

# PhD-questionnaire 2023

Sum-up report

Department of Mathematics  
Faculty of Mathematics and Natural Sciences



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## Introduction

The goal of the questionnaire was mapping the career paths of the doctoral candidates with a PhD or similar degree (Dr.Philos, Dr. Scient) from the Department of Mathematics, University of Oslo after obtaining their degree. The target group were doctoral candidates who obtained a degree in the period 2000-2022.

There were 187 candidates in the system with a registered PhD or similar degree from the Department of Mathematics. Of these, 74 answered the questionnaire.

Contact information of the candidates were found in various ways. Firstly, we used lists provided by UiO's alumni coordinator and email-address registered in FS, thereafter contact information was obtained by using Google search and LinkedIn at the end. In total 187 candidates were invited to participate and 39,6% replied. We do not know if the remaining candidates even received the questionnaire

The questions included in the questionnaire are found in Appendix 1.

The questionnaire is divided into sections: *Personal Information*, *Degree* and *Employment* and will be presented here in the similar order (except the section on Personal Information). The section *Employment* is, for the purposes of this report, divided into *Employment* and *Connection Between PhD-Education and the Employment and Language and Programming skills*.

Blindern, 3. October 2023

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## Degree Type

The respondents hold mainly PhD degrees from the Department of Mathematics (95%), but Dr.scient.- degree holders (3%) and Dr.philos (3%) were also represented.

## Year

The degree completion year of the respondents was scattered from 2004-2022.

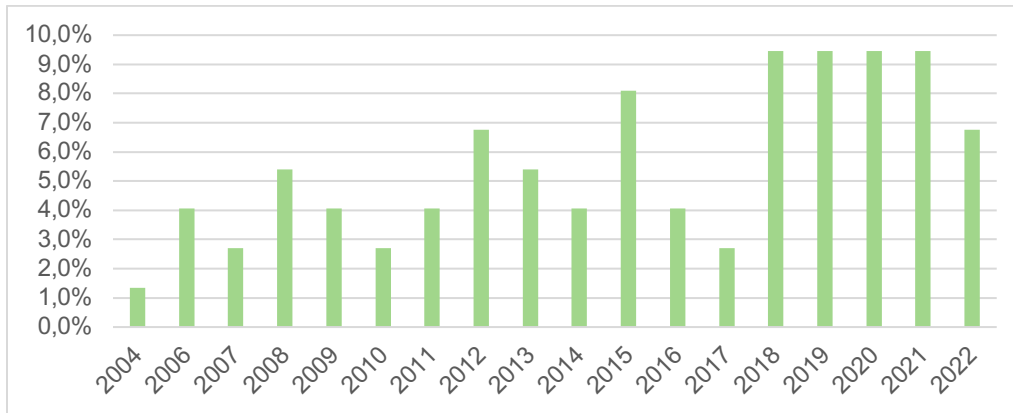


Figure 1: The year in which the respondents obtained a degree.

## Field

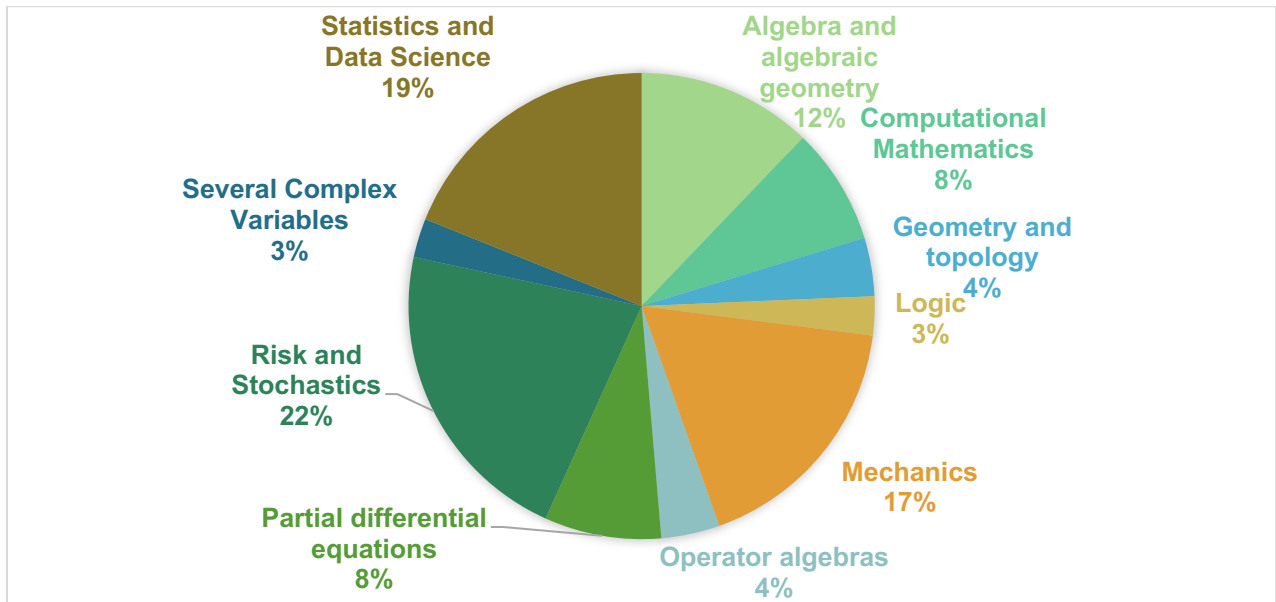


Figure 2: Field/research group affiliation of the respondents.

# Employment

## Time passed from obtained degree until employment

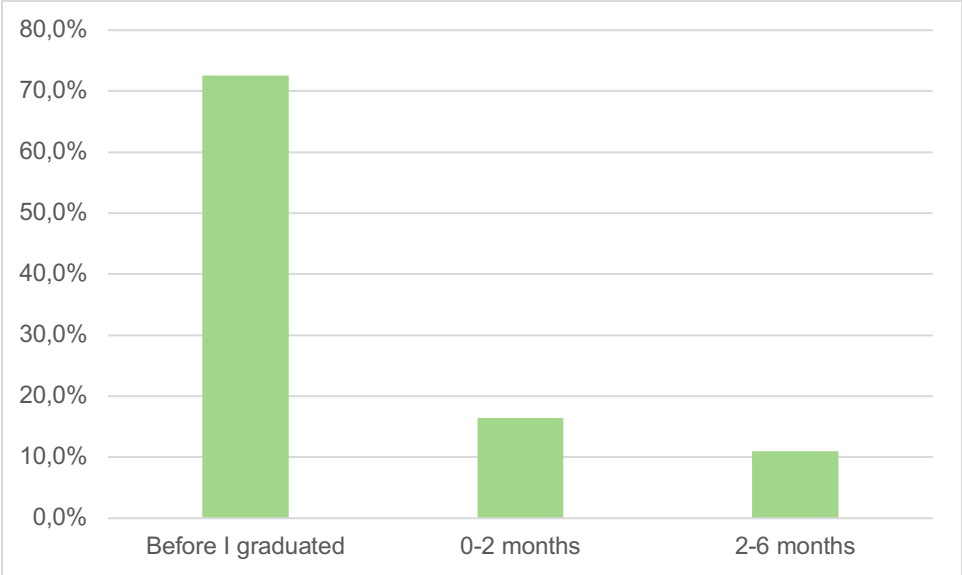


Figure 3: Time passed between the obtained degree and employment.

## The country of current employment

Most respondents work in Norway. In Europe, they work in Denmark, France, Germany, Iceland, Italy, Sweden, Switzerland, and the United Kingdom. The category *Other* covers Brazil, Malaysia, and India.

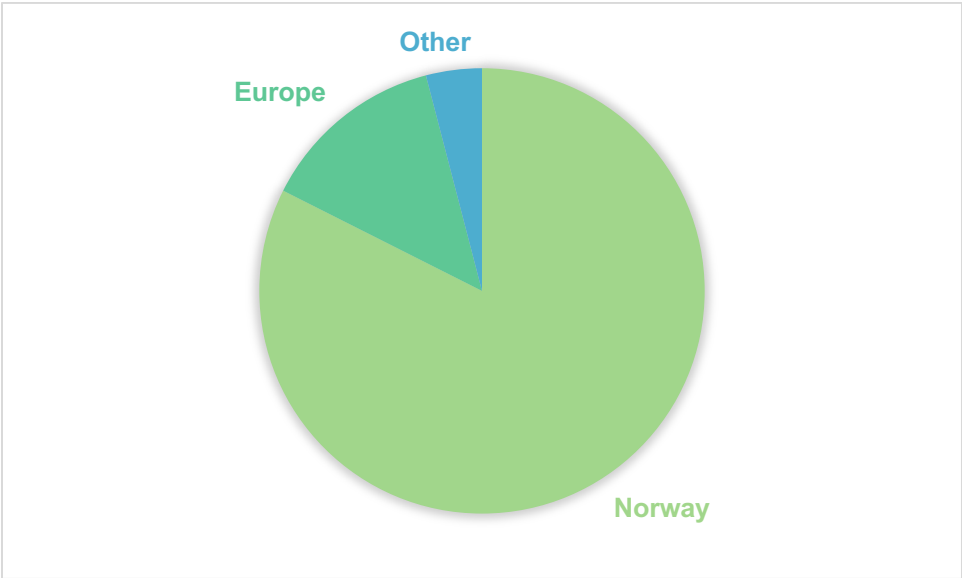


Figure 4: Country of current employment

## Sector

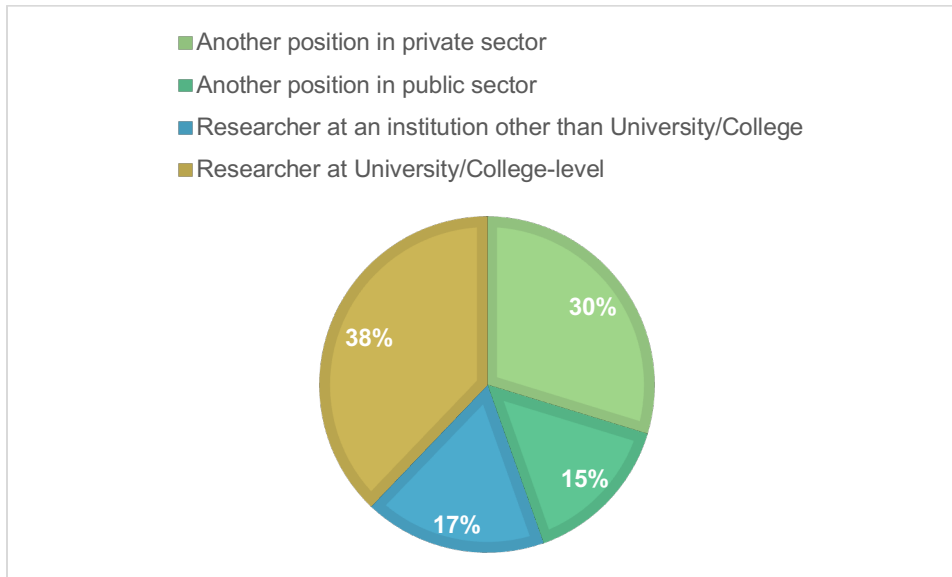


Figure 5: The sector in which the respondents work

## Job title

There is a wide variety of job titles given by the respondents. These have roughly been sorted in the following categories<sup>1</sup>:

- **Associate/Assistant Professor**
- **Professor**
- **Post doc**
- **Engineer** (the following have been summed up in this category: Senior (..)Engineer, Software Engineer, Project Engineer, Installation Analysis Engineer)
- **Analyst** (this category sums up all the analyst and consultant positions and was mentioned under the following titles: Consultant, Senior Consultant, senior IT Analyst, Software Consultant)
- **Researcher** is the category that has the most variations as the titles for both institute sector and private sector, as well as some of the academic positions, were included.
- **Other**

<sup>1</sup> The University of Oslo's guidelines for the translation of the titles has been used: <https://www.uio.no/for-ansatte/arbeidsstotte/profil/sprak/stillingsbetegnelser/index.html> as well as Universities Norway's dictionary: <http://termbase.uhr.no> for the translation of the titles (mostly academic).

# Main work tasks



Figure 6: Main tasks in the respondents daily work

## Position with hiring responsibilities

We asked the respondents if the position requires participation in the hiring processes of other employees. 56% answered positive to this question while 44% answered that they do not participate in hiring of other employees.

## Income

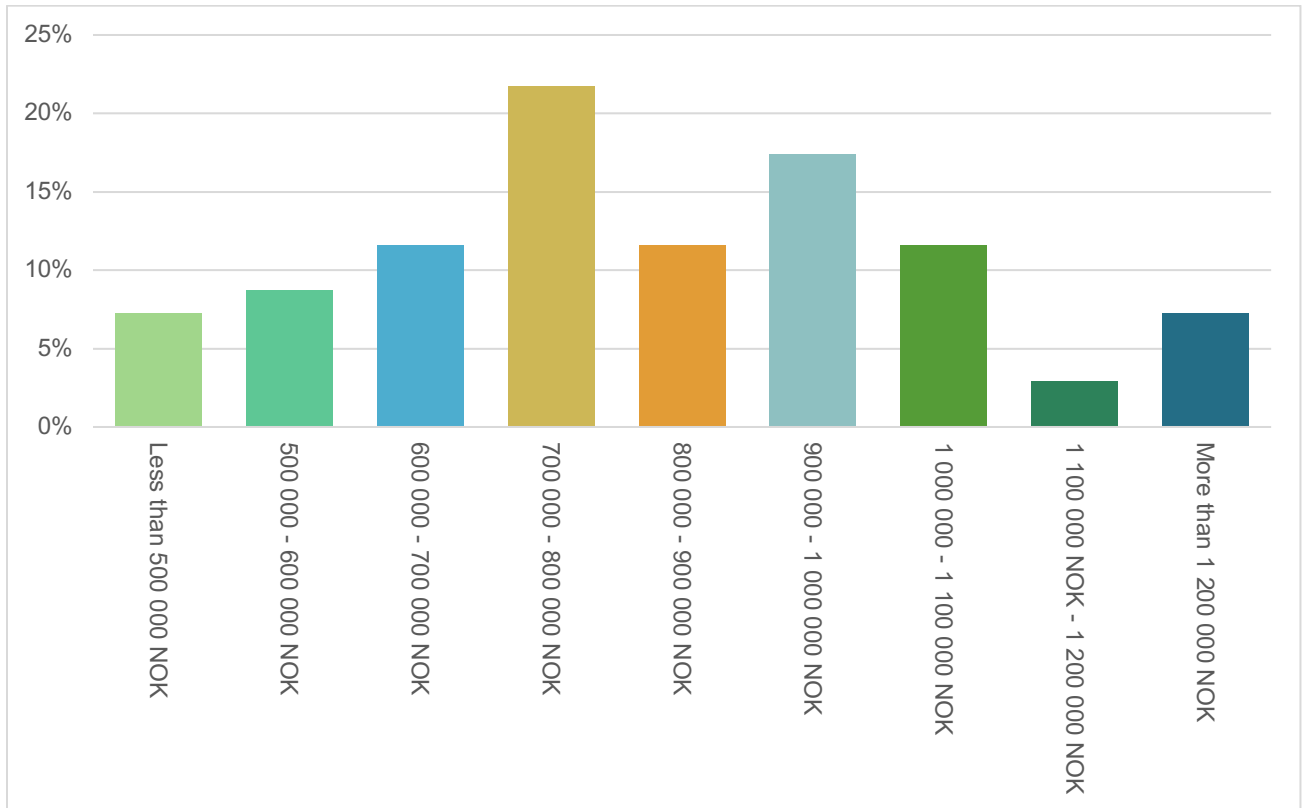
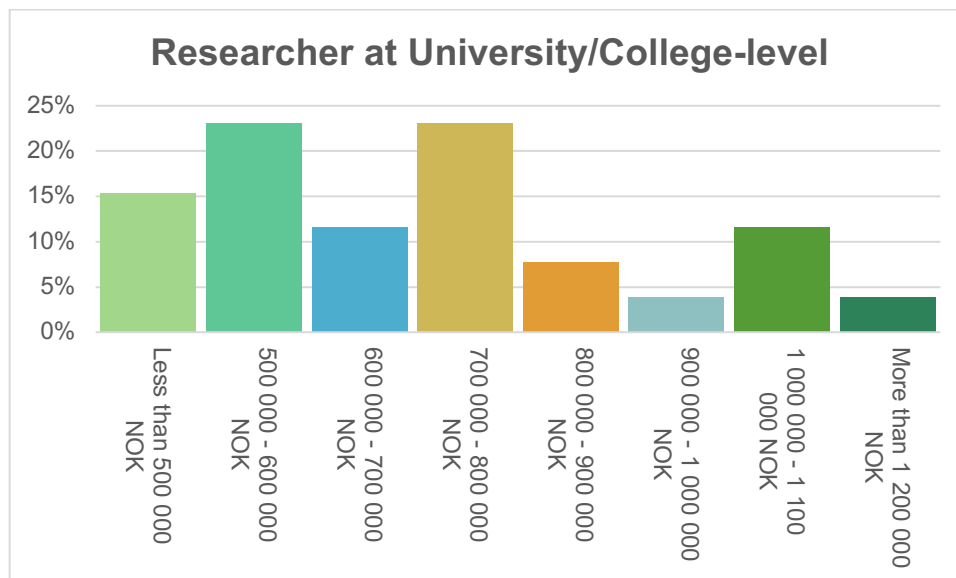


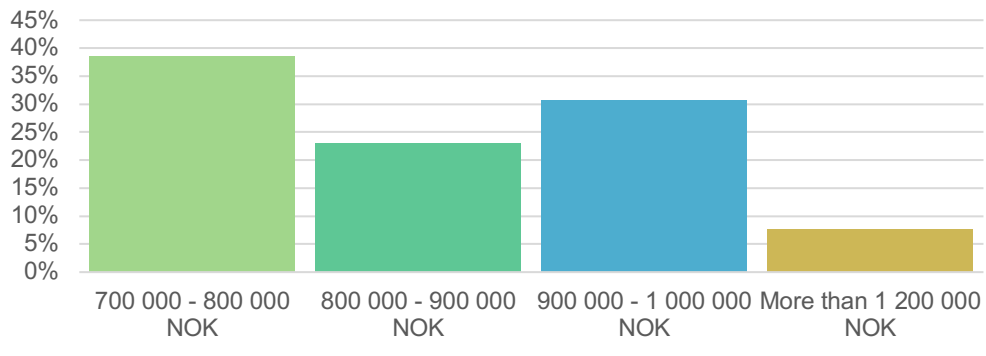
Figure 7: Respondents' annual gross income.

In the next four graphs the connection between the sector the respondents work in and the annual gross income is represented.

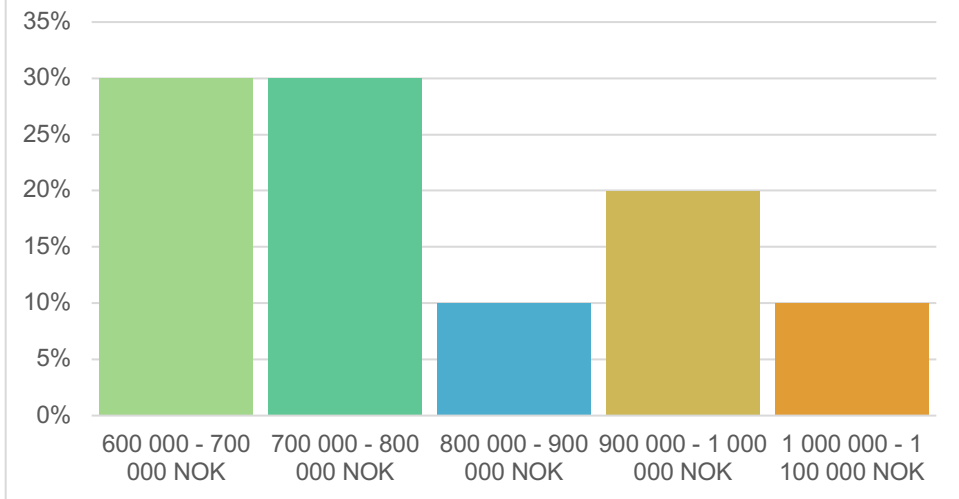




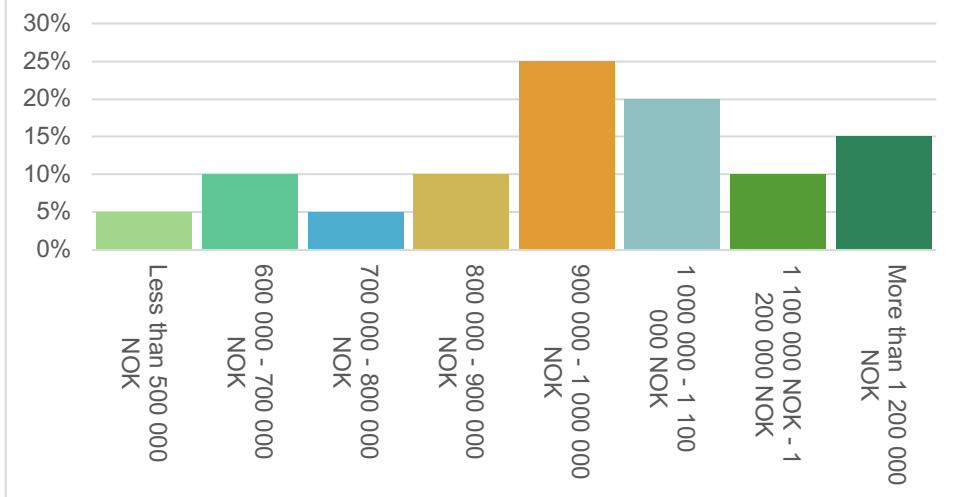
### Researcher at an institution other than University/College



### Another position in public sector



### Another position in private sector



## Main Occupation

A large majority of respondents are permanently employed, with only few being temporary employed or self-employed. None of the respondents were on long-term sick leave, students, unemployed or working as freelancers.

## Job Characteristics

The respondents were asked to rate what job characteristics are important to them, multiple answers was possible. We also asked the respondents about their present position, and what characterized it. The numbers in the table indicate what percentage of the respondents that rated the characteristic as important/a characteristic for their current position. The last column we have connected the two things: If this characteristic is important to you, is it present in your current position?

Below the table, the same information is represented in graphic form.

less <- importance -> more	Characteristic	important	current position	important and <b>not</b> present in current position
	Flexible working hours	80,8%	79.7%	10%
	Possibility of learning and personal development	78,1%	75.7 %	11%
	Professional challenges	74%	75.7%	7%
	Good income	67,1%	59.5%	33%
	Independent work	65,8%	74.3%	2%
	Doing something useful for society	63%	58.1%	24%
	Collaboration with others	63%	74.3%	13%
	Varied work tasks	56,2%	60.8%	15%
	Control over your own work pace	53,4%	50%	28%
	The possibility to work from home to some extent	52,1%	77%	5%
	Good career opportunities	38,4%	41.9%	32%
	Recognition from leaders and colleagues	35,6%	50%	23%
	Opportunity to make international career	21,9%	36.5%	38%
Possibility of influencing community development	17,8 %	23%	15%	

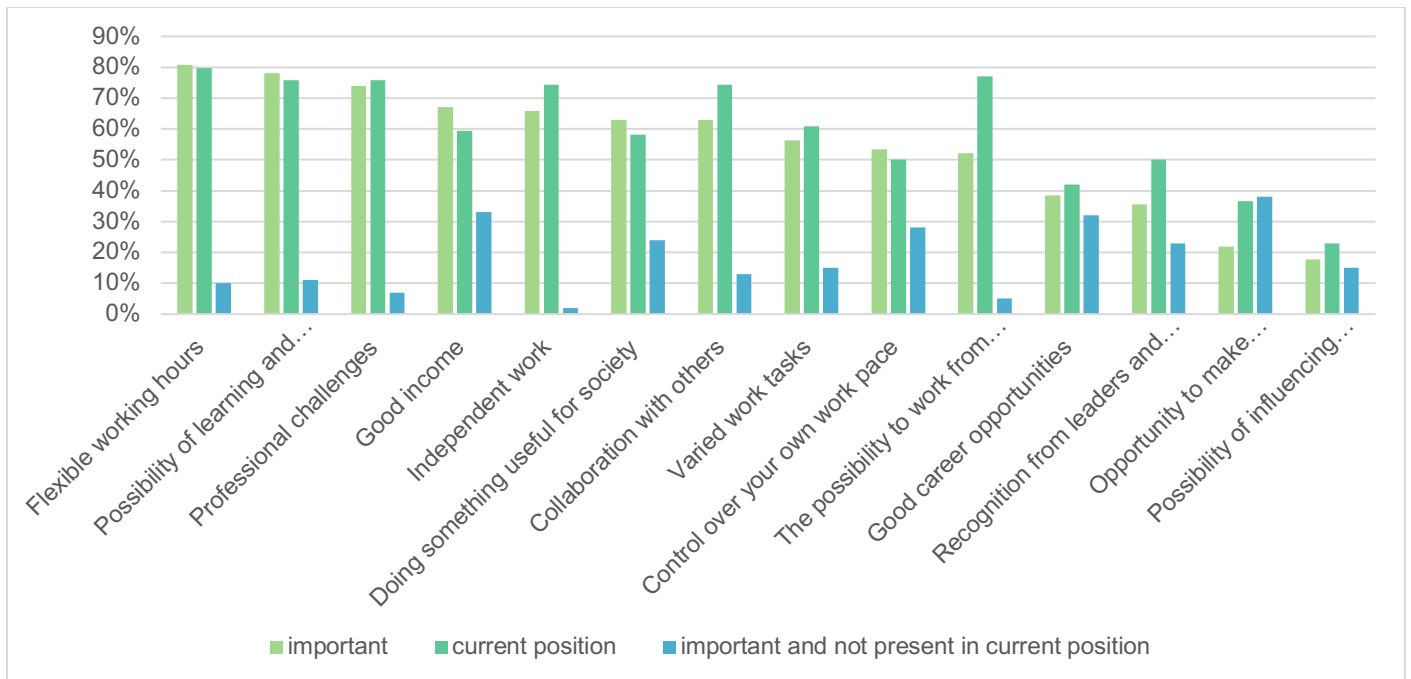


Figure 8: What characteristics do you value as important in a job, and which of these are present in your current position.

## Connection between PhD-education and employment

### Employers' awareness of the content of the education

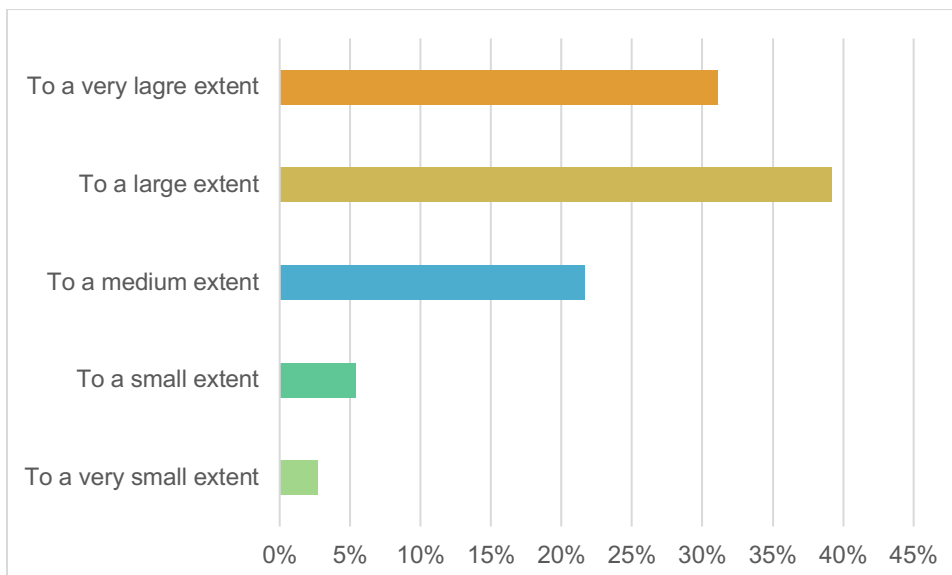


Figure 9: To what extent do you find that your employers in general are aware of skills that you have acquired through your doctoral education?

## The usefulness of your education at UiO in your active professional life

On a scale from 1 to 5 where 1 is *totally disagree* and 5 is *totally agree*, the respondents were asked to which extent they agreed with certain statements about the usefulness of their education in their professional life. Numbers in parentheses: sum of replies in the categories *agree* and *totally agree*.

less <- agree-> more

- My studies helped me develop my ability for analytical thinking(98,6%)
- My studies trained me for the process of collecting and processing complex information(89,2%)
- My studies gave me skills/competency that meets the demands of my professional life(87,8%)
- My studies helped develop my writing abilities (84,7%)
- My studies prepared me for the use of computers as a work tool (66,2%)
- My studies gave me a good practice in oral preparation(64,9%)

## Norwegian language and programming skills

We asked the respondents about their skills in programming and Norwegian language going into the degree, and during their degree. We also asked their opinion about these skills related to career possibilities.

### Norwegian proficiency and usefulness for employment

73% of the respondents spoke Norwegian before they started their degree, and 27% did not. Of the respondents that did not speak Norwegian, 50% learned a bit Norwegian during their degree, 25 % became fluent.

70% of the respondents think that Norwegian language proficiency has an effect on career possibilities after a PhD degree. 19% don't know, and 11% thinks it does not affect career possibilities.

### Programming skills and usefulness for employment

86,5% of the respondents had some IT-programming skills before starting their degree and 13,5% did not.

Of the respondents that did not have any programming skills, 60% learned a bit and 10% learned a lot of programming during their degree.

93% of the respondents think that programming skills influence career possibilities after a PhD degree. 3% don't know, and 4% thinks it does not affect career possibilities.

## Appendix 1 The questions included in the questionnaire

## PhD-questionnaire: alumni, Department of Mathematics, UiO

### Personal information

First (and middle name)

Family name

What is your e-mail address?

Date of birth

Degree

What degree did you obtain at the University of Oslo?

Dr.scient.

Dr.philos.

PhD

Other

### Comment

*This element is only shown when the option 'Other' is selected in the question 'What degree did you obtain at the University of Oslo?'*

When did you graduate?

2002

2003

2004

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

Please write a few keywords that describe the subject areas of your mathematics

## education (e.g. statistics, computer engineering)

### Which of the research groups were you associated with?

- Algebra and algebraic geometry
- Computational Mathematics
- Geometry and topology
- Logic
- Mechanics
- Operator algebras
- Partial differential equations
- Risk and Stochastics
- Several Complex Variables
- Statistics and Data Science
- Other

#### Comment:

*This element is only shown when the option 'Other' is selected in the question 'Which of the research groups were you associated with?'*

## Employment

### How many months after graduation did you obtain employment?

- Before I graduated
- 0-2
- 2-6
- More than 6 months

#### Comment

*This element is only shown when the option 'More than 6 months' is selected in the question 'How many months after graduation did you obtain employment?'*

### In which country do you work?

### What sector are you currently working in?

- Researcher at University/College-level
- Researcher at an institution other than University/College
- Another position in public sector
- Another position in private sector
- Other

#### Comment

*This element is only shown when the option 'Other' is selected in the question 'What sector are you currently working in?'*

### Name of the company/institution/organisation where you work

### If you are employed, what is your job title?

### What are your main work tasks? Please describe three examples of your daily work assignments.

### Are you involved in the hiring process of new employees at your place of work?

Yes

No

**Please state what is your approximate annual gross income.**

Less than 500 000 NOK

500 000 - 500 000 NOK

600 000 - 700 000 NOK

700 000 - 800 000 NOK

800 000 - 900 000 NOK

900 000 - 1 000 000 NOK

1 000 000 - 1 100 000 NOK

1 100 000 NOK - 1 200 000 NOK

More than 1 200 000 NOK

**What is your occupational status as of 1st April 2022?**

Permanent position

Temporary position

Working as a freelancer

Self-employed

Unemployed

Long-term sick leave/rehabilitation

Student

Disability benefit recipient/retiree

Other

**Comment**

*This element is only shown when the option 'Other' is selected in the question 'What is your occupational status as of 1st April 2022?'*

**To what extent do you find that your employers in general are aware of skills that you have acquired through your doctoral education?**

To a very small extent

To a small extent

To a medium extent

To a large extent

To a very large extent

**Job characteristics**

**In the boxes below check the characteristics that you value as important in a job (multiple answers possible).**

Independent work

Professional challenges

Varied work tasks

Possibility of learning and personal development

Good income



Good career opportunities  
Doing something useful for society  
Possibility of influencing community development  
Recognition from leaders and colleagues  
Collaboration with others  
Flexible working hours  
Control over your own work pace  
Opportunity to make international career  
The possibility to work from home to some extent

**Check the boxes that characterize your present position (multiple answers possible).**

Independent work  
Professional challenges  
Varied work tasks  
Possibility of learning and personal development  
Good income  
Good career opportunities  
Doing something useful for society  
Possibility of influencing community development  
Recognition from leaders and colleagues  
Collaboration with others  
Flexible working hours  
Control over your own work pace  
Opportunity to make international career  
The possibility to work from home to some extent

**The usefulness of your education at UiO in your active professional life**

**On a scale from 1 to 5, where 1 is &#34;totally disagree&#34; and 5 is &#34;totally agree&#34;, to what extent do you agree with the following:**

**My studies gave me skills/competency that meets the demands of my professional life**

Totally disagree  
2  
3  
4  
Totally agree  
I do not know

**My studies helped me develop my ability for analytical thinking**

Totally disagree  
2  
3

4

Totally agree

I do not know

**My studies trained me for the process of collecting and processing complex information**

Totally disagree

2

3

4

Totally agree

I do not know

**My studies helped develop my writing abilities**

Totally disagree

2

3

4

Totally agree

I do not know

**My studies gave me a good practice in oral preparation**

Totally disagree

2

3

4

Totally agree

I do not know

**My studies prepared me for the use of computers as a work tool**

Totally disagree

2

3

4

Totally agree

I do not know

**Did you speak Norwegian before you started your PhD (and alike) education at the Department of Mathematics?**

Yes

No

**Did you learn Norwegian while obtaining your PhD-degree?**

*This element is only shown when the option 'No' is selected in the question 'Did you speak Norwegian before you started your PhD (and alike) education at the Department of Mathematics?'*

No

Yes - a bit

Yes - fluent

**Do you think that Norwegian language proficiency has an effect on career possibilities after an achieved PhD (and alike) degree?**

Yes

No

I do not know

**Did you have any IT-programming skills before you started your PhD-education?**

Yes

No

**Did you learn programming while obtaining your PhD-degree?**

*This element is only shown when the option 'No' is selected in the question 'Did you have any IT-programming skills before you started your PhD-education?'*

No

Yes - a bit

Yes - to a large extent

**Do you think that programming skills have an effect on career possibilities after an achieved PhD (and alike) degree?**

Yes

No

I do not know

**Other**

**Is there something we haven't asked about your work life that you would like to tell us about?**

**Can we stay in touch?**

We are constantly trying to work with issues that may be relevant to our PhD students.

We would therefore appreciate if we can stay in touch with graduated PhD students and use you as resources in our work.

Yes

No

**Do you have any advice for us?**

Feel free to share any advice with us!