QUALITY IN THE PHD PROCESS 2021

A SURVEY AMONG PHD STUDENTS AT AARHUS UNIVERSITY

AARHUS
UNIVERSITY

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Centre for Educational Development

Aarhus University

https://ced.au.dk/

Abbreviations used

AU   Aarhus University

AR   Faculty of Arts

BSS   School of Business and Social Sciences

HE   Faculty of Health

NAT   Faculty of Natural Sciences

TECH   Faculty of Technical Sciences

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CHAPTER 1. INTRODUCTION

This report is the third of its kind at Aarhus University (AU). It reports the results of a survey about PhD students' perception of the *Quality in the PhD Process* at the university. The survey was conducted by Centre for Educational Development, AU on behalf of the Heads of the five Graduate Schools at AU. Rambøll Management Consulting assisted in the data collection.

Quality in the PhD Process is a quadrennial survey that aims at providing specific, local knowledge to support the quality development of Aarhus University's Graduate Schools as well as to contribute to international research on PhD degree programmes. It was carried out for the first time in 2013. The [report from 2013](#) includes a thorough description of the theory and research behind the questions asked in the survey.

The survey in 2021 is based on data from an electronic questionnaire, which was sent to 2,130 PhD fellows at Aarhus University. A total of 1,585 PhD students answered the questionnaire giving a response rate of 74.4 percent.

The results of the survey *Quality in PhD Process 2021* are reported in the form of tables and figures. The tables show the results for AU at an aggregated level *and* at the level of the five Graduate Schools. The tables also include data from 2017 to allow a comparison with data from the recent survey. Figures are added to illustrate data at AU aggregated level in 2021. Data at Programme level are not reported here, but are forwarded as Excel spreadsheets to the respective Heads of Graduate Schools.

The Graduate Schools at AU have been reorganized from four to five Schools since 2017. The former Graduate School at ST has been divided in to two Graduate Schools at the NAT faculty and TECH faculty, respectively. Therefore, it is not possible to make a complete comparison for these Schools. Please see Chapter 2 for methodological reflections on the issue.

SPECIAL CIRCUMSTANCES

It is important to note that the survey was conducted during lock down due to Covid-19. At the time of the survey, the pandemic had affected Aarhus University for almost a year. To take into account the extraordinary and difficult situation for many PhD students, a battery of questions about Covid-19 was added to the questionnaire, including an open comment box about Covid-19. The respondents received a cover letter with the following instruction:

> "In the beginning of the questionnaire, we will ask you some questions about the Covid-19 situation and how it might have affected your PhD process. All *remaining* questions are related to your overall PhD process, and therefore we kindly ask you to answer these questions based

on a *general perception* of your process so far and to the extent possible".

We acknowledge the difficulties and potential biases in asking the respondents to take an overall and general perspective, and we remind the reader that the survey results need to be understood in the light of the special circumstances of Covid-19.

Finally, we would like to thank Aarhus University's many PhD students for their participation in the survey, and for thereby allowing us to bring their perceptions to light.

Table 1.1. Overview of main results.

	AU	AR	BSS	HE	NAT	TECH
Covid-19 (Somewhat agree + Agree)						
I am worried that Corona will affect the quality of my PhD education	78%	80%	80%	74%	79%	81%
I have looked for other options than going abroad as a way of changing environment	37%	34%	43%	42%	26%	40%
I have talked with my supervisor about how to ensure progress in my PhD project during Corona.	75%	72%	75%	79%	70%	77%
I am worried that Corona will affect my career opportunities in a negative way.	53%	64%	60%	43%	47%	62%
Motives to begin the PhD (Important + Very important)						
I was passionate about doing research	91%	90%	93%	94%	89%	88%
I was very interested in my topic	92%	96%	94%	91%	92%	90%
I assumed that the PhD title would create opportunities in the job market outside the university	60%	49%	47%	66%	62%	68%
I considered it to be a regular job with a permanent income	44%	46%	47%	37%	42%	54%
I didn't have any other plans when I was given the opportunity	19%	17%	15%	13%	27%	22%
The educational elements of the PhD (To some degree + To a high degree)						
Does the selection of PhD courses give you the possibility of strengthening your general research qualifications?	80%	84%	80%	92%	62%	81%
Does the selection of PhD courses give you the possibility of strengthening your research qualifications within the framework of your project?	57%	54%	52%	66%	47%	63%
Has the work you do in addition to your own project (e.g., teaching or other departmental work) been an instructive experience?	81%	88%	84%	83%	77%	76%
Is the 280 hours of departmental work per year of such a nature that it negatively affects your PhD programme?	49%	56%	39%	33%	64%	48%
The research environment (Somewhat agree + Agree)						
Here I feel respected as a co-researcher	83%	77%	82%	88%	85%	80%
There is a sense around here that working together on research is fun	74%	61%	67%	80%	81%	72%

	AU	AR	BSS	HE	NAT	TECH
Here we present and discuss each other's research on a regular basis	72%	62%	71%	76%	80%	64%
It is possible to talk openly with colleagues about successful as well as unsuccessful experiences	81%	64%	77%	89%	86%	76%
I feel like I'm part of the research community here	73%	59%	68%	80%	81%	69%
Supervision (Somewhat agree + Agree)						
I receive sufficient supervision from my main supervisor	83%	85%	88%	83%	80%	79%
My supervisor makes many important choices in my project	38%	17%	20%	48%	47%	43%
My supervisor has clear preferences for the direction my project needs to take	50%	27%	28%	63%	58%	55%
My supervisor has a clear expectation that I will follow the advice I get	63%	44%	51%	71%	70%	65%
The relationship between my supervisor and me is characterised by mutual respect	94%	97%	96%	93%	93%	92%
My supervisor supports me in taking ownership of my research project	89%	90%	89%	90%	86%	88%
Independence (Somewhat agree + Agree)						
I feel that I'm in control of the project	77%	74%	81%	81%	74%	71%
I experience that it is possible to explore new research paths within the framework of my project	81%	88%	84%	78%	82%	79%
It is important to me that I make all the critical choices in my project	57%	74%	66%	54%	42%	60%
Workload (Often + Almost always)						
Do you feel that your work as a PhD student takes up so much time and energy that it affects your private life?	37%	43%	38%	28%	38%	46%
Does your work as a PhD student give you severe stress symptoms?	20%	28%	24%	12%	22%	20%
Satisfaction (Somewhat agree + Agree)						
Overall, I'm satisfied with what I have learned during my PhD process	86%	86%	88%	87%	85%	84%
Overall, I'm satisfied with the quality of my research work	79%	79%	80%	85%	74%	76%
Overall, I'm satisfied with the quality of my research supervision	81%	83%	84%	84%	77%	77%
I can warmly recommend my main supervisor	82%	84%	85%	84%	82%	76%

CHAPTER 2. METHOD AND DATA

This chapter includes a brief account of the data and methods used in the survey.

DATA COLLECTION

The study is based on data from an electronic questionnaire, which was sent out by e-Boks and e-mail to 2,130 PhD fellows at Aarhus University. The survey ran from the 5th January till the 5th February 2021. During this period, four reminders in all were sent out with regular intervals. The survey population included i) all enrolled PhD students at the time of the study and ii) PhD graduates who, at the time of the study, had handed in their PhD thesis within the recent six months.

RESPONSE RATE

A total of 1,585 PhD students chose to contribute to the study, giving a response rate of 74.4 percent. The response rate is shown in Table 2.1.

Table 2.1. Response rate at Graduate School level and Programme level

	Number of replies	Percent		Number of replies	Percent
AU	1,585	74%	**BSS**	222	77%
NAT	360	75%	Business Development and Technology	12	86%
Biology	45	92%	Economics and Business Economics	50	79%
Chemistry	46	75%	Law	18	67%
Computer Science	52	70%	Management	43	83%
Geoscience	16	80%	Political Science	51	85%
Mathematics	17	85%	Psychology and Behavioural Science	30	61%
Molecular Biology and Genetics	53	73%	Social Sciences and Business	18	78%
Nanoscience	81	69%	**TECH**	269	81%
Physics and Astronomy	50	75%	Agroecology	44	77%
AR	243	75%	Animal Science	26	76%
Anthropology, Global Studies and the Study of Religion	43	73%	Bioscience	23	92%
Art, Literature and Cultural Studies	38	78%	Engineering	102	80%
Didactics	32	78%	Environmental Science	30	81%
History, Archaeology and Classical Studies	35	83%	Food Science	32	82%
ICT, Media, Communication and Journalism	17	71%	Quantitative Genetics and Genomics	12	92%
Language, Linguistics, Communication, and Cognition	18	86%			
Learning and Education	38	73%			
Theology, History of ideas and Philosophy	22	65%			
HE	491	70%			
Biomedicine	66	69%			
ClinFO	363	69%			
Public Health	62	72%			

Figure 2.1. How far along are you in your PhD programme?
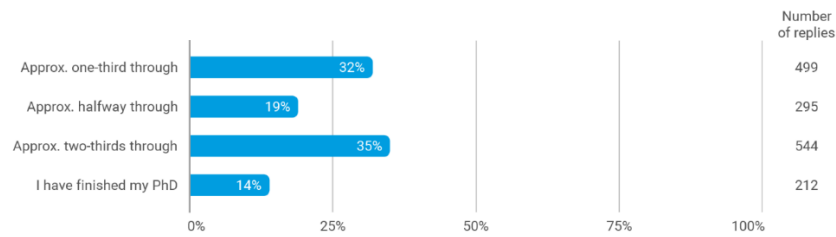
The distribution of respondents in terms of their study phase is illustrated in Figure 2.1

REPRESENTATIVITY

Even though a response rate of 74.4 is high for a study of this type, one in four have not answered the questionnaire for unknown reasons. To see how well the sample matched the survey population, an analysis of the representativity was carried out. This is shown in Table 2.2 below.

Table 2.2. Comparison of the study population and sample

	All (100%)	Sample (74%)
Gender (share of women)	53%	53%
International PhD.-students	29%	30%
Have submitted their thesis	12%	11%
Type		
Ordinary	81%	82%
Flexsible	19%	18%
Graduate School		
AR	15%	15%
BSS	14%	14%
HE	33%	31%
NAT	23%	23%
TECH	16%	17%

As can be seen from Table 2.2., there is a very high degree of correlation between the sample's composition of variables, such as gender, nationality, Graduate School and the composition of the survey population described with the same variables.

FROM FOUR TO FIVE GRADUATE SCHOOLS

The former Graduate School at ST has been divided in to two Graduate Schools at the NAT faculty and TECH faculty, respectively, since the recent survey in 2017. All the PhD programs included in the dataset for ST in 2017 are identifiable in the dataset for NAT and TECH in 2021. However, it is not possible to make a complete comparison for these Schools, because i) the former PhD Programme labelled "Bioscience" at ST has been divided in to "Biology" at NAT and "Bioscience" at TECH, respectively, and ii) a new program has been added to TECH labelled "Quantitative Genetics and Genomics". Consequently:

- Historic data from 2017 for NAT do not include the new PhD Programme labeled "Biology" in 2021
- Historic data from 2017 for TECH do not include the new PhD Programme labeled "Quantitative Genetics and Genomics"

ANONYMITY AND ETHICS

For detailed information about the survey respondents' confidentiality and rights, please follow this link.

OPEN COMMENTS

The questionnaire included two open questions allowing the respondents to write more in-depth comments about 1) The Covid-19 situation and 2) General issues related to their PhD study. A total of 387 PhD students wrote open comments about the Covid 19 situation, which corresponds to 24 percent of respondents. A total of 247 PhD students wrote open comments about general issues related to their PhD study, which corresponds to 16 percent of respondents. The open comments are not reported here but are forwarded directly to the Heads of the Graduate Schools.

CHAPTER 3. COVID-19

Table 3.1. During the Covid-19 period, I have mainly asked for advice and support, on how to handle the situation, from…

	AU	AR	BSS	HE	NAT	TECH
…my immediate leader	45%	48%	40%	49%	45%	42%
… my supervisor(s)	86%	82%	79%	90%	89%	86%
…the Graduate School	18%	29%	17%	18%	15%	13%

Note: The figures show the proportion who answered yes. The rest have answered no. The answer "Don't know/ not relevant" is not included in the calculation.

Table 3.2. The PhD students' experience of the Covid-19 situation

	AU	AR	BSS	HE	NAT	TECH
I am worried that Corona will affect the quality of my PhD education	78%	80%	80%	74%	79%	81%
I have looked for other options than going abroad as a way of changing environment	37%	34%	43%	42%	26%	40%
I find that my opportunities to establish networks and contacts are negatively affected by Corona.	90%	91%	94%	89%	88%	90%
Due to Corona, I have got more time, e.g., to write on my PhD and to watch lectures on the internet	30%	23%	19%	34%	31%	34%
I have talked with my supervisor about how to ensure progress in my PhD project during Corona.	75%	72%	75%	79%	70%	77%
I am worried that Corona will affect my career opportunities in a negative way.	53%	64%	60%	43%	47%	62%

Note: The table shows the proportion who have answered "agree" or "somewhat agree" to the statement. The rest have answered "neutral", "somewhat disagree", or "disagree". The calculation does not include those who have answered "do not know/not relevant".

Figure 3.1. During the Covid-19 period, I have mainly asked for advice and support, on how to handle the situation from…
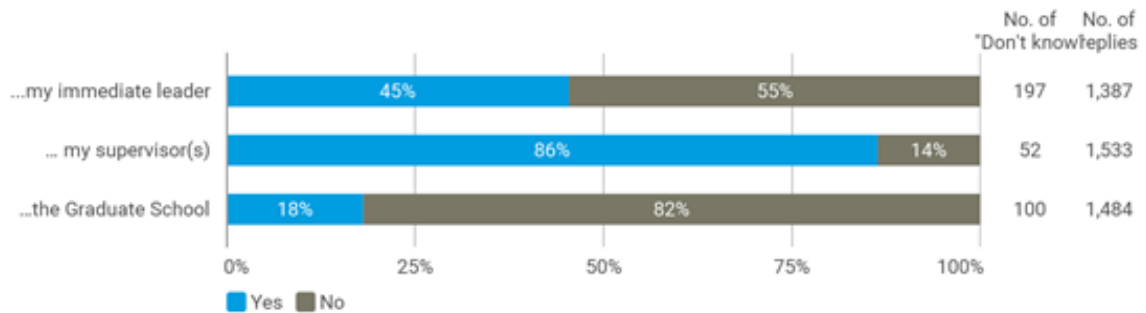
Note: Since these questions were not in the 2017 survey there is no historic data.

Figure 3.2. The PhD students' experience of the Covid-19 situation
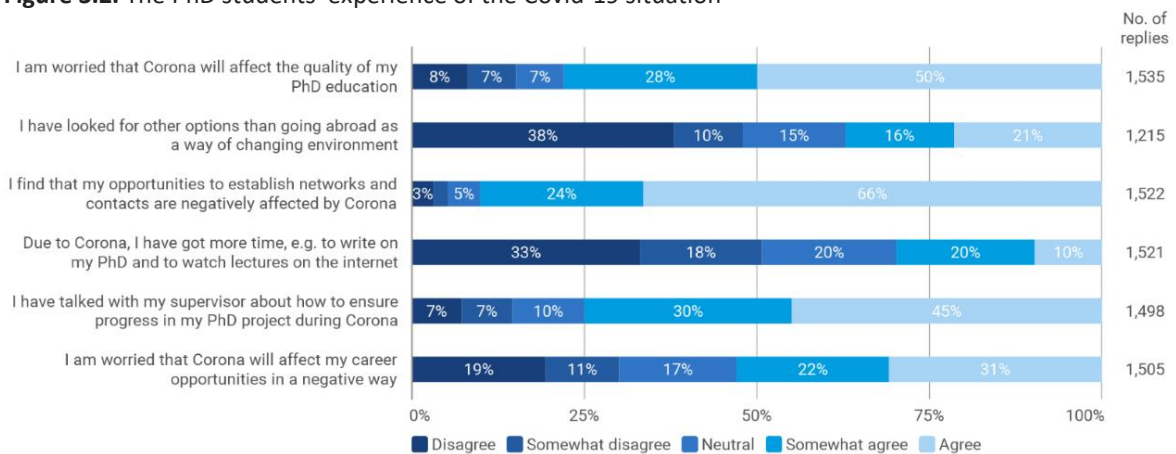
Questions: "Please indicate to what degree the following statements reflect your experience of the Covid-19 situation."
Note: Since these questions were not in the 2017 survey there is no historic data.

CHAPTER 4. THE WAY INTO THE PHD STUDY

Table 4.1. The PhD students' employment at the university prior to enrolment

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
Student teacher	22%	**21%**	25%	**20%**	26%	**27%**	19%	**23%**	25%	**24%**	15%	**7%**
Assistant lecturer - after Master's degree	5%	**4%**	9%	**5%**	4%	**1%**	8%	**8%**	1%	**1%**	2%	**1%**
Student assistant - with research-related tasks	12%	**13%**	16%	**17%**	24%	**23%**	8%	**11%**	11%	**11%**	11%	**7%**
Research assistant - after Master's degree	22%	**22%**	12%	**14%**	18%	**17%**	32%	**33%**	13%	**15%**	24%	**23%**
Research year student - only at Health	7%	**8%**	0%	**0%**	0%	**0%**	21%	**26%**	0%	**0%**	0%	**0%**
Other type of work - e.g., student guidance or administrative work	11%	**10%**	14%	**9%**	6%	**10%**	9%	**10%**	14%	**14%**	8%	**4%**
No, none of the above	45%	**48%**	51%	**55%**	44%	**45%**	33%	**31%**	49%	**50%**	57%	**68%**

Question: "Prior to your enrolment as a PhD student, have you had a job at Aarhus University (including Aarhus University Hospital)? (You may tick off more than one.)"

Note: The table shows the proportion of PhD students who have ticked off the above categories. Note that the PhD students could tick off more than one choice. It was not possible for the students to tick off more than one choice in the case where they answered "No, none of the above".

Note: The total sum of all choices does not add up to 100 percent, as it was possible to tick off more than one choice.

Table 4.2. Contact between PhD students and supervisors prior to enrolment

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Did one or more of your current supervisors encourage you to become a PhD student?	68%	**65%**	60%	**58%**	61%	**54%**	73%	**79%**	69%	**65%**	66%	**53%**
Did you go to one or more of your current supervisors to get help or inspiration for your PhD application?	79%	**76%**	78%	**77%**	82%	**83%**	86%	**88%**	74%	**70%**	66%	**52%**
Did you as a BA/Bsc or MA/Msc student get supervision from one or more of your current supervisors?	47%	**48%**	50%	**46%**	49%	**48%**	40%	**50%**	59%	**56%**	43%	**36%**
Did you work for one or more of your current supervisors before you applied for your PhD scholarship?	75%	**44%**	83%	**24%**	78%	**30%**	57%	**65%**	92%	**46%**	82%	**31%**

Note: The figures show the proportion who answered yes. The rest have answered no. The answer "Don't know/ not relevant" is not included in the calculation.

Table 4.3. Motives for beginning the PhD.

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
I was passionate about doing research	93%	**91%**	94%	**90%**	94%	**93%**	93%	**94%**	93%	**89%**	91%	**88%**
I wanted to teach	45%	**49%**	57%	**60%**	62%	**55%**	39%	**46%**	40%	**44%**	42%	**45%**
I was very interested in my topic	93%	**92%**	97%	**96%**	94%	**94%**	90%	**91%**	93%	**92%**	93%	**90%**
I assumed that the PhD title would create opportunities in the job market outside the university	61%	**60%**	43%	**49%**	48%	**47%**	73%	**66%**	65%	**62%**	59%	**68%**
I considered it to be a regular job with a permanent income	42%	**44%**	42%	**46%**	48%	**47%**	38%	**37%**	41%	**42%**	49%	**54%**
I didn't have any other plans when I was given the opportunity	19%	**19%**	16%	**17%**	20%	**15%**	14%	**13%**	23%	**27%**	30%	**22%**
I considered the PhD title to be prestigious	42%	**40%**	44%	**38%**	47%	**44%**	36%	**35%**	46%	**41%**	43%	**46%**

Question: "Please think back to the beginning of your PhD process. To which degree were the following statements important to your choice of becoming a PhD student?"

Note: The table shows the proportion of students who have answered that the statements (e.g. being passionate about doing research) were important or very important. The rest have answered less important or not important at all. The answer "do not know" is not included in the calculation.

Figure 4.1. Motives for beginning the PhD
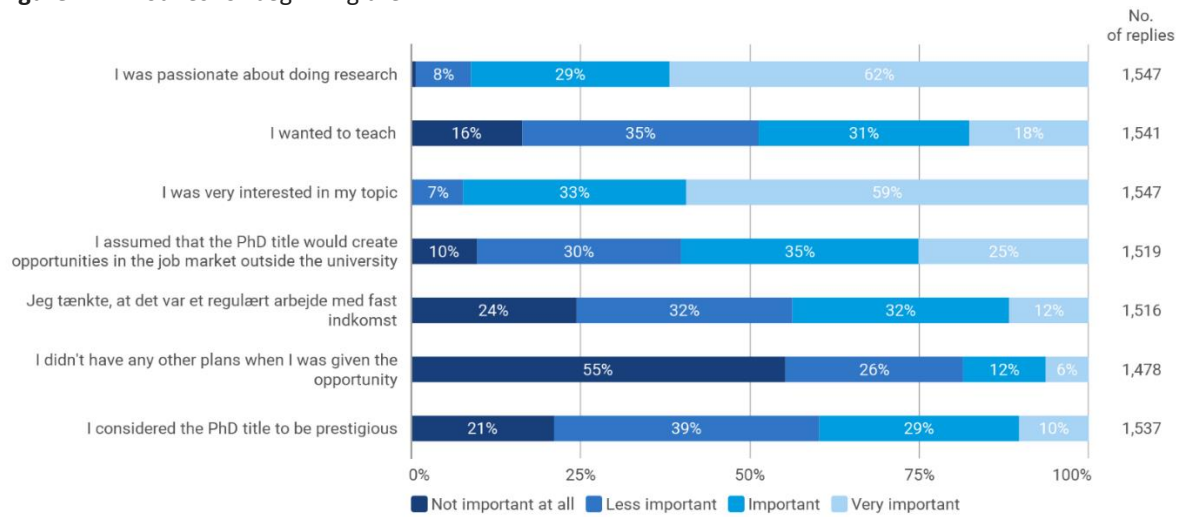
Question: "Please think back to the beginning of your PhD process. To which degree were the following statements important to your choice of becoming a PhD student?"

Note: The answer "do not know" is not included in the calculation.

CHAPTER 5. THE EDUCATIONAL ELEMENTS OF A PHD

Table 5.1. PhD students' experience of the educational elements of a PhD.

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Does the selection of PhD courses give you the possibility of strengthening your general research qualifications?	76%	**80%**	76%	**84%**	75%	**80%**	83%	**92%**	65%	**62%**	78%	**81%**
Does the selection of PhD courses give you the possibility of strengthening your research qualifications within the framework of your project?	53%	**57%**	46%	**54%**	53%	**52%**	59%	**66%**	43%	**47%**	57%	**63%**
Did your change of environment strengthen your research project?	81%	**79%**	80%	**80%**	78%	**72%**	80%	**79%**	86%	**80%**	83%	**82%**
Was your change of environment worth the effort compared to your professional benefits (e.g., networks, general skills as a researcher)?	79%	**77%**	76%	**73%**	73%	**66%**	77%	**81%**	84%	**80%**	84%	**81%**
Has the work you do in addition to your own project (e.g., teaching or other departmental work) been an instructive experience?	82%	**81%**	89%	**88%**	93%	**84%**	83%	**83%**	73%	**77%**	80%	**76%**
Is the 280 hours of departmental work per year of such a nature that it negatively affects your PhD study?	52%	**49%**	57%	**56%**	42%	**39%**	39%	**33%**	70%	**64%**	50%	**48%**
Are you satisfied with the content of your teaching assignments?	84%	**85%**	92%	**93%**	86%	**87%**	86%	**87%**	78%	**80%**	78%	**79%**
Are you satisfied with the extent of your teaching assignments?	75%	**74%**	86%	**83%**	81%	**79%**	82%	**82%**	55%	**55%**	72%	**68%**

Question: "In the following, we will ask you a number of questions about the PhD education elements. Not all elements are necessarily relevant to your particular PhD programme. If one or more elements are not included in your PhD programme, please tick the box "not relevant". This also applies if, for example, you have not yet been abroad or have not yet taken classes."

Note: The table shows the proportion who have answered "to a great extent" and "to some extent". The rest have answered "to a lesser extent" or "not at all". The calculation does not include the answer "do not know/not relevant".

Figure 5.1 PhD students' experience with the educational elements of the PhD programme
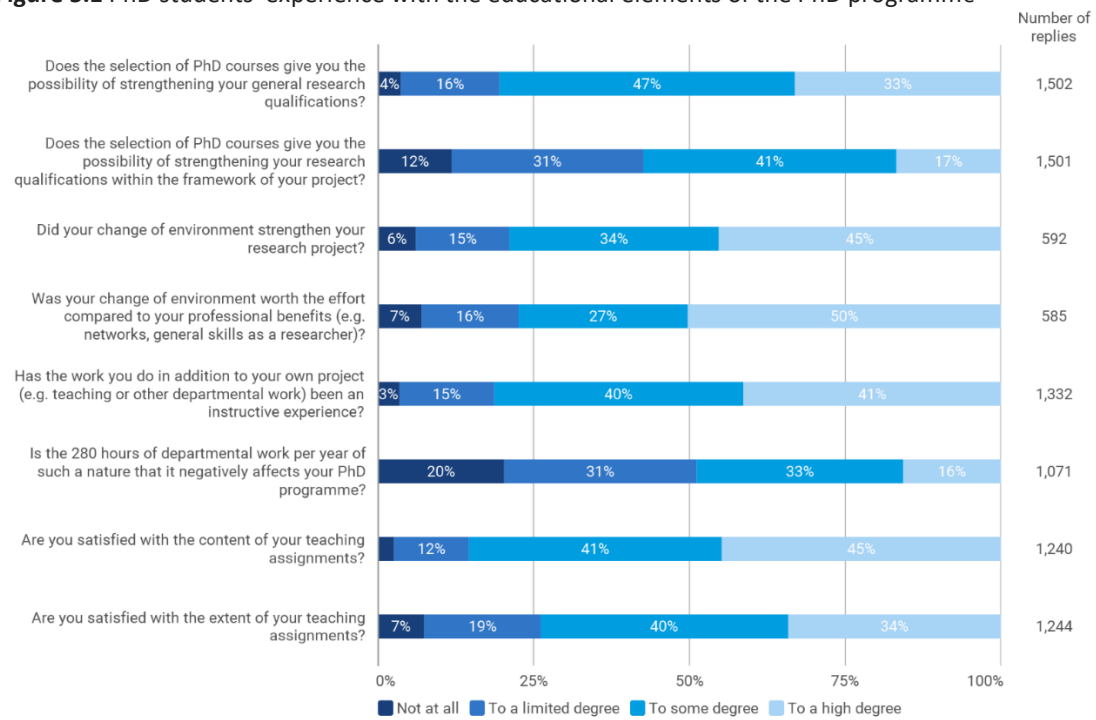
Question: "In the following, we will ask you a number of questions about the PhD education elements. Not all elements are necessarily relevant to your particular PhD programme. If one or more elements are not included in your PhD programme, please tick the box "not relevant". This also applies if, for example, you have not yet been abroad or have not yet taken classes."

Note: The figure does not include the answer "do not know".

Figure 5.2. Teaching and other departmental work related to the PhD
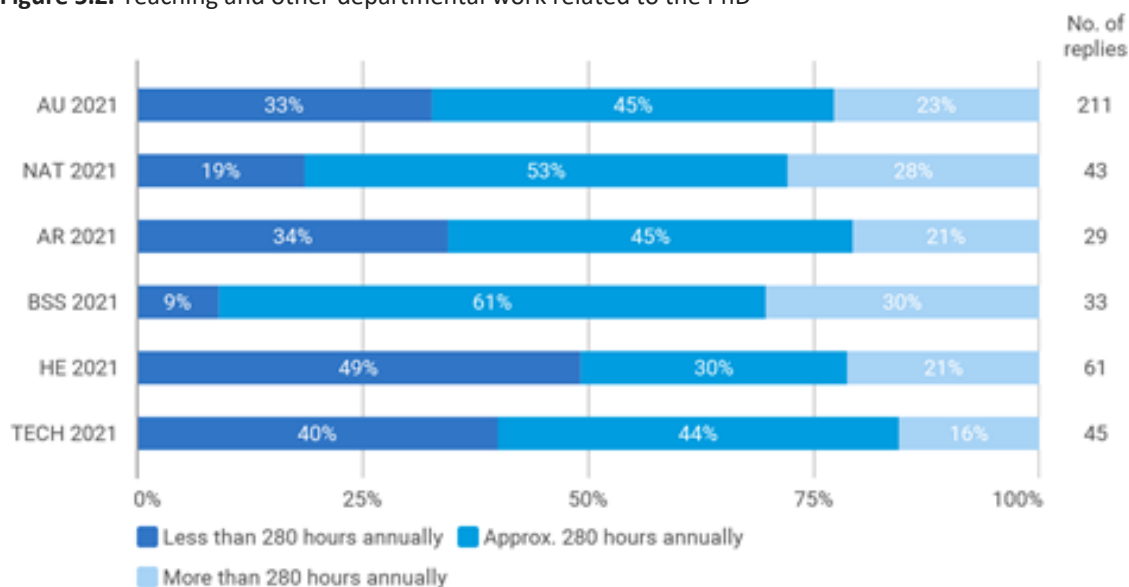
Question: "Has the work you have done in addition to your own project (e.g., teaching or other departmental work) been more or less than 280 hours annually (cf. the rule of 840 hours within three years)?"

Note: Only respondents who have answered "I have finished my PhD" to the question "How far along are you in your PhD programme?" have answered this question.

CHAPTER 6. INTEGRATION INTO THE RESEARCH ENVIRONMENT

COLLABORATION AND FEEDBACK IN THE RESEARCH ENVIRONMENT

Table 6.1. PhD students' experience of opportunities for collaboration and feedback.

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Here I meet other PhD students with whom I can exchange ideas	83%	**81%**	79%	**79%**	83%	**81%**	86%	**84%**	86%	**86%**	78%	**74%**
If I have any problems related to the PhD programme, I'm always welcome to ask one of the other researchers	89%	**88%**	83%	**82%**	93%	**85%**	92%	**92%**	89%	**91%**	88%	**85%**
There is a sense around here that working together on research is fun	74%	**74%**	65%	**61%**	68%	**67%**	79%	**80%**	76%	**81%**	71%	**72%**
If I want to, I have good opportunities for writing academic texts in collaboration with other researchers	64%	**64%**	50%	**53%**	66%	**60%**	68%	**68%**	68%	**68%**	63%	**64%**
Here we present and discuss each other's research on a regular basis	72%	**72%**	59%	**62%**	74%	**71%**	74%	**76%**	80%	**80%**	69%	**64%**
It is my impression that researchers here often write academic texts in collaboration with their PhD students	71%	**71%**	31%	**50%**	73%	**68%**	77%	**75%**	84%	**85%**	78%	**69%**

Question: "In the following, we will ask you questions about your perception of the research environment in your unit. A unit can have different meanings such as department, centre, research group or even the entire institute. We would ask you to think about your daily research environment, i.e., the researchers you meet and interact with in your daily life."

Note: The table shows the proportion who have answered "agree" or "somewhat agree" to the statement. The rest have answered "neutral", "somewhat disagree", or "disagree". The calculation does not include those who have answered "do not know/not relevant".

COLLEGIALITY IN THE RESEARCH ENVIRONMENT

Table 6.2. PhD students' experience of collegiality in the research environment.

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
The scientific staff members are generally interested in hearing about my project	77%	**75%**	69%	**70%**	72%	**73%**	83%	**79%**	82%	**78%**	73%	**72%**
It is possible to talk openly with colleagues about successful as well as unsuccessful experiences	80%	**81%**	68%	**64%**	70%	**77%**	86%	**89%**	87%	**86%**	79%	**76%**
Here both PhD students and professors are welcome to share their opinion	87%	**88%**	80%	**76%**	79%	**88%**	89%	**89%**	93%	**94%**	89%	**87%**

Question: "In the following, we will ask you questions about your perception of the research environment in your unit. A unit can have different meanings such as department, centre, research group or even the entire institute. We would ask you to think about your daily research environment, i.e., the researchers you meet and interact with in your daily life."

Note: The table shows the proportion who have answered "agree" or "somewhat agree" to the statement. The rest have answered "neutral", "somewhat disagree", or "disagree". The calculation does not include those who have answered "do not know/not relevant".

FEELING OF INTEGRATION

Table 6.3. PhD students' experience of being part of a research community.

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
Here I feel respected as a co-researcher	84%	**83%**	78%	**77%**	81%	**82%**	89%	**88%**	83%	**85%**	85%	**80%**
I feel like I'm part of the research community here	77%	**73%**	64%	**59%**	72%	**68%**	83%	**80%**	81%	**81%**	79%	**69%**
In physical terms, I spend most of my research time outside of the research environment (e.g., in a company)	15%	**14%**	31%	**26%**	12%	**8%**	16%	**15%**	7%	**6%**	13%	**14%**

Question: "In the following, we will ask you questions about your perception of the research environment in your unit. A unit can have different meanings such as department, centre, research group or even the entire institute. We would ask you to think about your daily research environment, i.e., the researchers you meet and interact with in your daily life."

Note: The table shows the proportion who have answered "agree" or "somewhat agree" to the statement. The rest have the answered "neutral", "somewhat disagree", or "disagree". The calculation does not include those who have answered "do not know/not relevant".

Figure 6.1. PhD students' experience of the research environment
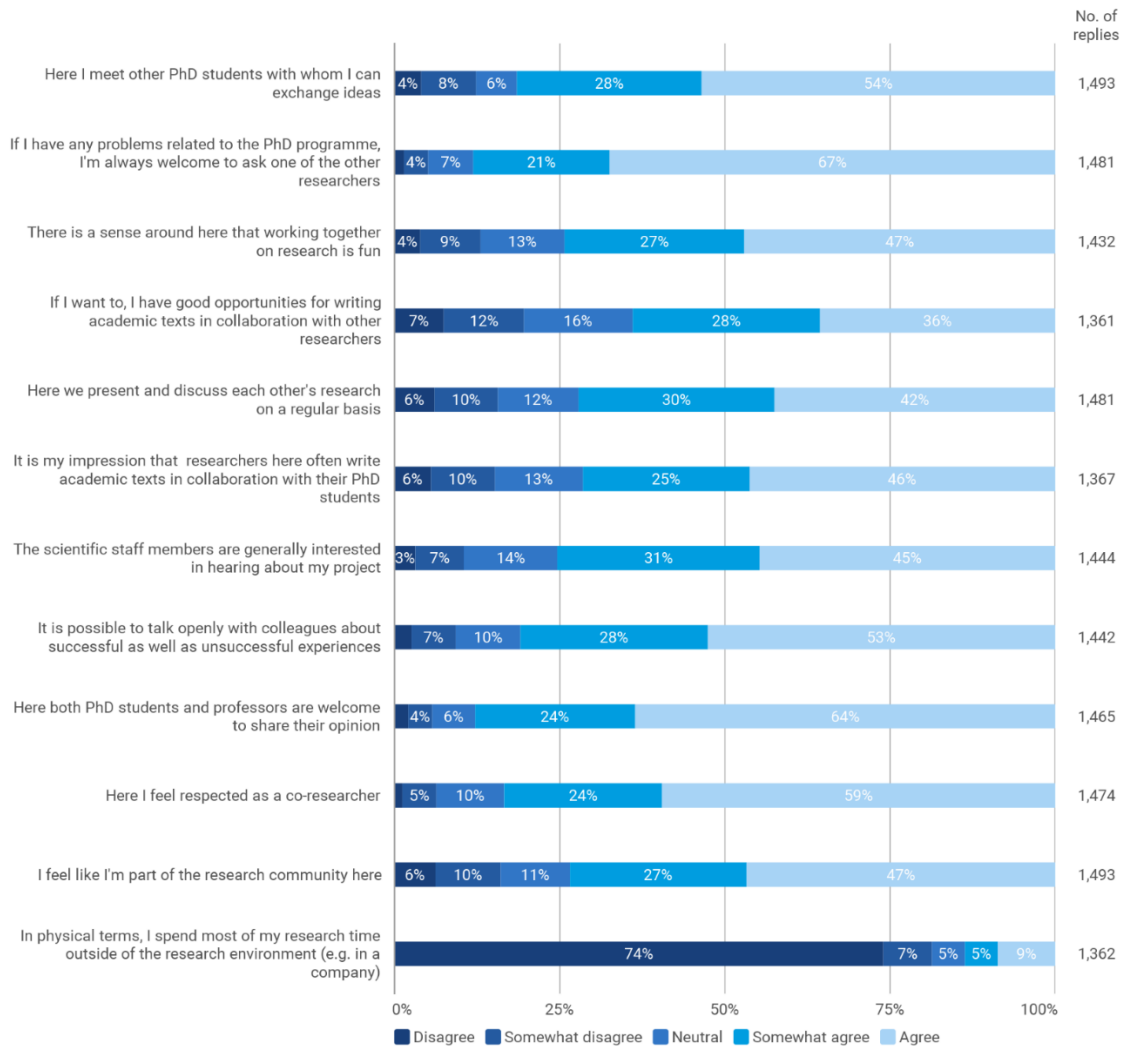
Question: "In the following, we will ask you questions about your perception of the research environment in your unit. A unit can have different meanings such as department, centre, research group or even the entire institute. We would ask you to think about your daily research environment, i.e., the researchers you meet and interact with in your daily life."

Note: The figure does not include those who have answered "do not know/not relevant".

Table 6.4: Organizational context

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
Is your project closely related to the research field of your main supervisor?	76%	**79%**	55%	**60%**	63%	**67%**	77%	**84%**	91%	**89%**	85%	**84%**
Is your PhD project embedded in a larger research project managed by one of your supervisors?	35%	**37%**	20%	**28%**	11%	**15%**	27%	**30%**	59%	**53%**	59%	**55%**
Are you formally employed somewhere outside Aarhus University?	25%	**20%**	33%	**24%**	9%	**8%**	42%	**36%**	7%	**6%**	15%	**15%**

Note: The figures show the proportion who answered yes. The rest have answered no. The answer "Don't know/ not relevant" is not included in the calculation.

Figure 6.2. Organizational context

25
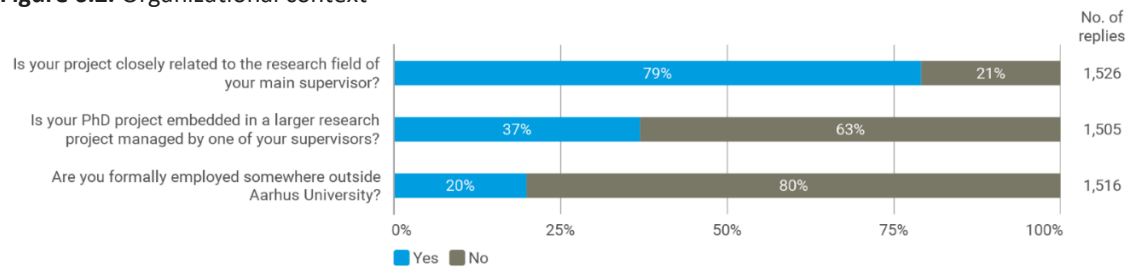
Chapter 7. Contact between students and supervisors

NUMBER OF SUPERVISORS

Table 7.1. The total number of supervisors (main supervisor and co-supervisor) per PhD student **(2021)**

	AU	AR	BSS	HE	NAT	TECH
1 supervisor	14%	2%	2%	1%	48%	13%
2 supervisors	45%	69%	84%	18%	39%	50%
3 supervisors	26%	26%	12%	41%	10%	27%
4 supervisors	13%	3%	1%	32%	2%	9%
5 supervisors	2%	0%	0%	6%	1%	1%
6 supervisors	0%	0%	0%	0%	0%	0%
Average number of supervisor/PhD student	2,5	2,3	2,1	3,3	1,7	2,4

Question: "How many supervisors are affiliated with your project? (Please include both main supervisors and co-supervisors.)"

Table 7.2. The total number of supervisors (main supervisor and co-supervisor) per PhD student **(2017)**

	AU	AR	BSS	HE	NAT	TECH
1 supervisor	14%	5%	3%	1%	45%	18%
2 supervisors	47%	76%	86%	21%	40%	49%
3 supervisors	26%	18%	10%	45%	10%	27%
4 supervisors	12%	1%	0%	29%	4%	5%
5 supervisors	2%	1%	0%	4%	1%	1%
6 supervisors	0%	0%	0%	1%	0%	0%
Average number of supervisor/PhD student	2,4	2,2	2,1	3,2	1,8	2,2

Question: "How many supervisors are affiliated with your project? (Please include both main supervisors and co-supervisors.)"

Table 7.3. PhD students' experience of supervisor availability

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
My main supervisor is available when needed	86%	**89%**	86%	**92%**	90%	**91%**	85%	**89%**	86%	**88%**	89%	**88%**
My co-supervisor(s) is/are available when needed	84%	**87%**	78%	**87%**	86%	**91%**	84%	**86%**	82%	**90%**	88%	**86%**
I receive sufficient supervision from my main supervisor	0%	**83%**	0%	**85%**	0%	**88%**	0%	**83%**	0%	**80%**	0%	**79%**
I receive sufficient supervision from my co-supervisor(s)	0%	**81%**	0%	**81%**	0%	**83%**	0%	**80%**	0%	**83%**	0%	**83%**

Note: The table shows the proportion who "agree" or "somewhat agree" with the statement. The rest have answered either "neutral", "somewhat disagree", or "disagree". The calculation does not include those who have answered "don't know/not relevant".

Note: The calculation of the table is based on what the PhD students have answered earlier on the question of which supervisor they use the most. If the PhD student has stated, for example, that he or she most often meets with a co-supervisor, the question of accessibility is based on the availability of a co-supervisor.

Note: Since "I receive sufficient supervision from my main supervisor" and "I receive sufficient supervision from my co-supervisor(s)" were not in the 2017 survey, there is not displayed historic data.

Figure 7.2. PhD students' experience of supervisor availability
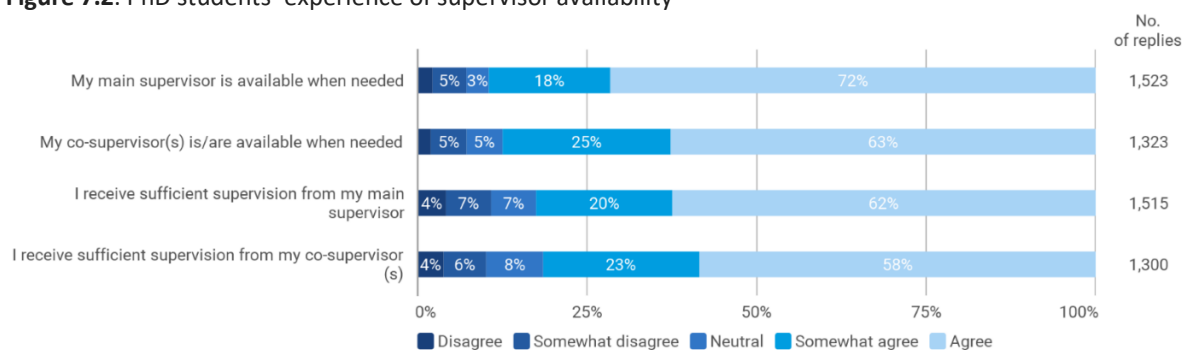
Note: The calculation does not include those who have answered by not / not relevant.

Figure 7.1. PhD students' specification of which supervisor they use the most
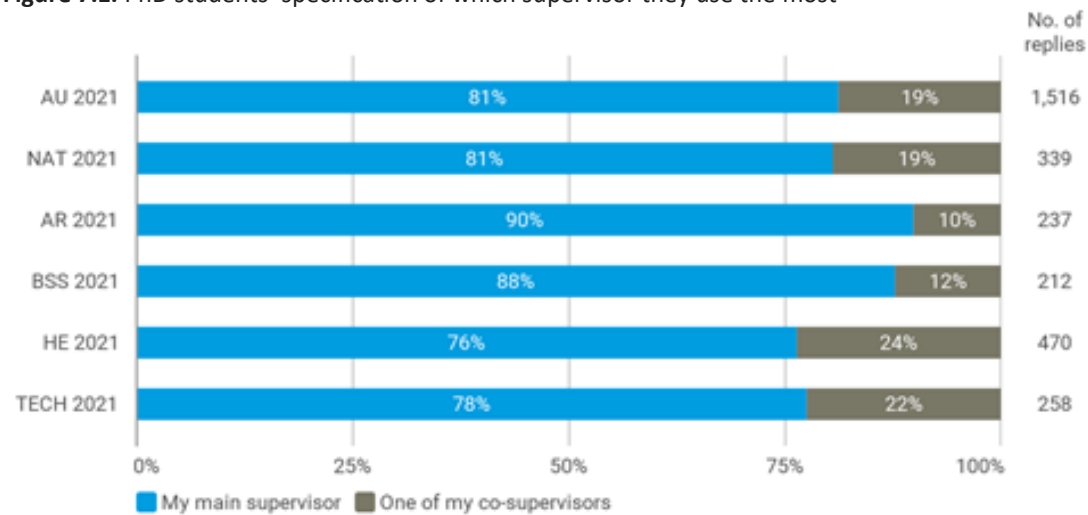
Question: "Which supervisor is in contact with you most often and is the most well-informed about what you are doing?"

CHAPTER 8. SCOPE AND CONTENT OF SUPERVISION

Table 8.1. PhD students' experience of the scope and content of supervision

	AU 2017	AU 2021	AR 2017	AR 2021	BSS 2017	BSS 2021	HE 2017	HE 2021	NAT 2017	NAT 2021	TECH 2017	TECH 2021
Completing a literature review and summarising the important issues	58%	**63%**	52%	**58%**	62%	**65%**	54%	**60%**	63%	**65%**	65%	**72%**
Identifying and posing research questions that contribute to the research field	90%	**91%**	89%	**91%**	91%	**94%**	94%	**93%**	84%	**86%**	89%	**90%**
Designing well thought out research studies	89%	**90%**	84%	**88%**	88%	**92%**	93%	**94%**	86%	**88%**	87%	**89%**
Collecting and analysing empirical data	85%	**85%**	77%	**83%**	79%	**84%**	91%	**91%**	82%	**83%**	86%	**81%**
Writing academic texts (e.g., articles, dissertations, book contributions, abstracts)	88%	**90%**	76%	**85%**	86%	**88%**	94%	**94%**	86%	**88%**	91%	**90%**
Communicating my research orally (e.g., presentations at conferences, lectures and defences)	74%	**72%**	57%	**63%**	69%	**70%**	78%	**75%**	81%	**73%**	78%	**76%**
Planning and managing my PhD project during the project period	82%	**85%**	78%	**86%**	86%	**89%**	80%	**83%**	82%	**80%**	85%	**88%**
Building a network and cooperating with other researchers	74%	**73%**	73%	**77%**	69%	**69%**	77%	**76%**	73%	**67%**	73%	**74%**
Teaching	51%	**55%**	52%	**62%**	65%	**68%**	49%	**48%**	41%	**45%**	54%	**60%**
Planning a change of environment	71%	**79%**	65%	**71%**	76%	**85%**	67%	**83%**	74%	**75%**	76%	**80%**
Handling personal issues (e.g., work-life balance)	54%	**62%**	51%	**67%**	56%	**66%**	52%	**63%**	53%	**56%**	60%	**57%**
Complying with responsible conduct of research	80%	**81%**	67%	**79%**	75%	**80%**	85%	**85%**	83%	**82%**	81%	**77%**
Considering my future career paths	0%	**65%**	0%	**66%**	0%	**73%**	0%	**67%**	0%	**60%**	0%	**60%**

Question: "Describe the extent to which you have received guidance on the following points. The guidance may be given by one or more supervisors."

Note: The figures show the proportion who have answered that they have received "some supervision" or "comprehensive supervision". The rest have replied that they have not received any guidance. The answer if not / not relevant is not included in the calculation.
Note: Since the statement "Considering my future career paths" was not in the 2017 survey, there is no historic data for this question.

Figure 8.1 PhD students' experience of the scope and content of supervision.

	No. of replies
Completing a literature review and summarising the important issues — No supervision 37%, Some supervision 46%, Comprehensive supervision 17%	1,401
Identifying and posing research questions that contribute to the research field — No supervision 9%, Some supervision 46%, Comprehensive supervision 45%	1,485
Designing well thought out research studies — No supervision 10%, Some supervision 41%, Comprehensive supervision 49%	1,461
Collecting and analysing empirical data — No supervision 15%, Some supervision 50%, Comprehensive supervision 36%	1,400
Writing academic texts (e.g. articles, dissertations, book contributions, abstracts) — No supervision 10%, Some supervision 40%, Comprehensive supervision 50%	1,415
Communicating my research orally (e.g. presentations at conferences, lectures and defences) — No supervision 28%, Some supervision 47%, Comprehensive supervision 26%	1,401
Planning and managing my PhD project during the project period — No supervision 15%, Some supervision 51%, Comprehensive supervision 33%	1,488
Building a network and cooperating with other researchers — No supervision 27%, Some supervision 48%, Comprehensive supervision 25%	1,459
Teaching — No supervision 45%, Some supervision 38%, Comprehensive supervision 17%	1,317
Planning a change of environment — No supervision 21%, Some supervision 51%, Comprehensive supervision 28%	1,289
Handling personal issues (e.g. work-life balance) — No supervision 38%, Some supervision 39%, Comprehensive supervision 22%	1,410
Complying with responsible conduct of research — No supervision 19%, Some supervision 47%, Comprehensive supervision 34%	1,427
Considering my future career paths — No supervision 35%, Some supervision 44%, Comprehensive supervision 22%	1,363

Legend: No supervision ■ Some supervision ■ Comprehensive supervision

Question: "Please describe to what degree you have received supervision in the following areas. The supervision given can be from one or more supervisors."

Note: The figure does not include "Do not know / Not relevant".

CHAPTER 9. THE SUPERVISION RELATIONSHIP

THE INTERPERSONAL RELATIONSHIP

Table 9.1. PhD students' experience of the quality of the interpersonal relationship

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
My supervisor is friendly and accommodating	95%	**95%**	96%	**95%**	96%	**95%**	95%	**96%**	93%	**93%**	96%	**95%**
The relationship between my supervisor and me is characterised by mutual respect	92%	**94%**	92%	**97%**	94%	**96%**	93%	**93%**	92%	**93%**	93%	**92%**
My supervisor recognises my work	90%	**90%**	89%	**92%**	92%	**90%**	91%	**91%**	87%	**88%**	92%	**87%**
I feel confident asking my supervisor about things I'm unsure about	89%	**90%**	90%	**90%**	87%	**91%**	92%	**93%**	85%	**86%**	90%	**88%**

Question: Please indicate to what degree the following statements reflect your experience of the relationship between you and your supervisor.

Note: The table indicates the proportion that have answered "agree" and "somewhat agree". The rest have answered "neither/nor", "somewhat disagree" or "disagree". "Do not know/not relevant" is not included in the calculation.

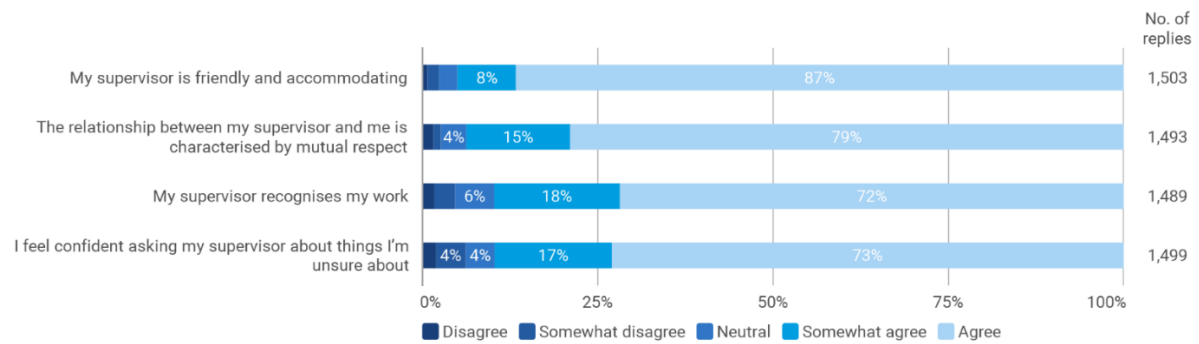**Table 9.2.** PhD students' experienced degree of hands-on supervision

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
My supervisor often sets the agenda for the supervision	32%	**32%**	24%	**20%**	24%	**19%**	30%	**29%**	43%	**43%**	38%	**40%**
My supervisor makes many important choices in my project	41%	**38%**	17%	**17%**	23%	**20%**	47%	**48%**	52%	**47%**	50%	**43%**
My supervisor has clear preferences for the direction my project needs to take	53%	**50%**	33%	**27%**	33%	**28%**	59%	**63%**	68%	**58%**	59%	**55%**
My supervisor tells me what works well and what I need to do better	67%	**70%**	74%	**77%**	72%	**80%**	63%	**68%**	65%	**66%**	63%	**65%**
My supervisor helps me break down my tasks into manageable subtasks	47%	**50%**	49%	**48%**	45%	**54%**	46%	**52%**	48%	**48%**	51%	**46%**
My supervisor monitors my work closely	61%	**65%**	55%	**63%**	57%	**69%**	64%	**73%**	64%	**60%**	60%	**55%**
My supervisor sets benchmarks and tells me what I need to do	42%	**39%**	36%	**36%**	37%	**37%**	40%	**40%**	46%	**39%**	51%	**40%**
My supervisor has a clear expectation that I will follow the advice I get	64%	**63%**	40%	**44%**	50%	**51%**	74%	**71%**	71%	**70%**	69%	**65%**
My supervisor gives me many specific tips on what to do	72%	**75%**	69%	**73%**	69%	**77%**	75%	**78%**	69%	**76%**	76%	**69%**
My supervisor supports me in taking ownership of my research project	0%	**89%**	0%	**90%**	0%	**89%**	0%	**90%**	0%	**86%**	0%	**88%**

Question: Please indicate to what degree the following statements reflect your experience of the relationship between you and your supervisor.

Note: The table indicates the proportion that have answered "agree" and "somewhat agree". The rest have answered "neither/nor", "somewhat disagree" or "disagree". "Do not know/not relevant" is not included in the calculation.

Note: Since the question "My supervisor supports me in taking ownership of my research project" was not in the 2017 survey there is no historic data on this question.
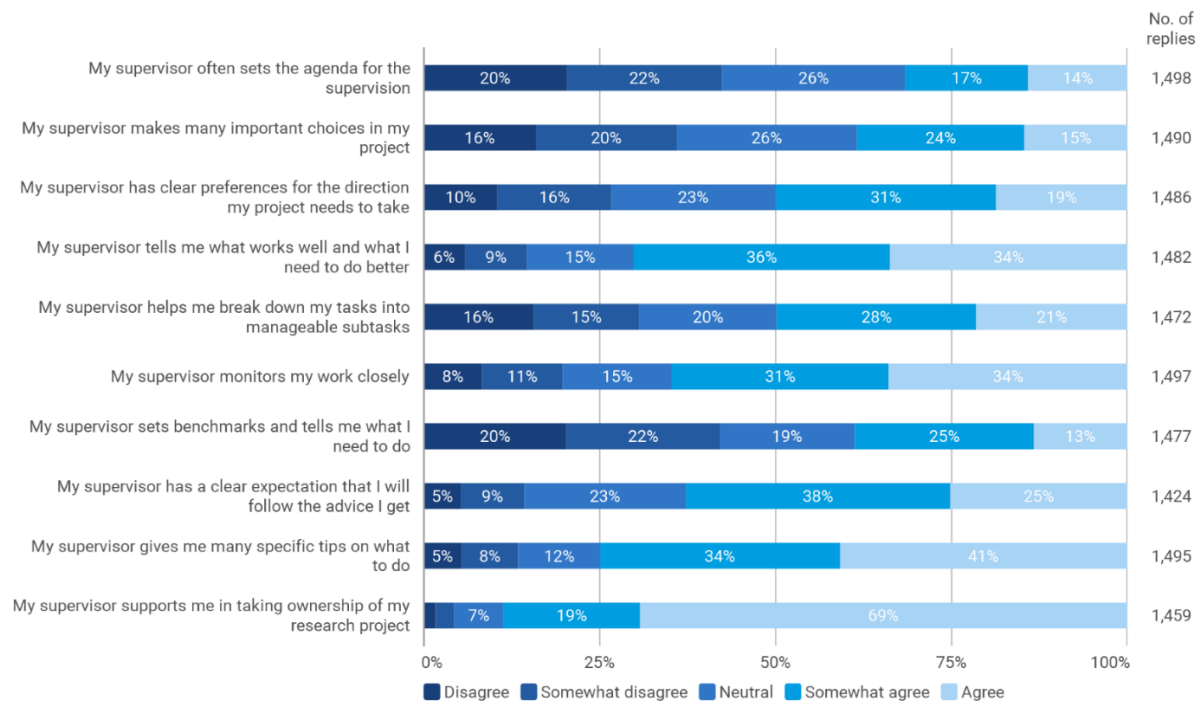
Figure 9.1. PhD students' experience of the quality of the interpersonal relationship

No. of replies

My supervisor is friendly and accommodating	8% ... 87% ... 1,503
The relationship between my supervisor and me is characterised by mutual respect	4% 15% ... 79% ... 1,493
My supervisor recognises my work	6% 18% ... 72% ... 1,489
I feel confident asking my supervisor about things I'm unsure about	4% 4% 17% ... 73% ... 1,499

0% 25% 50% 75% 100%

■ Disagree ■ Somewhat disagree ■ Neutral ■ Somewhat agree ■ Agree

Question: Please indicate to what degree the following statements reflect your experience of the relationship between you and your supervisor.

Note: The figure does not include "Do not know / Not relevant".

Figure 9.2. PhD students' experienced degree of hands-on supervision

No. of replies

My supervisor often sets the agenda for the supervision	20% 22% 26% 17% 14% 1,498
My supervisor makes many important choices in my project	16% 20% 26% 24% 15% 1,490
My supervisor has clear preferences for the direction my project needs to take	10% 16% 23% 31% 19% 1,486
My supervisor tells me what works well and what I need to do better	6% 9% 15% 36% 34% 1,482
My supervisor helps me break down my tasks into manageable subtasks	16% 15% 20% 28% 21% 1,472
My supervisor monitors my work closely	8% 11% 15% 31% 34% 1,497
My supervisor sets benchmarks and tells me what I need to do	20% 22% 19% 25% 13% 1,477
My supervisor has a clear expectation that I will follow the advice I get	5% 9% 23% 38% 25% 1,424
My supervisor gives me many specific tips on what to do	5% 8% 12% 34% 41% 1,495
My supervisor supports me in taking ownership of my research project	7% 19% 69% 1,459

0% 25% 50% 75% 100%

■ Disagree ■ Somewhat disagree ■ Neutral ■ Somewhat agree ■ Agree

Question: Please indicate to what degree the following statements reflect your experience of the relationship between you and your supervisor.

Note: The figure does not include "Do not know / Not relevant".

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CHAPTER 10. INDEPENDENCE AND INSECURITY

INDEPENDENCE

Table 10.1. PhD students' sense of independence

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
I feel that I'm in control of the project	0%	77%	0%	74%	0%	81%	0%	81%	0%	74%	0%	71%
I experience that it is possible to explore new research paths within the framework of my project	0%	81%	0%	88%	0%	84%	0%	78%	0%	82%	0%	79%
It is important to me that I make all the critical choices in my project	0%	57%	0%	74%	0%	66%	0%	54%	0%	42%	0%	60%
Sometimes I feel that I'm nothing but an assistant to someone else's project	0%	10%	0%	4%	0%	6%	0%	10%	0%	13%	0%	14%
I think that my project is very exciting	0%	91%	0%	96%	0%	90%	0%	93%	0%	90%	0%	85%

Question: "Please indicate to what degree the following statements reflect your sense of independence and insecurity".

Note: The table indicates the proportion that have answered "agree" and "somewhat agree". The rest have answered "neither/nor", "somewhat disagree" or "disagree". "Do not know/not relevant" is not included in the calculation.

Note: There is no historic data for 2017 because the questions about independence and insecurity were not included in the 2017 survey.

INSECURITY

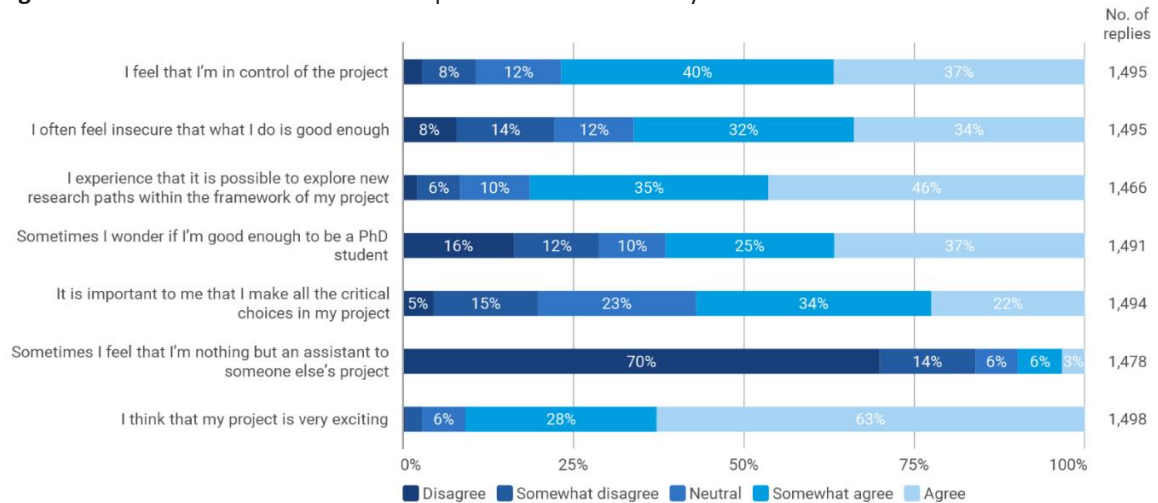**Table 10.2.** PhD students' sense of insecurity

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
I often feel insecure that what I do is good enough	0%	**66%**	0%	**77%**	0%	**73%**	0%	**56%**	0%	**69%**	0%	**65%**
Sometimes I wonder if I'm good enough to be a PhD student	0%	**61%**	0%	**71%**	0%	**56%**	0%	**57%**	0%	**63%**	0%	**62%**

Question: "Please indicate to what degree the following statements reflect your sense of independence and insecurity".

Note: The table indicates the proportion that have answered "agree" and "somewhat agree". The rest have answered "neither/nor", "somewhat disagree" or "disagree". "Do not know/not relevant" is not included in the calculation.

Note: There is no historic data for 2017 because the questions about independence and insecurity were not included in the 2017 survey.

Figure 10.1. PhD students' sense of independence and insecurity

Question: "Please indicate to what degree the following statements reflect your sense of independence and insecurity."

Note: The figure does not include "do not know/not relevant".

CHAPTER 11. WORKLOAD AND LONELINESS

WORKLOAD

Table 11.1. PhD students' perception of workload

	AU 2017	AU 2021	AR 2017	AR 2021	BSS 2017	BSS 2021	HE 2017	HE 2021	NAT 2017	NAT 2021	TECH 2017	TECH 2021
Do you feel that your work as a PhD student takes up so much time and energy that it affects your private life?	34%	**37%**	41%	**43%**	32%	**38%**	27%	**28%**	42%	**38%**	35%	**46%**
Does your work as a PhD student give you severe stress symptoms (e.g., isolation, palpitations, stomach ache, depression, restlessness, memory loss)?	17%	**20%**	23%	**28%**	17%	**24%**	13%	**12%**	19%	**22%**	19%	**20%**

Note: The table shows the proportion that have answered "Often" and "almost always". The rest have answered "sometimes", "rarely" or "almost never". The calculation does not include "Do not know/not relevant".

LONELINESS

Table 11.2. PhD students' perception of loneliness

	AU 2017	AU 2021	AR 2017	AR 2021	BSS 2017	BSS 2021	HE 2017	HE 2021	NAT 2017	NAT 2021	TECH 2017	TECH 2021
Do you feel lonely during your day at your workplace?	14%	**23%**	21%	**31%**	15%	**24%**	14%	**20%**	10%	**18%**	13%	**27%**
Do you feel that you act alone in your project and lack the necessary feedback to make progress?	16%	**18%**	23%	**21%**	17%	**15%**	15%	**16%**	15%	**18%**	14%	**22%**

Note: The table shows the proportion that have answered "Often" and "almost always". The rest have answered "sometimes", "rarely" or "almost never". The calculation does not include "Do not know/not relevant".

Figure 11.1. PhD students' perception of workload and loneliness
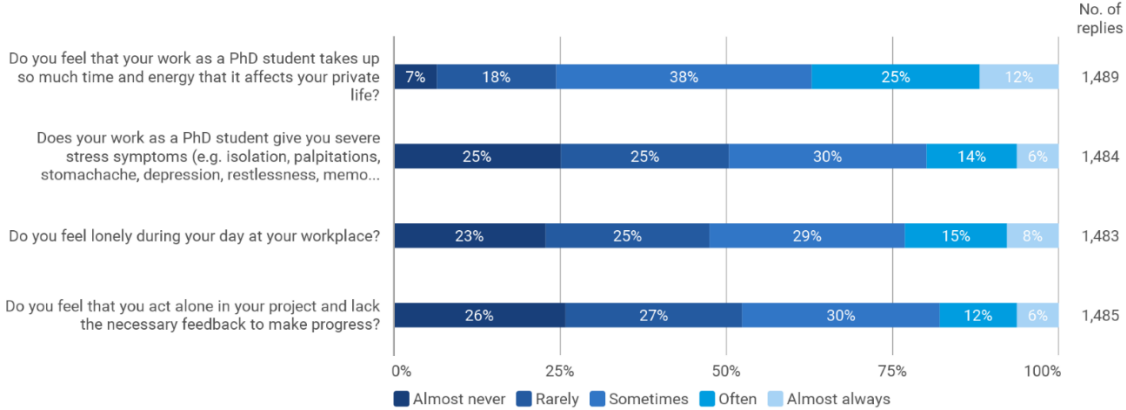
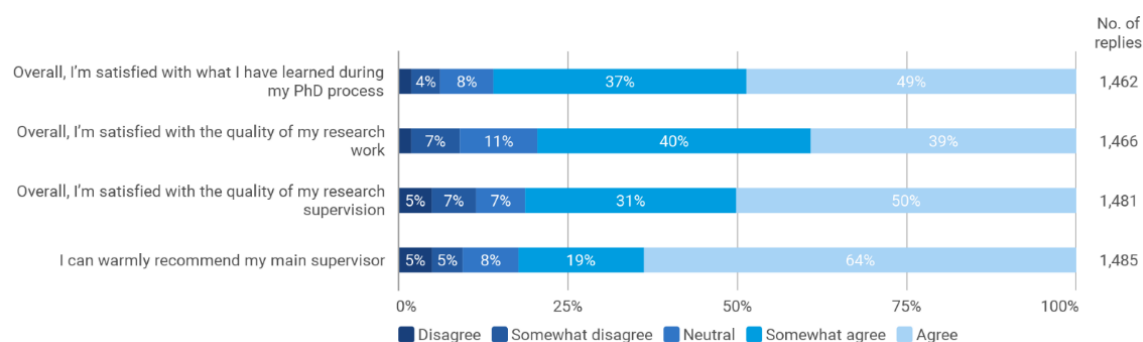Note: The figure does not include "Do not know / Not relevant".

CHAPTER 12. SATISFACTION

Table 12.1. PhD students' satisfaction with the PhD process

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
Overall, I'm satisfied with what I have learned during my PhD process	92%	**86%**	94%	**86%**	90%	**88%**	92%	**87%**	89%	**85%**	93%	**84%**
Overall, I'm satisfied with the quality of my research work	85%	**79%**	86%	**79%**	80%	**80%**	90%	**85%**	79%	**74%**	86%	**76%**
Overall, I'm satisfied with the quality of my research supervision	81%	**81%**	78%	**83%**	84%	**84%**	79%	**84%**	81%	**77%**	82%	**77%**
I can warmly recommend my main supervisor	81%	**82%**	80%	**84%**	88%	**85%**	78%	**84%**	82%	**82%**	83%	**76%**

Note: The table shows the proportion that have answered "Agree" and "somewhat agree". The rest have answered "Neutral", "Somewhat disagree" or "Disagree". The calculation does not include "Do not know/not relevant".

Figure 12.1. PhD students' satisfaction with the PhD process

Note: The figure does not include "Do not know / Not relevant".

CHAPTER 13. RESEARCH SELF-EFFICACY

**Table 13.1.** PhD students' research self-efficacy

	AU		AR		BSS		HE		NAT		TECH	
	2017	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
... completing a literature review and summarising the important issues	84%	**80%**	80%	**74%**	89%	**85%**	86%	**82%**	81%	**78%**	85%	**81%**
... identifying and posing research questions that contribute to the research field	77%	**71%**	87%	**76%**	78%	**76%**	81%	**75%**	63%	**61%**	74%	**69%**
... designing well thought out research studies	72%	**69%**	75%	**72%**	70%	**74%**	75%	**71%**	65%	**65%**	75%	**66%**
... collecting and analysing empirical data	82%	**80%**	80%	**79%**	81%	**82%**	81%	**80%**	85%	**82%**	83%	**78%**
... communicating your research orally, e.g. at conferences	0%	**70%**	0%	**73%**	0%	**65%**	0%	**73%**	0%	**66%**	0%	**73%**
... communicating your research in writing so it is publishable	0%	**68%**	0%	**65%**	0%	**65%**	0%	**74%**	0%	**61%**	0%	**69%**
... planning and managing a research project independently	0%	**66%**	0%	**69%**	0%	**72%**	0%	**71%**	0%	**57%**	0%	**62%**
... collaborating with others e.g. researchers, organisations, and companies	0%	**74%**	0%	**72%**	0%	**70%**	0%	**80%**	0%	**68%**	0%	**74%**

Question: To what extent do you feel confident managing the following tasks? (Place yourself on a continuum from 1 to 5.)

Note: The table shows the proportion that have 4 and 5. The rest have answered 3, 2 or 1. The calculation does not include "Do not know/not relevant".

Note: Since the statements "… communicating your research orally, e.g. at conferences", "… communicating your research in writing so it is publishable", "… planning and managing a research project independently" and "… collaborating with others e.g. researchers, organisations, and companies" were not in the 2017 survey, there is no historic data for these questions.

Figure 13.1. PhD students' research self-efficacy
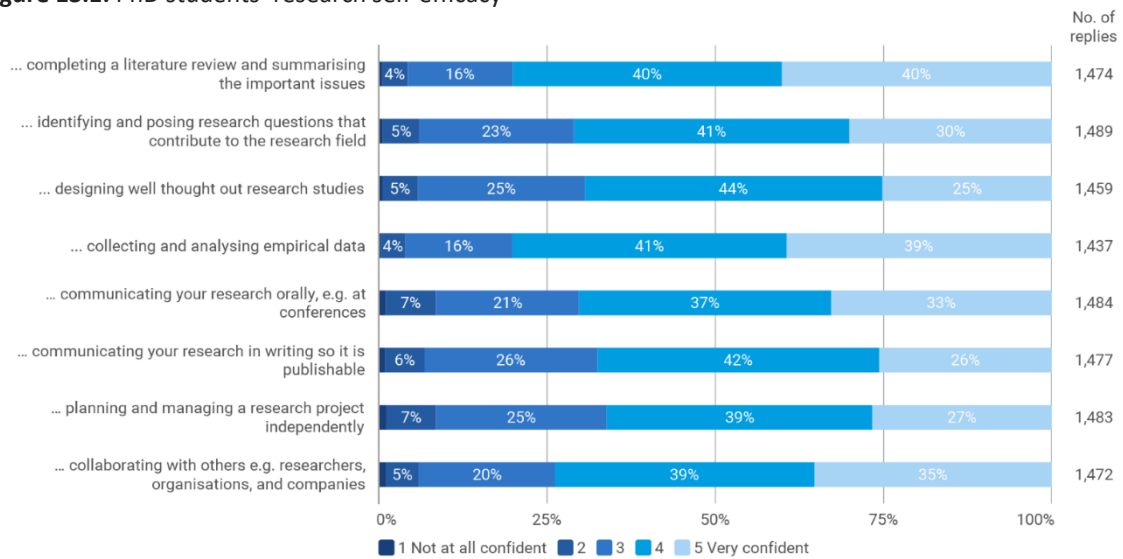
Question: "To what extent do you feel confident managing the following tasks? (Place yourself on a continuum from 1 to 5.)"

Note: The table shows the proportion that have indicated 4 and 5. The rest have indicated 3, 2 or 1. The calculation does not include "Do not know/not relevant".
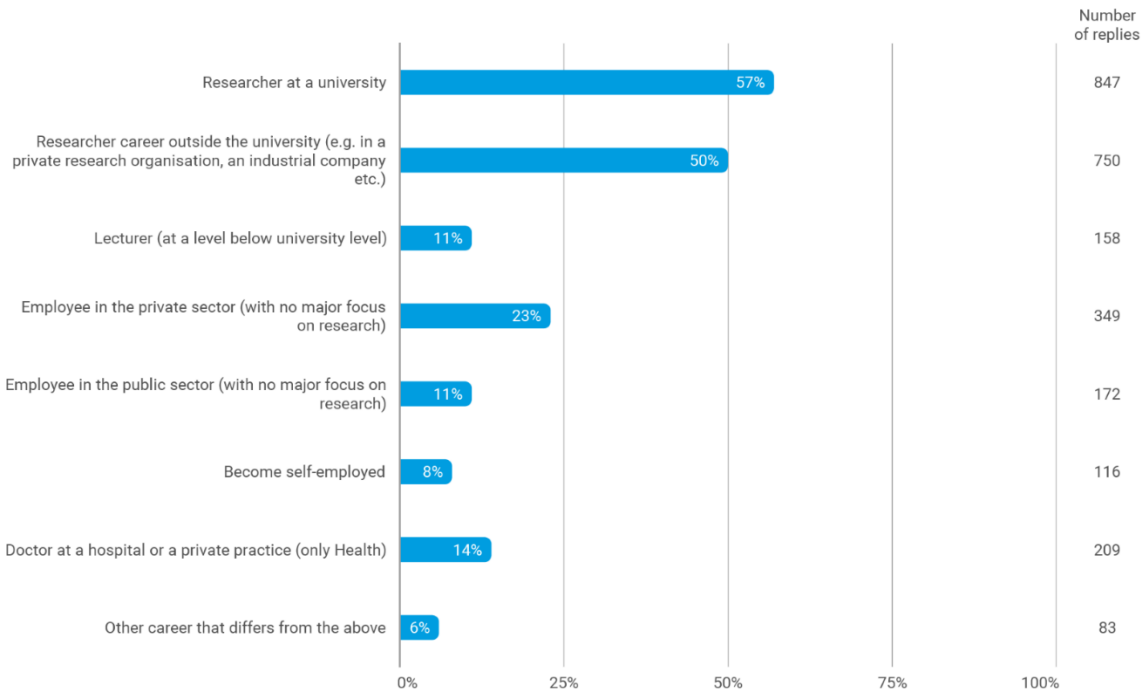
CHAPTER 14. CAREER PLANS

Table 14.1. PhD students' career plans

	AU		AR		BSS		HE		NAT		TECH	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Researcher at a university	56%	**57%**	68%	**70%**	70%	**70%**	49%	**50%**	47%	**46%**	61%	**58%**
Researcher career outside the university (e.g. in a private research organisation, an industrial company etc.)	55%	**50%**	53%	**45%**	53%	**45%**	40%	**36%**	71%	**65%**	68%	**65%**
Lecturer (at a level below university level)	17%	**11%**	35%	**28%**	15%	**9%**	13%	**6%**	13%	**8%**	16%	**7%**
Employee in the private sector (with no major focus on research)	29%	**23%**	14%	**9%**	38%	**24%**	17%	**12%**	47%	**43%**	37%	**30%**
Employee in the public sector (with no major focus on research)	17%	**11%**	19%	**13%**	25%	**18%**	12%	**12%**	17%	**9%**	17%	**9%**
Become self-employed	11%	**8%**	13%	**11%**	18%	**10%**	6%	**3%**	15%	**10%**	10%	**9%**
Doctor at a hospital or a private practice (only Health)	17%	**14%**	0%	**0%**	0%	**0%**	51%	**45%**	0%	**0%**	0%	**0%**
Other career that differs from the above	9%	**6%**	15%	**11%**	8%	**3%**	10%	**6%**	6%	**4%**	6%	**3%**

Question: "Which career would you currently like to pursue? (Tick off up to two of the career paths below)."

Note: The total sum does not add up to 100 percent, as it was possible to tick off up to two career path options.

Figure 14.1. PhD students' career plans

Question: "Which career would you currently like to pursue? (Tick off up to two of the career paths below)."

Note: The total sum does not add up to 100 percent, as it was possible to tick off up to two career path options.