting to know talented students etc."* Man/Natural sciences.

*"Digital platforms have made it easier to meet people from around the world than before the pandemic (if there is something positive with the pandemic, this is it), but since the threshold for having an online meeting has vanished, we also invest more time in unnecessary Zoom meetings, in my opinion."* Man/Humanities and fine arts.

*"Concerning online meetings/seminars/lectures, etc., I see that they have allowed us to integrate with colleagues in the international research community. In this way, it is good and there is a point with online exchanges. Online meetings can similarly facilitate quick decisions, etc. But – I see that the quality of digital collaborations is typically worse than seeing each other."* Woman/Social sciences.

*"The time for meetings has multiplied many times over during the pandemic, from having time resulting from cancelled meetings, my calendar is now filled and my research is often neglective. Instead of taking care of smaller things between colleagues when meeting at the workplace, meetings are now booked and the day easily becomes booked up. Since all meetings are online, you can be everywhere (different places/countries within the space of minutes) and more or less non-stop from morning to evening."* Woman/Social sciences.

## Summary conclusions of the study

UKÄ's survey of researchers shows that the coronavirus pandemic has not had particularly significant consequences for the research of certain respondents and that it has even led to positive changes. For many others, the pandemic has had a very negative impact on their research. These varying findings are seen in the responses for several of the questions since the percentage of positive responses overall is about the same as the negative responses. The open-ended responses also provide a varied picture – some things have worked well and others have worked poorly. With this in mind, UKÄ would like to highlight several areas that require extra attention and that can be the basis for additional in-depth studies or measures.

One result that sticks out is that many say that data collection has become more difficult or not possible to conduct as planned. This is a widespread problem for respondents within different fields of research. Within the humanities and fine arts and the social sciences, for example, archives and

libraries were not available to the desired degree and studies could not be conducted because of closures. With the medical and health sciences, for example, it has not been possible to conduct experiments because of restrictions on patient visits. Within the natural sciences, for example, it has become more difficult to conduct field trips and field experiments because of travel restrictions.

The study also shows that research has suffered from teaching taking more time in connection with the transition to remote teaching. For a third of respondents, teaching has taken time from research, which has meant they have either spent less worktime on research or have worked overtime to be able to invest as much work time on research as before the pandemic. Of the studied employment categories, senior lecturers have been hardest hit.

The use of external research funding has decreased for nearly half. This can be a consequence of the inability to conduct data collection as planned or because research is pushed aside because of the transition to remote teaching.

Many feel that remote work during the pandemic has impacted research negatively. There is widespread concern that the lack of physical meetings will have negative consequences on research through reduced productivity and quality. This is primarily because social interactions are important for the motivation and creativity of many respondents. The survey shows that short, informal meetings allow thoughts and ideas to be tested and that it is not possible to replace these with online meetings. Many also point to home settings not being conducive work environments, for example because family members have been home or the home is not a good workplace from a purely ergonomic perspective.

The task at hand also influences how well remote research works. Some indicate that it works well to remotely write articles or grant applications. But it is worse if you are in a data collection phase.

Overall, respondents are relatively satisfied with online meetings and online seminars. They were least satisfied with online conferences. An interesting finding is that women are more positive to online meetings than men.

Even though the focus of this survey is not on doctoral students and doctoral programmes, there are signs of negative consequences on doctoral education. Many doctoral supervisors indicate that remote work during the pandemic has impacted supervision negatively. A majority of doctoral supervisors also indicate that studies for doctoral students are taking longer than planned.

Just under 25 per cent have had to make many or very many changes to their research. For example, this could result from transitioning to COVID-19 research or adapting their research because of problems with data collection.

This survey was conducted during the ongoing pandemic. Only the future can show the degree to which the observed changes are permanent and what their long-term consequences on research will be. UKÄ will continue following up the consequences of the pandemic on research within the framework of the pandemic government assignment and in its regular collection and analysis of statistics.

## Annex 1. The survey.

### Survey sent to researchers on the pandemic's consequences for research

The Swedish Higher Education Authority (UKÄ) has been tasked by the Government to study the consequences of the coronavirus on higher education, both in the short and long terms.

This study is attempting to identify the corona pandemic's short-term and long-term consequences for research at Swedish higher education institutions. To this end, we are asking you to contribute your experience if your work includes research. Doctoral students are not included in this survey since we will be examining their experiences of the pandemic in other ways.

Since we want to capture the consequences of the pandemic on research and not on education, we ask that you focus on how you in your role as a researcher and your research have been impacted by the pandemic.

The survey has 22 questions and will take 5–10 minutes to complete.

Thank you for your participation.

### Background questions

1. Which university or university college is your primary place of work?

- Beckmans College of Design
- Blekinge Institute of Technology
- Chalmers University of Technology
- University College Stockholm
- Erica Foundation
- Ersta Sköndal Bräcke University College
- Evidens AB
- Swedish Defence University
- Gammelkroppa School of Forestry
- Swedish School of Sport and Health Sciences
- University of Gothenburg
- Stockholm School of Economics
- Dalarna University

- University of Borås
- University of Gävle
- Halmstad University
- University of Skövde
- Kristianstad University
- University West
- Johannelund School of Theology
- Karlstad University
- Karolinska Institutet
- University College of Art, Craft and Design
- Royal Institute of Art
- Royal College of Music in Stockholm
- KTH Royal Institute of Technology
- Linköping University
- Linnaeus University
- Luleå University of Technology
- Lund University
- Malmö University
- Mid Sweden University
- Mälardalen University
- Newman Institute
- Swedish Red Cross University College
- Scandinavia's Academy for Psychotherapy Development
- Sophiahemmet University College
- Jönköping University Foundation
- Stockholm University of the Arts

- Stockholm University College of Music Education
- Stockholm University
- Swedish Institute for CBT & Schema Therapy
- Swedish University of Agricultural Sciences
- Södertörn University
- Umeå University
- Uppsala University
- Örebro School of Theology
- Örebro University

2. How do you describe your gender identity?

- Female
- Male
- Other (individuals who are not or do not feel they belong to the categories male or female)

3. What year were you born?

4. What is your main occupation at the higher education institution?

- Professor
- Lecturer
- Researcher
- Associate senior lecturer
- Postdoctoral research fellow
- Postdoctoral researcher
- Adjunct
- Other researching staff
- Not employed by the higher education institution, i.e., I am associated with and employed by another employer.

5. Within which subject category do you primarily conduct research?

### Natural science

- Physics
- Biology
- Chemistry
- Computer and information science
- Earth and related environmental sciences
- Mathematics
- Other natural science

### Engineering and Technology

- Mechanical engineering
- Electrical engineering, electronic engineering, information engineering
- Built environment
- Industrial biotechnology
- Materials engineering
- Chemical engineering
- Environmental engineering
- Medical engineering
- Nano technology
- Environmental biotechnology
- Other engineering or technologies

### Medical and health sciences

- Clinical medicine
- Basic medicine
- Health Sciences.
- Medical biotechnology
- Other medical and health sciences



#### Agricultural sciences and veterinary medicine

- Agricultural, forestry and fisheries
- Other natural sciences
- Veterinary medicine
- Animal and dairy science
- Agricultural biotechnology

#### Social science

- Economics and business
- Educational sciences
- Sociology
- Political Science
- Psychology
- Law
- Media and communications
- Social and economic geography
- Other social sciences

#### Humanities and fine arts

- Languages and literature
- History and archaeology
- Art
- Philosophy, ethics and religion
- Other humanities

#### Remote work

6. About what percentage of your work time has been done remotely during an average week during the pandemic?

- 0%

- 1–20%
- 21–40%
- 41–60%
- 61–80%
- 81–100%

7. Compared with researching at the workplace. How well has research worked when working remotely during the pandemic?

- Much better.
- Better.
- Minor difference from conducting research at my normal workplace.
- Worse.
- Much worse.
- Not applicable since I have not conducted research remotely during the pandemic.

8. Compared with supervising doctoral students at your normal workplace. How well has supervising doctoral students remotely worked during the pandemic?

- Much better.
- Better.
- Minor difference from supervising at my normal workplace.
- Worse.
- Much worse.
- Not applicable since I have not supervised any doctoral students remotely during the pandemic.

9. Compared with when your colleagues worked at your normal workplace. How has your colleagues' remote work during the pandemic impacted your ability to conduct research?

- It has become much better.
- It has become better.
- I have not noticed any difference.
- It has become worse.

- It has become much worse.
- Not applicable since none of my colleagues have worked remotely.

**Data collecting, funding, publication and recruitment**

10. To what degree has the pandemic impacted the data collection that your research is based on?

- It has become much easier.
- It has become easier.
- No significant impact.
- It has become more difficult.
- It has become much more difficult.
- Not applicable since I have not collected data during the pandemic.
- Not applicable since my research is not based on data collection.

11. How have the results of your applications for external research funding been impacted by the pandemic?

- It has become easier to receive external funding.
- I have not noticed any difference.
- It has become more difficult to receive external funding.
- Not applicable since I have not applied for external research funding during the pandemic.

12. How has use of your external research funding been impacted by the pandemic?

- I am spending less money.
- I have not noticed any significant impact.
- I am spending more money.
- Not applicable since I do not have any external research funding.

13. How have opportunities for publishing your research findings changed during the pandemic?

- It has become easier.
- I have not noticed any significant change.
- It has become more difficult.

- Not applicable since I have not attempted to publish anything.

14. What is your assessment of your career development as a researcher during the pandemic?

- It has gone well.
- I have not noticed any significant impact.
- It has not gone well.
- The question is not applicable for me.

15. How has recruitment of staff worked during the pandemic?

- It has become easier to recruit.
- I have not noticed any difference.
- It has become more difficult to recruit.
- Not applicable since I have not recruited staff.

16. Compared with before the pandemic. How has the amount of time you research changed during the pandemic? Indicate the response that is most appropriate.

- I put in more time since I teach less.
- I put in more time.
- I put in about the same amount of time.
- I put in about the same amount of time, but I have to work overtime now to have time to research since teaching takes more time.
- I put in less time since teaching takes more time.

17. To what degree have your doctoral students completed their studies according to the study plan during the pandemic?

- It has gone quicker than planned.
- No difference.
- It has gone slower than planned.
- Not applicable since I do not supervise any doctoral students.

**Research specialisation**

18. To what degree have you needed to change your research as a consequence of the pandemic? For example, the pandemic may have raised new research questions, forced changes to data collection methods, or changed the focus of the research.

- I have had to make very many changes.
- I have had to make many changes.
- I have had to make few changes.
- The pandemic has not impacted my research.

**Cooperation/collaboration**

19. How have international collaborations in your research been impacted by the pandemic?

- They increased in scope.
- They have not been impacted.
- They have decreased in scope.
- They have practically stopped completely.
- Not applicable since my research does not involve international cooperation.

20. How has your collaboration with parties outside of higher education been impacted during the pandemic?

- It has increased in scope.
- It has not been impacted.
- It has decreased in scope.
- It has practically stopped completely.
- Not applicable since my research does not involve collaboration with parties outside of higher education.

**Increasing degree of digitalisation**

21. Describe your experience of:

Online defences of dissertations: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good), Have not participated/not relevant.

Online seminars: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good), Have not participated/not relevant.

Online workshops: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good).

Online conferences: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good), Have not participated/not relevant.

Online lectures: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good), Have not participated/not relevant.

Online meetings: 1–5: 1 (very bad), 2 (bad), 3 (neither good nor bad), 4 (good), 5 (very good), Have not participated/not relevant.

22. Do you have any comments about what short-term and long-term effects the coronavirus pandemic may have on your research?

## Annex 2. Information about the respondents

Of total 1,356 questionnaire responses, 35 per cent were in English and 65 per cent were in Swedish.

The number of responses per HEI and percentage of men and women. Fewest responses per cell shown are 10.

| Higher education institutions     | Percentage women | Percentage men | Percentage other gender identity | Total        |
|-----------------------------------|------------------|----------------|----------------------------------|--------------|
| Chalmers University of Technology | 38%              | 58%            |                                  | 48           |
| Kristianstad University           | 74%              | 23%            |                                  | 31           |
| Karolinska Institutet             | 55%              | 44%            |                                  | 441          |
| Luleå University of Technology    | 34%              | 66%            |                                  | 88           |
| Mälardalen University             | 45%              | 53%            |                                  | 75           |
| Stockholm University              | 55%              | 44%            |                                  | 445          |
| Uppsala University                | 47%              | 51%            |                                  | 208          |
| Second                            | 60%              | 40%            |                                  | 20           |
| <b>Total</b>                      | <b>52%</b>       | <b>47%</b>     | <b>1%</b>                        | <b>1,356</b> |

Number of responses per field of research and percentage of women and men, respectively. Fewest responses per cell shown are 10.

| Research field                                | Percentage women | Percentage men | Percentage other gender identity | Total number |
|---|------------------|----------------|----------------------------------|--------------|
| Humanities and fine arts                      | 66%              | 34%            |                                  | 176          |
| Agricultural sciences and veterinary medicine |                  |                |                                  |              |
| Medical and health sciences                   | 57%              | 42%            |                                  | 445          |
| Natural science                               | 41%              | 58%            |                                  | 379          |
| Social science                                | 58%              | 41%            |                                  | 258          |
| Engineering and Technology                    | 29%              | 70%            |                                  | 97           |
| <b>Total</b>                                  | <b>52%</b>       | <b>47%</b>     | <b>1%</b>                        | <b>1,356</b> |

Total responses per main employment category and percentage of women and men, respectively. Fewest responses per cell shown are 10.

| Main employment category     | Percentage women | Percentage men | Percentage other gender identity | Total number |
|------------------------------|------------------|----------------|----------------------------------|--------------|
| Professor                    | 43%              | 57%            |                                  | 352          |
| Lecturer                     | 58%              | 42%            |                                  | 338          |
| Researcher                   | 50%              | 48%            |                                  | 255          |
| Associate senior lecturer    | 43%              | 55%            |                                  | 47           |
| Postdoctoral research fellow | 48%              | 52%            |                                  | 27           |
| Postdoctoral researcher      | 56%              | 43%            |                                  | 152          |
| Other researching staff      | 62%              | 37%            |                                  | 105          |
| Adjunct                      | 71%              | 29%            |                                  | 24           |
| Not employed at the HEI      | 57%              | 43%            |                                  | 56           |
| <b>Total</b>                 | <b>52%</b>       | <b>47%</b>     | <b>1%</b>                        | <b>1,356</b> |

