Voices of Early Career Researchers 2021 data report

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Gary Dooley

Contents

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Acknowledgements

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Cover images from left to right: Ujunwa Dike and his colleague providing free malaria tests on World Malaria Day in Nigeria; Tuong Vu Dang and colleague identifying wild bananas in Vietnam; Stephanie Adama from Ghana observing cervical cancer cells

List of tables

List of figures

1 Introduction

The 'Voices of Early Career Researchers' survey was first carried out in 2020 to better understand early career researchers' (ECRs) perceptions of their work and their research environment. It revealed how researchers in the Global South were passionate about their research, hoped it could transform lives, and were optimistic and positive about their ability to do so. However, it also confirmed the challenges that researchers face, both at home and globally. These include gender inequities, inequities in research collaborations and access to funding, and an ongoing pressure to prioritise academic publications over social and economic impact (Dooley et al., 2021).

At the end of 2021 we ran an updated version of the survey to find out how the research environment is changing for ECRs. 7,972 individuals responded to our 2021 survey.[1] Respondents came from 141 countries, with the majority (70%) being based in Sub-Saharan Africa. In this data report, we present a full overview of the data collected in order to contribute to a better understanding of the experiences of, and opportunities and challenges encountered by early career researchers from the Global South.

The data presented in this report follows the order of the original survey. Based on the analysis of this data, we have released two publications that take a deeper thematic look at the experiences and perceptions of early career researchers: *Listening to the Voices of Early-Career Researchers in the Global South so that we can better support them to thrive* (Nobes, 2023) and *An equitable knowledge ecosystem must include the voices of both women and men* (Skovgaard, 2023). They focus on the key findings from the survey and the different experiences women and men early career researchers respectively. The two thematic publications can be found at: www.inasp.info/publications.

While our survey largely consisted of quantitative questions it also included some qualitative questions.[2] Due to the large volume of responses, the responses to the qualitative questions will not be featured in this report. However, they have informed the two thematic publications.

2 Distribution of survey

The survey was targeted at Early Career Researchers in the Global South. An email with a link to a SurveyMonkey survey was sent to all participants who enrolled on an AuthorAID MOOC between 2015 to 2021, and all members of the AuthorAID community who had consented to receive emails. Once cross-referenced for duplications across both platforms, this was a total of 67,640 emails. An email was also shared with key contacts and partners of INASP who had close links with the research community, as well as INASP's currently partners in Ethiopian and Uganda. A link to the survey was also publicised on the AuthorAID website news page.

[1] https://www.inasp.info/voice-ECRs-2020

[2] See Annex 1 for a full list of questions included in our 2021 survey.

3 The data

3.1 General notes

Unless otherwise specified, all results are shown based upon the number of respondents who provided an answer to specific questions, rather than the total number taking the survey; in other words, blanks are ignored. This means that the total 'N' for each question will be different and will always be <=7972. Since respondents dropped out of the survey at different points, this generally means that the higher the question number, the smaller the N.

3.2 Notes on statistics

When considering the following analysis:

- If a finding is noted as being statistically significant, this means statistically significant at the 5% level (which is the normal convention) unless otherwise noted
- Although some of the percentages in tables are shown to two decimal places, they should usually be rounded up and quoted as whole numbers in any publications using the data

3.3 Data consolidation

Data that originally came from SurveyMonkey appeared to contain 8,113 individuals. However, it subsequently transpired that there were some repetitions of key identifiable information (email addresses) within the data, effectively meaning that some individuals were represented more than once. Therefore, we subjected the data to a consolidation process to ensure that: (1) individuals were only represented once within the data; (2) the resulting data for any individual made maximal use of all data available for that individual.

141 email addresses were identified as being repeated within the data. No email addresses were repeated more than once. For each repeated email address, the two data lines were compared to determine whether demographic information (names, gender, country) also matched. In the majority of cases (136 of 141) the information matched up, indicating that we did indeed have multiple data lines representing one individual. For each of these cases a single line of data was created by taking the iteration with the earlier time stamp and supplementing any missing data fields with data from the later time stamp where available.

For the five cases where the demographic information did not match up, we were able to resolve them individually by inspecting the data.

The resulting dataset contains data from 7,972 individuals.

3.4 Who does the sample represent?

The Voices of Early Career Researchers survey was conducted among the members of INASP's AuthorAID community. AuthorAID provides support, mentoring, resources, and training for early career researchers in low- and middle-income countries. It supports over 25,000 researchers to publish and communicate their work. Over the last seven years, over 44,000 participants from 135 countries have taken part in our award-winning Massive Open Online Courses (MOOCs).

7,972 individuals from the AuthorAID network responded to the 2021 survey; 42% of the respondents were women, 57% were men, and 1% selected 'other' or preferred not to specify their gender. The respondents come from 141 different countries, with the majority being based in Sub-Saharan Africa (70%). The researchers that responded to our survey are predominantly based in universities and research institutes (58%).

At INASP, we take an expansive view of an 'early career researcher'. While science systems in many high-income countries define an ECR as someone in their first five to 10 years following completion of their PhD, we take an ECR to include anyone who is considered to be a researcher by their institution, is undertaking research work of some form, and is in the early stages of their career – from postgraduates to lecturers. While active researchers in low- and middle-income countries are less likely to have a PhD than those in the Global North, they are often expected to run departments, undertake and publish research, and to lead research projects, alongside teaching. The AuthorAID community also includes many aspiring researchers, who have attained a bachelor's or master's degree, and who work in a variety of roles and organisations. The data from our survey suggest that the majority of respondents with 'only' a bachelor's or master's degree are nonetheless involved in activities equivalent to those of many with a PhD qualification, with evidence of publications, conference attendance and being assessed, by their institutions, on their research outputs.

3.5 Data summary

The data from the 2021 survey:

- Was collected between 2nd and 16th December 2021
- Contains data from 7,972 individuals

These respondents:

- Are split: 42% women; 57% men; 1% ('other' or 'prefer not to say')
- Are from 141 different countries: most significantly represented were Nigeria (27%), Kenya (7%), and Uganda (6%)
- Are predominantly based in Sub-Saharan Africa (70%)
- Working in a variety of types of organisation: 45% in universities; 12% in research organisations; 12% in hospitals
- Come from a wide variety of disciplines, the most widely represented being 'medicine and healthcare' (35%)

3.6 Gender

Gender was a key focus for this study, so wherever possible data has been broken down by gender.

3.6.1 Non-binary respondents (brief profile)

37 individuals (approximately 0.5% of the total number) identified as neither male nor female:

- 14 identified as 'other'
- 23 opted to 'prefer not to say'

In the majority of subsequent gender analyses, only those who selected the option male or female will be included, in order to simplify the tables, and because the small numbers in the other two categories do not easily allow for further breakdown. Furthermore, the terms 'women' and 'men' will be used for those who selected 'female' and 'male' respectively.

This section contains a brief description of the demographics of those who did not identify as either 'male' or 'female'.

Table 1: Non M/F x region

	Other		**Prefer not to say**		**Total**	**Total %**
	Count	**%**	**Count**	**%**		
Latin America	2	14.29%	1	4.35%	3	8.11%
South Asia	1	7.14%	6	26.09%	7	18.92%
South East Asia	2	14.29%	4	17.39%	6	16.22%
Sub-Saharan Africa	6	42.86%	11	47.83%	17	45.95%
Other	3	21.43%	1	4.35%	4	10.81%
Grand Total	**14**	**100.00%**	**23**	**100.00%**	**37**	**100.00%**

Table 2: Non M/F x organisation reclassified.[3]

	Other		Prefer not to say		Total	Total %
	Count	**%**	**Count**	**%**		
Academy+		0.00%	2	9.09%	2	5.56%
Government		0.00%	1	4.55%	1	2.78%
Hospital	1	7.14%	3	13.64%	4	11.11%
NGO		0.00%	4	18.18%	4	11.11%
Research Institute	3	21.43%	1	4.55%	4	11.11%
University	8	57.14%	7	31.82%	15	41.67%
Other	2	14.29%	4	18.18%	6	16.67%
Grand Total	**14**	**100.00%**	**22**	**100.00%**	**36**	**100.00%**

Table 3: Non M/F x discipline

	Other		Prefer not to say		Total	Total %
	Count	**%**	**Count**	**%**		
Arts and Humanities		0.00%	2	8.70%	2	5.41%
Biological Sciences	1	7.14%	4	17.39%	5	13.51%
Engineering and Technology	1	7.14%	1	4.35%	2	5.41%
Life Sciences and Agriculture		0.00%	3	13.04%	3	8.11%
Medicine and Healthcare	3	21.43%	6	26.09%	9	24.32%
Social Sciences and Business	8	57.14%	4	17.39%	12	32.43%
Other (please specify)	1	7.14%	3	13.04%	4	10.81%
Grand Total	**14**	**100.00%**	**23**	**100.00%**	**37**	**100.00%**

[3] See 1.6.1.8 Organisation reclassified (NewOrg)

Although a complete breakdown of every question for these 37 individuals is beyond the scope of this data report, we have conducted a full gender category analysis of specifically the question 'I have experienced discrimination at my job because of my gender' (Q39).

Table 4: Non M/F x gender discrimination

	Women		Men		Other		Prefer not to say		Total	Total %
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**		
Agree completely	134	5.68%	85	2.50%		0.00%	2	13.33%	221	3.82%
Agree somewhat	373	15.81%	178	5.23%	2	18.18%	3	20.00%	556	9.61%
Neither agree nor disagree	308	13.05%	341	10.03%	2	18.18%	2	13.33%	653	11.28%
Disagree somewhat	396	16.78%	352	10.35%	3	27.27%	2	13.33%	753	13.01%
Disagree completely	1149	48.69%	2445	71.89%	4	36.36%	6	40.00%	3604	62.28%
Grand Total	**2360**	**100.00%**	**3401**	**100.00%**	**11**	**100.00%**	**15**	**100.00%**	**5787**	**100.00%**

3.7 Regional analysis

Respondents to the survey came from 141 different countries. Clearly, the complete breakdown of all the questions by country is not feasible – not least because many countries only had small numbers of respondents. How you group together countries for regional analysis depends entirely upon the specific question being asked. In this document, regional analysis is confined to regions used in our previous 'Voices of Early Career Researchers' analysis. Our regional categorisations follow most common conventions in order to match other datasets, along with a consideration of the most important groupings of the AuthorAID community – specifically, the six regions:[4]

1. Latin America (LA)
2. Middle East and North Africa (MENA)

[4] A full list of regions and countries included in each region can be found in Annex 2. We acknowledge that these divisions are to some extent arbitrary and unhelpful, and do not reflect social and economic realities.

3. South Asia (SA)
4. South East Asia (SEA)
5. Sub-Saharan Africa (SSA)
6. Other

These categories were quite imbalanced in terms of data distribution; 70% respondents were in SSA. However, at least 3% of the total respondents were in each other category, giving sufficient numbers for meaningful statistical analysis.

In some instances, in the subsequent analysis, individual countries are used. It should be noted, however, that country analysis is only appropriate for countries with high numbers of respondents. Table 6 shows all the countries represented with more than 100 respondents.

3.8 Data breakdown by survey section

3.8.1 Demographics (Q1–8)[5]

3.8.1.1 Gender Q2

Table 5: Gender

	Count	Percentage
Women	3356	42.10%
Men	4579	57.44%
Other	14	0.18%
Prefer not to say	23	0.29%
Grand Total	**7972**	**100.00%**

[5] Q9-12 asked respondents from Cambodia, Ethiopia, Tanzania and Uganda to specify which region in the country they were from as these were focus countries for the GPEKE project under which the survey was conducted. The data breakdown for these specific country-level regional questions have not been included in this report. For the full list of survey questions see Annex 1.

3.8.1.2 Country Q8

Respondents came from 141 different countries. 16 countries had more than 100 respondents. The most frequently represented countries are show in Table 6 below.

Table 6: Country

Country	Count	Percentage
Nigeria	2155	27%
Kenya	592	7%
Uganda	488	6%
Nepal	401	5%
Ethiopia	400	5%
Ghana	362	5%
United Republic of Tanzania	360	5%
Pakistan	249	3%
India	232	3%
Sri Lanka	180	2%
Vietnam	163	2%
Zambia	154	2%
Rwanda	143	2%
Sudan	135	2%
Zimbabwe	106	1%
South Africa	100	1%

(Showing all countries with >=100 respondents)

Country x gender

The gender distribution in the most represented countries was as follows:

Table 7: Country x gender

	Count women	% Women	Count men	% Men	Count total
Nigeria	861	40%	1287	60%	2148
Kenya	289	49%	301	51%	590
Uganda	184	38%	304	62%	488
Ethiopia	68	17%	332	83%	400
Nepal	173	43%	227	57%	400
Ghana	142	39%	220	61%	362
United Republic of Tanzania	149	41%	211	59%	360
Pakistan	131	53%	117	47%	248
India	97	42%	132	58%	229
Sri Lanka	131	73%	49	27%	180
Vietnam	101	63%	60	37%	161
Zambia	68	44%	85	56%	153
Rwanda	33	23%	109	77%	142
Sudan	86	64%	49	36%	135
Zimbabwe	45	42%	61	58%	106
South Africa	66	67%	33	33%	99
Grand Total	**3356**	**42%**	**4579**	**58%**	**7935**

There was a marked gender imbalance in many countries. Countries with a high gender imbalance (>40:60) included:

Table 8: Gender imbalance

More men than women respondents	Count women	% Women	Count men	% Men
Liberia	1	6%	15	94%
Burundi	2	7%	27	93%
Somalia	10	14%	63	86%
Ethiopia	68	17%	332	83%
Rwanda	33	23%	109	77%

Colombia	8	26%	23	74%
Malawi	27	29%	65	71%
Bangladesh	27	31%	59	69%
China	10	36%	18	64%
Benin	10	37%	17	63%
Uganda	184	38%	304	62%
More women than men respondents	Count women	% Women	Count men	% Men
Vietnam	101	63%	60	37%
Sudan	86	64%	49	36%
South Africa	66	67%	33	33%
Myanmar	23	68%	11	32%
Philippines	47	68%	22	32%
Sri Lanka	131	73%	49	27%

(Table only shows the most populous countries)

3.8.1.3 Region

Table 9: Region

	Number	**%**
Latin America (LA)	315	4%
Middle East and North Africa (MENA)	203	3%
South Asia (SA)	1171	15%
Southeast Asia (SEA)	328	4%
Sub-Saharan Africa (SSA)	5560	70%
Other	395	5%
Grand Total	**7972**	**100%**

Region x gender

Table 10: Region x gender

	Count women	% Women	Count men	% Men
Latin America (LA)	156	50.00%	156	50.00%
Middle East and North Africa (MENA)	85	41.87%	118	58.13%
South Asia (SA)	565	48.54%	599	51.46%
Southeast Asia (SEA)	191	59.32%	131	40.68%
Sub-Saharan Africa (SSA)	2173	39.20%	3370	60.80%
Other	186	47.57%	205	52.43%
Grand Total	**3356**	**42.29%**	**4579**	**57.71%**

3.8.1.4 Organisation Q3

Respondents worked in a range of different organisations. The organisational types offered in the survey were designed to reflect the membership of the AuthorAID community, and categories of interest to INASP.

Table 11: Organisation

	Number	%
Academy of science	119	1.49%
Government	787	9.87%
Government – regional	95	1.19%
Hospital	943	11.83%
International NGO	277	3.47%
Learned/Professional Society	63	0.79%
Library Consortium	10	0.13%
National or regional NGO	380	4.77%
National Research and Education Network (NREN)	27	0.34%
Open access advocacy group	13	0.16%

Publishing platform	14	0.18%
Research institute – international	98	1.23%
Research institute – private	203	2.55%
Research institute – public	469	5.88%
Research network	210	2.63%
University private	516	6.47%
University public	2317	29.06%
University network	822	10.31%
Other (please specify)	446	5.59%
(blank)	163	2.04%
Grand Total	**7972**	**100.00%**

Organisation x gender

Table 12: Organisation x gender

	Count women	**% Women**	**Count men**	**% Men**
Academy of science	53	44.92%	65	55.08%
Government	314	39.95%	472	60.05%
Government – regional	36	37.89%	59	62.11%
Hospital	412	43.88%	527	56.12%
International NGO	92	33.45%	183	66.55%
Learned/Professional Society	18	29.03%	44	70.97%
Library Consortium	6	60.00%	4	40.00%
National or regional NGO	157	41.53%	221	58.47%
National Research and Education Network (NREN)	8	30.77%	18	69.23%
Open access advocacy group	4	30.77%	9	69.23%
Publishing platform	3	21.43%	11	78.57%
Research institute – international	45	45.92%	53	54.08%
Research institute – private	92	45.54%	110	54.46%
Research institute – public	203	43.56%	263	56.44%

Research network	92	43.81%	118	56.19%
University private	235	45.81%	278	54.19%
University public	885	38.34%	1423	61.66%
University network	410	50.06%	409	49.94%
Other (please specify)	206	46.71%	235	53.29%
(blank)	85	52.47%	77	47.53%
Grand Total	**3356**	**42.29%**	**4579**	**57.71%**

3.8.1.5 Organisation reclassified (NewOrg)

In some subsequent analyses a simplified description of organisation was used as follows:

Table 13: Organisation reclassified - NewOrg

	Number	**%**
Academy+	182	2.28%
Government	882	11.06%
Hospital	943	11.83%
NGO	657	8.24%
Research Institute	980	12.29%
University	3665	45.97%
#N/A	163	2.04%
Other	500	6.27%
Grand Total	**7972**	**100.00%**

3.8.1.6 NewOrg x Gender

Table 14: NewOrg x Gender

	Count women	% Women	Count men	% Men
Academy+	71	39.44%	109	60.56%
Government	350	39.73%	531	60.27%

Hospital	412	43.88%	527	56.12%
NGO	249	38.13%	404	61.87%
Research Institute	432	44.26%	544	55.74%
University	1536	42.08%	2114	57.92%
#N/A	85	52.47%	77	47.53%
Other	221	44.74%	273	55.26%
Grand Total	**3356**	**42.29%**	**4579**	**57.71%**

3.8.1.7 Discipline Q4

Respondents came from a wide variety of disciplines:

Table 15: Discipline

	Number	**%**
Arts and Humanities	476	5.97%
Biological Sciences	852	10.69%
Engineering and Technology	615	7.71%
Life Sciences and Agriculture	951	11.93%
Medicine and Healthcare	2799	35.11%
Physical Sciences and Mathematics	378	4.74%
Social Sciences and Business	1226	15.38%
Other (please specify)	675	8.47%
Grand Total	**7972**	**100.00%**

Discipline x gender

Table 16: Discipline x gender

	Count women	**% Women**	**Count men**	**% Men**
Arts and Humanities	197	41.56%	277	58.44%
Biological Sciences	426	50.30%	421	49.70%

Engineering and Technology	196	31.97%	417	68.03%
Life Sciences and Agriculture	377	39.77%	571	60.23%
Medicine and Healthcare	1243	44.55%	1547	55.45%
Physical Sciences and Mathematics	139	36.77%	239	63.23%
Social Sciences and Business	464	38.22%	750	61.78%
Other (please specify)	314	46.80%	357	53.20%
Grand Total	**3356**	**42.29%**	**4579**	**57.71%**

Discipline x organisation

For each discipline, looking at the proportion of people working in different organisation types:

Table 17: Discipline x organisation

	Academy+	**Govern-ment**	**Hospital**	**NGO**	**Research Institute**	**University**	**#N/A**	**Other**	**Grand Total**
Arts and Humanities	2.73%	10.92%	0.21%	11.76%	6.09%	56.30%	1.05%	10.92%	100.00%
Biological Sciences	3.29%	10.33%	2.70%	6.46%	19.48%	49.41%	2.58%	5.75%	100.00%
Engineering and Technology	3.74%	11.22%	0.16%	2.28%	11.06%	62.76%	1.63%	7.15%	100.00%
Life Sciences and Agriculture	2.31%	10.30%	0.32%	8.20%	21.35%	49.53%	1.47%	6.52%	100.00%
Medicine and Healthcare	1.79%	10.75%	31.55%	8.79%	8.25%	32.76%	2.29%	3.82%	100.00%
Physical Sciences and Mathematics	3.44%	9.79%	0.26%	3.70%	14.02%	60.85%	2.12%	5.82%	100.00%
Social Sciences and Business	1.39%	11.58%	0.73%	11.34%	12.89%	52.28%	2.04%	7.75%	100.00%
Other (please specify)	2.37%	14.07%	3.26%	8.15%	10.67%	49.04%	2.22%	10.22%	100.00%
Grand Total	**2.28%**	**11.06%**	**11.83%**	**8.24%**	**12.29%**	**45.97%**	**2.04%**	**6.27%**	**100.00%**

3.8.1.8 Disability Q5

In total 415 individuals (5%) identify as having at least one disability. Some respondents identified as having more than one impairment.

The prevalence of disabilities identified by the respondents was as follows:

Table 18: Disability

Visual impairment	205	2.57%
Learning/cognitive difficulties	118	1.48%
Motor/physical difficulties	76	0.95%
Hearing impairment	73	0.92%

3.8.1.9 2020 survey repeaters Q6

Respondents were asked whether they had completed the earlier (2020) 'Voices of Early Career Researchers' survey. They responded as follows:

Table 19: 2020 survey repeaters

Yes	614	7.70%
No	4769	59.82%
Not sure/Do not remember	2589	32.48%
Grand Total	**7972**	**100.00%**

The overlap between the sample in 2020 and 2021 is important when it comes to analysing differences between the two surveys. In order to get a better estimate – and to compare with the self-recall above – the email addresses were compared between the two survey iterations.

752 provided an email address in 2020; of those, 281 also did the 2021 survey – this represents 37% of the 2020 total. This is much smaller than the number who said in 2021 that they had done the 20220 survey (614) which would be 82% of the 2020 respondents.

Comparison by email address is not 100% accurate – after all, people can change email addresses – but the discrepancy between the email address comparison and the self-recall is marked. Overlap could be as low as 37% (email estimate) or as high as 82% (self-recall) and this needs to be accounted for in the statistics in any comparisons that are made between the two years.

3.8.1.10 Geographical context Q7

Table 20: Geographical context

	Number	**%**

I am based in a large urban area that is not the capital city	3005	37.90%
I am based in a relatively small city in my country	1418	17.89%
I am based in a remote area	110	1.39%
I am based in a rural area	574	7.24%
I am based in the capital city of my country	2821	35.58%
Grand Total	**7928**	**100.00%**

For some subsequent analyses it was thought appropriate to collapse the data further into urban and rural.

Table 21: Context urban/rural

	Number	**%**
Rural	2102	26.51%
Urban	5826	73.49%
Grand Total	**7928**	**100.00%**

Context x gender

Table 22: Context x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**
Rural	811	38.75%	1282	61.25%	2093
Urban	2521	43.48%	3277	56.52%	5798
Grand Total	**3332**	**42.23%**	**4559**	**57.77%**	**7891**

A Chi-square independence test ($\chi 2$) showed that in urban areas there is a relatively higher percentage of women than in rural areas. ($\chi 2 = 14.11$; $df = 1$; $p < .01$)

3.8.2 Research background / experience (Q13-15)

3.8.2.1 Qualifications

Q13: What is the highest academic degree you have completed?

Table 23: Qualifications

	Number	**%**
Bachelor's degree or equivalent	2030	25.59%
Master's degree or equivalent	3854	48.58%
PhD/Doctorate or equivalent	1913	24.11%
No academic degree	137	1.73%
Grand Total	**7934**	**100.00%**

Qualifications x gender

Table 24: Qualifications x gender (1)

Percentages express 'of any specific gender, what percentages have a given qualification?'; e.g. 'what percentage of women have a PhD?'

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**
Bachelor's degree or equivalent	844	25.27%	1171	25.70%	2015	25.52%
Master's degree or equivalent	1569	46.98%	2268	49.77%	3837	48.59%
No academic degree	63	1.89%	74	1.62%	137	1.73%
PhD/Doctorate or equivalent	864	25.87%	1044	22.91%	1908	24.16%
Grand Total	**3340**	**100.00%**	**4557**	**100.00%**	**7897**	**100.00%**

The proportion of women with a PhD was significantly higher than the proportion of men with a PhD ($\chi 2 = 9.21$; $df = 1$; $p < .01$)

Table 25: Qualifications x gender (2)

Percentages express ‘of any specific qualification, what percentages are of a given gender?’; e.g. ‘what percentage of PhDs are women?’

	Count women	% Women	Count men	% Men	Count total
Bachelor's degree or equivalent	844	42%	1171	58%	2015
Master's degree or equivalent	1569	41%	2268	59%	3837
PhD/Doctorate or equivalent	864	45%	1044	55%	1908
No academic degree	63	46%	74	54%	137
Grand Total	**3340**	**42%**	**4557**	**58%**	**7897**

3.8.2.2 Research experience

Depending on whether or not they had a PhD, respondents were asked slightly different questions about their research experience. This means that a direct comparison of the amount of experience between those with and without a PhD is not possible. Separate analysis of those with and without a PhD has therefore been conducted..[6]

Research experience (post-PhD) x gender

Respondents *with a PhD* were asked ‘since starting your PhD, how many years have you spent working with research?’ (Q14)

The number of years reported was:

- Total: average 7.3 years; median 6 years
- Women: average 7.2 years; median 6 years
- Men: average 7.3 years; median 6 years

[6] For any use of this experience data, it is important to bear in mind that experience of respondents with a PhD cannot be directly compared with experience of respondents without a PhD and vice versa.

The distribution was as follows:

Table 26: Years of research experience (post-PhD) x gender

Years' Experience	Count women	% Women	Count men	% Men	Total	%Total
1	37	4.34%	50	4.83%	87	4.61%
2	31	3.63%	51	4.93%	82	4.34%
3	71	8.32%	97	9.37%	168	8.90%
4	105	12.31%	106	10.24%	211	11.18%
5	121	14.19%	168	16.23%	289	15.31%
6	78	9.14%	101	9.76%	179	9.48%
7	81	9.50%	86	8.31%	167	8.85%
8	58	6.80%	62	5.99%	120	6.36%
9	47	5.51%	45	4.35%	92	4.87%
10	78	9.14%	77	7.44%	155	8.21%
11	32	3.75%	28	2.71%	60	3.18%
12	29	3.40%	35	3.38%	64	3.39%
13	16	1.88%	18	1.74%	34	1.80%
14	13	1.52%	12	1.16%	25	1.32%
15	20	2.34%	30	2.90%	50	2.65%
16	5	0.59%	10	0.97%	15	0.79%
17	6	0.70%	10	0.97%	16	0.85%
18	1	0.12%	5	0.48%	6	0.32%
19	6	0.70%	2	0.19%	8	0.42%
20	3	0.35%	16	1.55%	19	1.01%
21	2	0.23%	4	0.39%	6	0.32%
22	0	0.00%	3	0.29%	3	0.16%
23	0	0.00%	1	0.10%	1	0.05%
24	0	0.00%	1	0.10%	1	0.05%
25	3	0.35%	1	0.10%	4	0.21%

25 or more	10	1.17%	16	1.55%	26	1.38%
Grand Total	**853**	**100.00%**	**1035**	**100.00%**	**1888**	**100.00%**

And represented graphically:

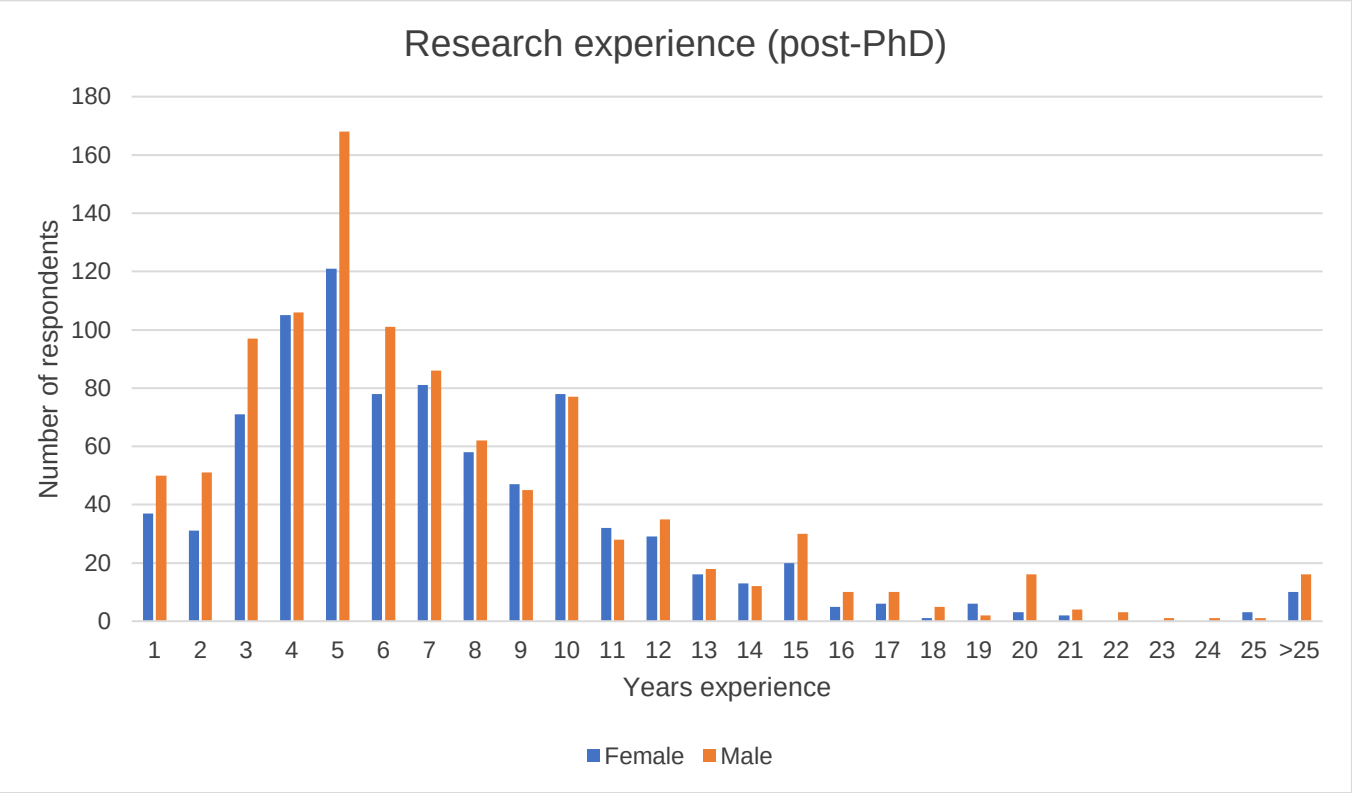


Figure 1 Post-PhD research experience

Research experience (without PhD) x gender

Respondents *without a PhD* were asked 'including training, how many years of research experience do you have?' (Q15)

The number of years reported was:

- Total: average 5.5 years; median 4 years
- Women: average 5.3 years; median 3 years
- Men: average 5.6 years; median 5 years

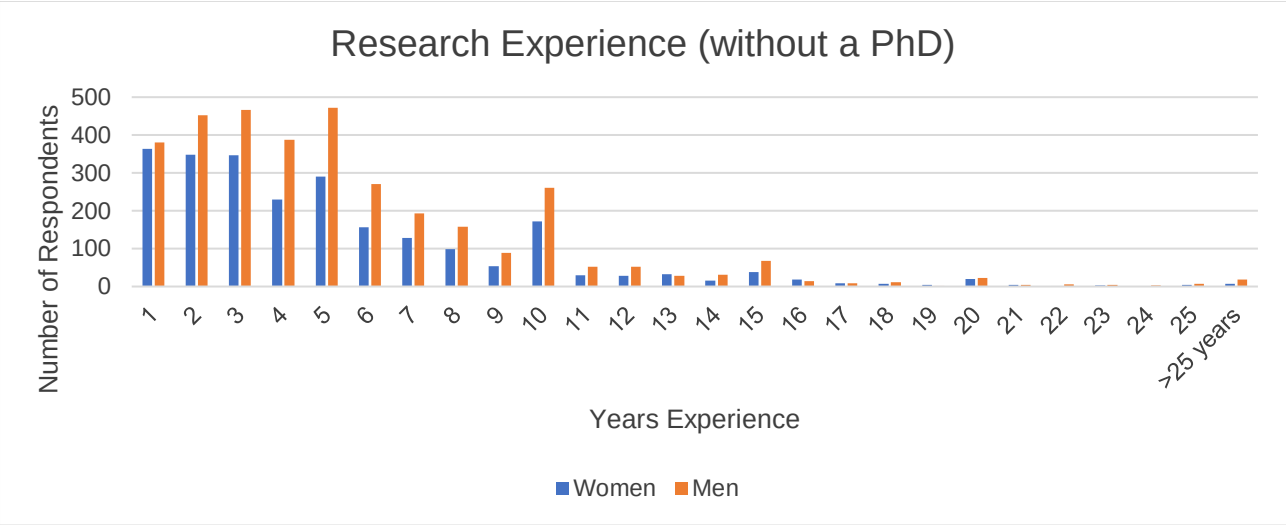
Table 27: Years of research experience (without PhD) x gender

Years' Experience	Count women	% Women	Count men	% Men	Total	%Total
1	364	15.11%	381	11.00%	745	12.69%
2	348	14.45%	452	13.05%	800	13.62%
3	347	14.40%	466	13.46%	813	13.85%
4	230	9.55%	388	11.20%	618	10.52%
5	290	12.04%	472	13.63%	762	12.98%
6	156	6.48%	270	7.80%	426	7.25%
7	128	5.31%	193	5.57%	321	5.47%
8	99	4.11%	158	4.56%	257	4.38%
9	54	2.24%	89	2.57%	143	2.44%
10	172	7.14%	260	7.51%	432	7.36%
11	29	1.20%	52	1.50%	81	1.38%
12	28	1.16%	52	1.50%	80	1.36%
13	33	1.37%	28	0.81%	61	1.04%
14	15	0.62%	31	0.90%	46	0.78%
15	38	1.58%	68	1.96%	106	1.81%
16	18	0.75%	14	0.40%	32	0.54%
17	9	0.37%	9	0.26%	18	0.31%
18	7	0.29%	11	0.32%	18	0.31%
19	5	0.21%	2	0.06%	7	0.12%
20	20	0.83%	23	0.66%	43	0.73%
21	4	0.17%	5	0.14%	9	0.15%

22	1	0.04%	6	0.17%	7	0.12%
23	3	0.12%	4	0.12%	7	0.12%
24	0	0.00%	3	0.09%	3	0.05%
25	4	0.17%	7	0.20%	11	0.19%
>25 years	7	0.29%	19	0.55%	26	0.44%
Grand Total	**2409**	**100.00%**	**3463**	**100.00%**	**5872**	**100.00%**

Represented graphically:

Figure 2: Without PhD research experience



3.8.3 Important factors

3.8.3.1 Important factors in research

Q17: Which factors are most important for your research? (please select the three factors you consider the most important)

Table 28: Important factors in research

	Count	%		Count	%
... to be published in high-impact journals			***... to be novel or innovative***		
Selected	1805	23.0%	Selected	3426	43.5%
not selected	6033	77.0%	not selected	4449	56.5%
Grand Total	**7838**	**100.0%**	**Grand Total**	**7875**	**100.0%**
... to have a rigorous methodology			***... to be accessible to a wide range of readers***		
Selected	1626	20.8%	Selected	2751	35.0%
not selected	6208	79.2%	not selected	5113	65.0%
Grand Total	**7834**	**100.0%**	**Grand Total**	**7864**	**100.0%**
... to make a difference to society			***... to make a contribution to your nation's scientific development***		
Selected	4998	63.2%	Selected	5293	66.9%
not selected	2904	36.8%	not selected	2624	33.1%
Grand Total	**7902**	**100.0%**	**Grand Total**	**7917**	**100.0%**
... to be frequently cited in the literature			***... to be recognised internationally***		
Selected	590	7.6%	Selected	1228	15.7%
not selected	7218	92.4%	not selected	6611	84.3%
Grand Total	**7808**	**100.0%**	**Grand Total**	**7839**	**100.0%**

Table 29: Important factors x gender

	Count women	% Women	Count men	% Men	Total	%Total
... to be published in high-impact journals						
Selected	686	20.7%	1119	24.7%	1805	23.0%
not selected	2622	79.3%	3411	75.3%	6033	77.0%
Grand Total	**3308**	**100.0%**	**4530**	**100.0%**	**7838**	**100.0%**
... to have a rigorous methodology						
Selected	656	19.8%	970	21.4%	1626	20.8%

not selected	2653	80.2%	3555	78.6%	6208	79.2%
Grand Total	**3309**	**100.0%**	**4525**	**100.0%**	**7834**	**100.0%**
... to make a difference to society						
Selected	2104	62.9%	2894	63.5%	4998	63.2%
not selected	1242	37.1%	1662	36.5%	2904	36.8%
Grand Total	**3346**	**100.0%**	**4556**	**100.0%**	**7902**	**100.0%**
... to be frequently cited in the literature						
Selected	238	7.2%	352	7.8%	590	7.6%
not selected	3062	92.8%	4156	92.2%	7218	92.4%
Grand Total	**3300**	**100.0%**	**4508**	**100.0%**	**7808**	**100.0%**
... to be novel or innovative						
Selected	1363	41.0%	2063	45.3%	3426	43.5%
not selected	1959	59.0%	2490	54.7%	4449	56.5%
Grand Total	**3322**	**100.0%**	**4553**	**100.0%**	**7875**	**100.0%**
... to be accessible to a wide range of readers						
Selected	1285	38.7%	1466	32.3%	2751	35.0%
not selected	2038	61.3%	3075	67.7%	5113	65.0%
Grand Total	**3323**	**100.0%**	**4541**	**100.0%**	**7864**	**100.0%**
... to make a contribution to your nation's scientific development						
Selected	2211	66.0%	3082	67.5%	5293	66.9%
not selected	1137	34.0%	1487	32.5%	2624	33.1%
Grand Total	**3348**	**100.0%**	**4569**	**100.0%**	**7917**	**100.0%**
... to be recognised internationally						
Selected	491	14.8%	737	16.3%	1228	15.7%
not selected	2823	85.2%	3788	83.7%	6611	84.3%
Grand Total	**3314**	**100.0%**	**4525**	**100.0%**	**7839**	**100.0%**

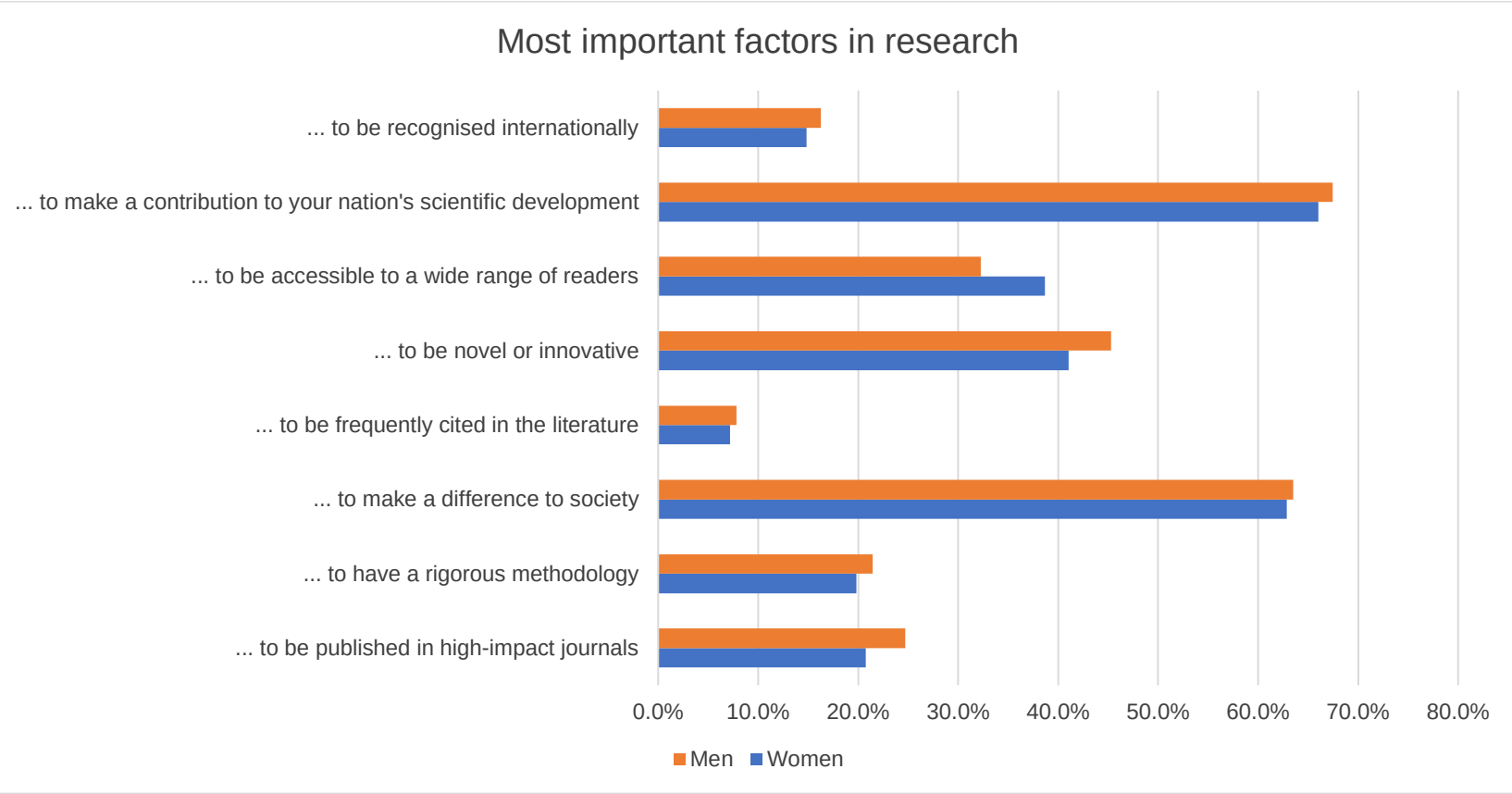


Figure 3: Most important factors

Chi-square tests were performed separately for each factor. The factors which had a statistically significant gender imbalance were:

- ... to be published in high-impact journals: men more likely to select ($\chi 2 = 16.95$; df = 1; $p < .01$)
- ... to be novel or innovative: men more likely to select ($\chi 2 = 14.32$; df = 1; $p < .01$)
- ... to be accessible to a wide range of readers: women more likely to select ($\chi 2 = 34.41$; df = 1; $p < .01$)

3.8.4 Research evaluation (Q18-24)

3.8.4.1 Evaluation by an institutional research body

Q18: Is your research work routinely evaluated for quality and impact by an institutional research body?

Table 30: Institutional research body evaluation

	Count	%
Yes	3954	60.53%
No	1435	21.97%
Don't Know	1143	17.50%
Grand Total	**6532**	**100.00%**

Table 31: Institutional research body evaluation x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	1607	59.65%	2328	61.12%	3935	60.51%
No	582	21.60%	850	22.32%	1432	22.02%
Don't Know	505	18.75%	631	16.57%	1136	17.47%
Grand Total	**2694**	**100.00%**	**3809**	**100.00%**	**6503**	**100.00%**

3.8.4.2 Evaluation by national or government body

Q19: Is your research work routinely evaluated for quality and impact by a national or government body?

Table 32: National or government body evaluation

	Count	%
Yes	2431	37.22%
No	2540	38.89%
Don't Know	1561	23.90%

Grand Total	**6532**	**100.00%**

Table 33: National or government body evaluation x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	894	33.18%	1526	40.06%	2420	37.21%
No	1078	40.01%	1452	38.12%	2530	38.91%
Don't Know	722	26.80%	831	21.82%	1553	23.88%
Grand Total	**2694**	**100.00%**	**3809**	**100.00%**	**6503**	**100.00%**

3.8.4.3 Assessment metrics

Q20: What indicators or metrics are used to assess you as a researcher (for career and promotion purposes)? (Tick all that apply)

In the following tables the line with the descriptor represents the people who selected that option. For example, the proportion of people who selected 'Number of papers published in peer-reviewed journals' was 77% etc. The corresponding (blank) is respondents who did not select the option.

Table 34: Assessment metrics

Number of papers published in peer-reviewed journals	4808	77.03%
(blank)	1434	22.97%
Grand Total	**6242**	**100.00%**
Metrics of peer-reviewed journals in which you publish	3111	50.15%
(blank)	3092	49.85%
Grand Total	**6203**	**100.00%**
Quantity of citations of your research (or H-index)	2708	43.78%
(blank)	3478	56.22%
Grand Total	**6186**	**100.00%**

Conference presentations given	3536	56.98%
(blank)	2670	43.02%
Grand Total	**6206**	**100.00%**
Impact case studies produced	1861	30.17%
(blank)	4307	69.83%
Grand Total	**6168**	**100.00%**
Datasets or protocols produced	1077	17.54%
(blank)	5064	82.46%
Grand Total	**6141**	**100.00%**
Broader recognition in media or social media	661	10.76%
(blank)	5481	89.24%
Grand Total	**6142**	**100.00%**
Book chapters or monographs published	2065	33.44%
(blank)	4111	66.56%
Grand Total	**6176**	**100.00%**
Technology transfer / patents	1372	22.32%
(blank)	4775	77.68%
Grand Total	**6147**	**100.00%**
Policy briefs produced	1148	18.67%
(blank)	5000	81.33%
Grand Total	**6148**	**100.00%**

Assessment metrics x gender

Table 35: Assessment metrics x gender

	Count women	% Women	Count men	% Men	Total	%Total
Number of papers published in peer-reviewed journals	2016	78.72%	2774	75.92%	4790	77.07%
(blank)	545	21.28%	880	24.08%	1425	22.93%
Grand Total	**2561**	**100.00%**	**3654**	**100.00%**	**6215**	**100.00%**
Metrics of peer-reviewed journals in which you publish	1260	49.61%	1836	50.50%	3096	50.13%
(blank)	1280	50.39%	1800	49.50%	3080	49.87%
Grand Total	**2540**	**100.00%**	**3636**	**100.00%**	**6176**	**100.00%**
Quantity of citations of your research (or H-index)	1146	45.28%	1552	42.78%	2698	43.81%
(blank)	1385	54.72%	2076	57.22%	3461	56.19%
Grand Total	**2531**	**100.00%**	**3628**	**100.00%**	**6159**	**100.00%**
Conference presentations given	1533	60.16%	1985	54.67%	3518	56.93%
(blank)	1015	39.84%	1646	45.33%	2661	43.07%
Grand Total	**2548**	**100.00%**	**3631**	**100.00%**	**6179**	**100.00%**
Impact case studies produced	731	29.03%	1118	30.86%	1849	30.11%
(blank)	1787	70.97%	2505	69.14%	4292	69.89%
Grand Total	**2518**	**100.00%**	**3623**	**100.00%**	**6141**	**100.00%**
Datasets or protocols produced	463	18.42%	608	16.88%	1071	17.52%
(blank)	2050	81.58%	2993	83.12%	5043	82.48%
Grand Total	**2513**	**100.00%**	**3601**	**100.00%**	**6114**	**100.00%**
Broader recognition in media or social media	275	10.95%	382	10.60%	657	10.74%

(blank)	2236	89.05%	3222	89.40%	5458	89.26%
Grand Total	**2511**	**100.00%**	**3604**	**100.00%**	**6115**	**100.00%**
Book chapters or monographs published	859	33.90%	1193	33.00%	2052	33.37%
(blank)	1675	66.10%	2422	67.00%	4097	66.63%
Grand Total	**2534**	**100.00%**	**3615**	**100.00%**	**6149**	**100.00%**
Technology transfer / patents	529	21.04%	835	23.16%	1364	22.29%
(blank)	1985	78.96%	2771	76.84%	4756	77.71%
Grand Total	**2514**	**100.00%**	**3606**	**100.00%**	**6120**	**100.00%**
Policy briefs produced	416	16.56%	722	20.01%	1138	18.59%
(blank)	2096	83.44%	2887	79.99%	4983	81.41%
Grand Total	**2512**	**100.00%**	**3609**	**100.00%**	**6121**	**100.00%**

3.8.4.4 Research recognition

Q22 (part 1): I feel that the quality of my research is *recognized* at my institution.

Table 36: Research recognition

	Count	**%**
Agree	4333	66.33%
Disagree	766	11.73%
Don’t Know or Not Applicable	1433	21.94%
Grand Total	**6532**	**100.00%**

Research recognition x gender

Table 37: Research recognition x gender

	Count women	% Women	Count men	% Men	Total	%Total
Agree	1653	61.36%	2662	69.89%	4315	66.35%
Disagree	353	13.10%	407	10.69%	760	11.69%
Don't Know or N/A	688	25.54%	740	19.43%	1428	21.96%
Grand Total	**2694**	**100.00%**	**3809**	**100.00%**	**6503**	**100.00%**

Men are more likely than women to report that their research is recognised in their institutions ($\chi 2 = 51.41$; $df = 1$; $p < .01$)

3.8.4.5 Research reward

Q22 (part 2): I feel that the quality of my research is *rewarded* at my institution.

Table 38: Research reward

	Count	%
Agree	2883	44.14%
Disagree	1576	24.13%
Don't Know or Not Applicable	2073	31.74%
Grand Total	**6532**	**100.00%**

Research reward x gender

Table 39: Research reward x gender

	Count women	% Women	Count men	% Men	Total	%Total
Agree	1035	38.42%	1831	48.07%	2866	44.07%
Disagree	694	25.76%	878	23.05%	1572	24.17%
Don't Know or N/A	965	35.82%	1100	28.88%	2065	31.75%

Grand Total	**2694**	**100.00%**	**3809**	**100.00%**	**6503**	**100.00%**

Men are more likely than women to report that their research is rewarded in their institutions ($\chi 2 = 5.99$; df = 1; $p < .05$)

3.8.4.6 Main users

Q24: Who are the main users of your research?

Table 40: Main users

	Count	**%**
Other academics	5327	84.30%
(blank)	992	15.70%
Grand Total	**6319**	**100.00%**
Policymakers	2934	46.79%
(blank)	3336	53.21%
Grand Total	**6270**	**100.00%**
Practitioners	3502	55.78%
(blank)	2776	44.22%
Grand Total	**6278**	**100.00%**
Corporate/business/industrial sector	1394	22.38%
(blank)	4836	77.62%
Grand Total	**6230**	**100.00%**

Main users x gender

Table 41: Main users x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**

Other academics	2172	84.19%	3131	84.37%	5303	84.30%
(blank)	408	15.81%	580	15.63%	988	15.70%
Grand Total	**2580**	**100.00%**	**3711**	**100.00%**	**6291**	**100.00%**
Policymakers	1030	40.33%	1889	51.22%	2919	46.76%
(blank)	1524	59.67%	1799	48.78%	3323	53.24%
Grand Total	**2554**	**100.00%**	**3688**	**100.00%**	**6242**	**100.00%**
Practitioners	1299	50.80%	2190	59.30%	3489	55.82%
(blank)	1258	49.20%	1503	40.70%	2761	44.18%
Grand Total	**2557**	**100.00%**	**3693**	**100.00%**	**6250**	**100.00%**
Corporate/business/industrial sector	462	18.21%	928	25.32%	1390	22.41%
(blank)	2075	81.79%	2737	74.68%	4812	77.59%
Grand Total	**2537**	**100.00%**	**3665**	**100.00%**	**6202**	**100.00%**

3.8.5 Collaboration (Q25-33)

3.8.5.1 Importance of collaboration

Q25: How important is it to you to do collaborative research with other researchers outside your own institution?

Table 42: Importance of collaboration

	Count	**%**
Very important	5803	90.15%
Moderately important	594	9.23%
Not at all important	40	0.62%
Grand Total	**6437**	**100.00%**

Importance of collaboration x gender

Table 43: Importance of collaboration x gender

	Count women	% Women	Count men	% Men	Total	%Total
Very important	2338	88.26%	3440	91.51%	5778	90.17%
Moderately important	292	11.02%	298	7.93%	590	9.21%
Not at all important	19	0.72%	21	0.56%	40	0.62%
Grand Total	**2649**	**100.00%**	**3759**	**100.00%**	**6408**	**100.00%**

Numbers are so high that no further stats are warranted.

3.8.5.2 Opportunities for collaboration

Q26: Do you feel that you have sufficient opportunities to do collaborative research?

Table 44: Opportunities for collaboration

	Count	%
Yes	2343	36.40%
No	4094	63.60%
Grand Total	**6437**	**100.00%**

Opportunities x gender

Table 45: Opportunities x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	859	32.43%	1476	39.27%	2335	36.44%
No	1790	67.57%	2283	60.73%	4073	63.56%
Grand Total	**2649**	**100.00%**	**3759**	**100.00%**	**6408**	**100.00%**

Men are more likely than women to report that they have sufficient opportunities for collaboration ($\chi 2 = 31.38$; $df = 1$; $p < .01$)

3.8.5.3 Research with anyone in another institution

Q27: Have you ever carried out any collaborative research with anyone in another institution in your own country?

Table 46: Research with anyone in another institution

	Count	%
Yes	3942	61.24%
No	2495	38.76%
Grand Total	**6437**	**100.00%**

Research with anyone in another institution x gender

Table 47: Research with anyone in another institution x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	1549	58.47%	2373	63.13%	3922	61.20%
No	1100	41.53%	1386	36.87%	2486	38.80%
Grand Total	**2649**	**100.00%**	**3759**	**100.00%**	**6408**	**100.00%**

Men are more likely than women to report having done research in collaboration with someone in another institution in their own country ($\chi 2 = 14.17$; df = 1; $p < .01$)

3.8.5.4 Research with anyone in another country

Q28: Have you ever carried out any collaborative research with anyone in another country?

Table 48: Research with anyone in another country

	Count	%
Yes	2608	40.52%
No	3829	59.48%
Grand Total	**6437**	**100.00%**

Research with anyone in another country x gender

Table 49: Research with anyone in another country x gender

	Count women	% Women	Count men	% Men	**Total**	%Total
Yes	1031	38.92%	1560	41.50%	2591	40.43%
No	1618	61.08%	2199	58.50%	3817	59.57%
Grand Total	**2649**	**100.00%**	**3759**	**100.00%**	**6408**	**100.00%**

Men are more likely than women to report having done research in collaboration with someone in another country ($\chi 2 = 4.29$; df = 1; $p < .05$)

3.8.5.5 Recognition

Q29: In your last international collaboration, do you think your expertise and contribution to the project was sufficiently recognized?

Table 50: Recognition

	Count	**%**
Yes	2021	79.38%
No	154	6.05%
Not applicable / don't know	371	14.57%
Grand Total	**2546**	**100.00%**

Recognition x gender

Table 51: Recognition x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**
Yes	774	76.94%	1236	81.16%	2010	79.48%
No	75	7.46%	78	5.12%	153	6.05%
Not applicable / don't know	157	15.61%	209	13.72%	366	14.47%
Grand Total	**1006**	**100.00%**	**1523**	**100.00%**	**2529**	**100.00%**

Men are more likely than women to report that their contribution to an international collaboration was sufficiently recognized ($\chi 2 = 6.61$; df = 1; $p < .05$)

3.8.5.6 Barriers to collaboration

Q31: To what extent do the following affect your ability to do collaborative research:

Table 52: Barriers to collaboration

Lack of funding opportunities		
To a great extent	4605	73.03%
To a moderate extent	1053	16.70%
To a small extent	426	6.76%
Not a problem / does not affect me	222	3.52%
Grand Total	**6306**	**100.00%**
Lack of institutional support		
To a great extent	2384	37.81%
To a moderate extent	2059	32.65%
To a small extent	1135	18.00%
Not a problem / does not affect me	728	11.54%
Grand Total	**6306**	**100.00%**
Lack of time & resources		
To a great extent	1851	29.35%
To a moderate extent	2031	32.21%
To a small extent	1512	23.98%
Not a problem / does not affect me	912	14.46%
Grand Total	**6306**	**100.00%**
Lack of access to collaborators		
To a great extent	2480	39.33%
To a moderate extent	1890	29.97%

To a small extent	1349	21.39%
Not a problem / does not affect me	587	9.31%
Grand Total	**6306**	**100.00%**

Adding together ‘Great Extent’ and ‘Moderate Extent’ (effectively looking at individuals for whom the issue was ‘at least of moderate consideration’):

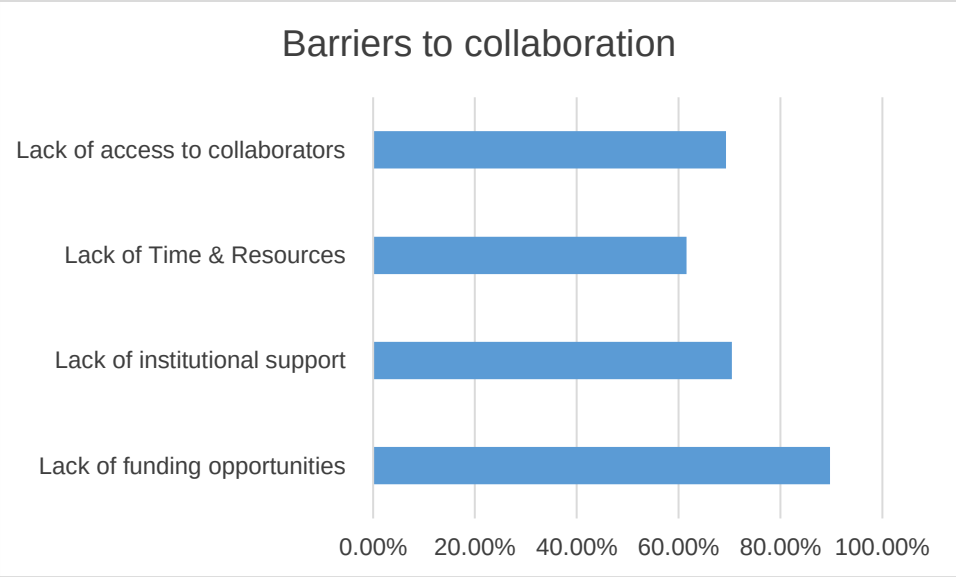


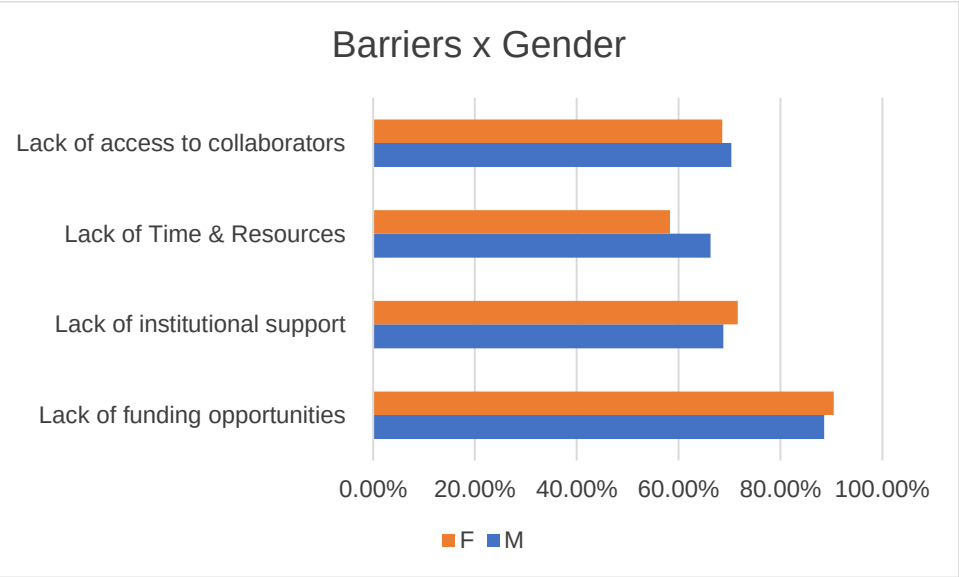
Figure 4: Barriers to collaboration

Barriers x gender

Table 53: Barriers x gender

	Count women	% Women	Count men	% Men	Total	%Total
Lack of funding opportunities						
To a great extent	1811	69.76%	2778	75.47%	4589	73.11%
To a moderate extent	488	18.80%	552	15.00%	1040	16.57%

To a small extent	207	7.97%	219	5.95%	426	6.79%
Not a problem / does not affect me	90	3.47%	132	3.59%	222	3.54%
Grand Total	**2596**	**100.00%**	**3681**	**100.00%**	**6277**	**100.00%**
Lack of institutional support						
To a great extent	942	36.29%	1431	38.88%	2373	37.80%
To a moderate extent	844	32.51%	1203	32.68%	2047	32.61%
To a small extent	488	18.80%	644	17.50%	1132	18.03%
Not a problem / does not affect me	322	12.40%	403	10.95%	725	11.55%
Grand Total	**2596**	**100.00%**	**3681**	**100.00%**	**6277**	**100.00%**
Lack of time & resources						
To a great extent	823	31.70%	1020	27.71%	1843	29.36%
To a moderate extent	897	34.55%	1124	30.54%	2021	32.20%
To a small extent	551	21.22%	951	25.84%	1502	23.93%
Not a problem / does not affect me	325	12.52%	586	15.92%	911	14.51%
Grand Total	**2596**	**100.00%**	**3681**	**100.00%**	**6277**	**100.00%**
Lack of access to collaborators						
To a great extent	1043	40.18%	1424	38.69%	2467	39.30%
To a moderate extent	782	30.12%	1099	29.86%	1881	29.97%
To a small extent	541	20.84%	803	21.81%	1344	21.41%
Not a problem / does not affect me	230	8.86%	355	9.64%	585	9.32%
Grand Total	**2596**	**100.00%**	**3681**	**100.00%**	**6277**	**100.00%**



Statistical testing was performed for each barrier to determine whether there is a gender difference (collapsing data to 2 categories (great + moderate and small + none)

- **Lack of funding opportunities:** a higher proportion of men believe that 'lack of funding opportunities' is a barrier to collaboration ($\chi 2$ = 5.97; df = 1; p <.05)
- **Lack of institutional support:** a higher proportion of **men** believe that 'lack of institutional support' is a barrier to collaboration ($\chi 2$ = 5.56; df = 1; p <.05)
- **Lack of Time & Resources:** a higher proportion of **women** believe that a lack of time & resources is a barrier to collaboration ($\chi 2$ = 41.28; df = 1; p <.01)
- **Lack of access to collaborators:** there is no difference in the proportion of men and women who believe 'lack of access to collaborators' is a barrier ($\chi 2$ = 2.21; df = 1; p =ns)

3.8.5.7 More collaboration

Q32: Would you like to carry out more collaborative research if you had the opportunity to do so?

Table 54: More collaboration

	Count	%
Yes	6283	99.64%
No	23	0.36%
Grand Total	**6306**	**100.00%**

More collaboration x gender

Table 55: More collaboration x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	2583	99.50%	3672	99.76%	6255	99.65%
No	13	0.50%	9	0.24%	22	0.35%
Grand Total	**2596**	**100.00%**	**3681**	**100.00%**	**6277**	**100.00%**

3.8.6 The state of research and 'recognition' (Q34-37)

3.8.6.1 National recognition

Q34: How much recognition do you think the research produced in your country receives nationally?

Table 56: National recognition

	Count	%
High recognition	1119	18.37%
Sufficient recognition	2093	34.36%
Low recognition	2252	36.97%
Unsure	628	10.31%
Grand Total	**6092**	**100.00%**

National recognition x gender

Table 57: National recognition x gender

	Count women	% Women	Count men	% Men	Total	%Total
High recognition	421	16.98%	691	19.27%	1112	18.34%
Sufficient recognition	869	35.05%	1214	33.86%	2083	34.35%
Low recognition	917	36.99%	1324	36.93%	2241	36.96%
Unsure	272	10.97%	356	9.93%	628	10.36%
Grand Total	**2479**	**100.00%**	**3585**	**100.00%**	**6064**	**100.00%**

3.8.6.2 International recognition

Q34: How much recognition do you think the research produced in your country receives internationally?

Table 58: International recognition

	Count	%
High recognition	888	14.96%
Sufficient recognition	2027	34.14%
Low recognition	1910	32.17%
Unsure	1112	18.73%
Grand Total	**5937**	**100.00%**

International recognition x gender

Table 59: International recognition x gender

	Count women	% Women	Count men	% Men	Total	%Total
High recognition	328	13.60%	554	15.84%	882	14.92%

Sufficient recognition	782	32.42%	1236	35.33%	2018	34.15%
Low recognition	828	34.33%	1072	30.65%	1900	32.15%
Unsure	474	19.65%	636	18.18%	1110	18.78%
Grand Total	**2412**	**100.00%**	**3498**	**100.00%**	**5910**	**100.00%**

3.8.6.3 The status of research

Q36: How would you broadly describe the status of:

1. Research in your department?
2. Research across disciplines within your institution
3. Research in your discipline in your country
4. International research in your discipline

Table 60: Status of research

	Count	**%**
Department		
Thriving	437	7.07%
Good	1581	25.57%
Moderate	2588	41.86%
In crisis	257	4.16%
Poor	1319	21.34%
Grand Total	**6182**	**100.00%**
Institution		
Thriving	409	6.63%
Good	1686	27.33%
Moderate	2594	42.05%
Poor	1269	20.57%
In crisis	211	3.42%
Grand Total	**6169**	**100.00%**

Country		
Thriving	411	6.67%
Good	1656	26.87%
Moderate	2596	42.13%
Poor	1270	20.61%
In crisis	229	3.72%
Grand Total	**6162**	**100.00%**
International		
Thriving	1784	28.93%
Good	2422	39.27%
Moderate	1290	20.92%
Poor	549	8.90%
In crisis	122	1.98%
Grand Total	**6167**	**100.00%**

Status of research x gender

Table 61: Status of research x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**
Department						
Thriving	189	7.46%	246	6.79%	435	7.07%
Good	648	25.59%	924	25.51%	1572	25.54%
Moderate	1051	41.51%	1524	42.08%	2575	41.84%
Poor	549	21.68%	768	21.20%	1317	21.40%
In crisis	95	3.75%	160	4.42%	255	4.14%
Grand Total	**2532**	**100.00%**	**3622**	**100.00%**	**6154**	**100.00%**
Institution						
Thriving	188	7.45%	216	5.97%	404	6.58%
Good	681	26.98%	998	27.59%	1679	27.34%

Moderate	1108	43.90%	1478	40.86%	2586	42.11%
Poor	485	19.22%	776	21.45%	1261	20.53%
In crisis	62	2.46%	149	4.12%	211	3.44%
Grand Total	**2524**	**100.00%**	**3617**	**100.00%**	**6141**	**100.00%**
Country						
Thriving	186	7.37%	222	6.15%	408	6.65%
Good	683	27.06%	968	26.81%	1651	26.92%
Moderate	1082	42.87%	1502	41.61%	2584	42.13%
Poor	483	19.14%	780	21.61%	1263	20.59%
In crisis	90	3.57%	138	3.82%	228	3.72%
Grand Total	**2524**	**100.00%**	**3610**	**100.00%**	**6134**	**100.00%**
International						
Thriving	797	31.53%	980	27.14%	1777	28.95%
Good	947	37.46%	1466	40.60%	2413	39.31%
Moderate	520	20.57%	760	21.05%	1280	20.85%
Poor	223	8.82%	324	8.97%	547	8.91%
In crisis	41	1.62%	81	2.24%	122	1.99%
Grand Total	**2528**	**100.00%**	**3611**	**100.00%**	**6139**	**100.00%**

A higher proportion of men than women believe that ***institutional*** research is 'poor' or 'in crisis' ($\chi 2 = 23.69$; df = 1; $p < .01$)

A higher proportion of men than women believe that ***national*** research is 'poor' or 'in crisis' ($\chi 2 = 6.00$; df = 1; $p < .05$)

There was no difference in the proportion of men and women who believe that ***departmental*** or ***international*** research is 'poor' or 'in crisis'.

It is notable that respondents are much more likely to find international research to be 'thriving' than national, departmental, or institutional research. The pessimism at a local level compared with optimism at a global level seems to hold true for men and women alike.

3.8.6.4 Research experience is … challenging

Q37: Thinking of your experience as an early career researcher, indicate the extent to which you would describe it as…

Table 62: Challenging

	Count	%
Extremely	725	12.58%
Very	2444	42.39%
Moderately	1939	33.63%
Slightly	548	9.51%
Not at all	109	1.89%
Grand Total	**5765**	**100.00%**

Challenging x gender

Table 63: Challenging x gender

	Count women	% Women	Count men	% Men	Total	%Total
Extremely	355	15.09%	363	10.72%	718	12.51%
Very	1025	43.58%	1407	41.54%	2432	42.38%
Moderately	743	31.59%	1190	35.13%	1933	33.68%
Slightly	196	8.33%	351	10.36%	547	9.53%
Not at all	33	1.40%	76	2.24%	109	1.90%
Grand Total	**2352**	**100.00%**	**3387**	**100.00%**	**5739**	**100.00%**

3.8.6.5 Research experience is … frustrating

Q37: Thinking of your experience as an early career researcher, indicate the extent to which you would describe it as...

Table 64: Frustrating

	Count	%
Extremely	391	6.81%
Very	1138	19.81%
Moderately	2028	35.30%

Slightly	1545	26.89%
Not at all	643	11.19%
Grand Total	**5745**	**100.00%**

Frustrating x gender

Table 65: Frustrating x gender

	Count women	% Women	Count men	% Men	Total	%Total
Extremely	204	8.70%	183	5.42%	387	6.77%
Very	519	22.14%	610	18.07%	1129	19.74%
Moderately	804	34.30%	1214	35.97%	2018	35.29%
Slightly	596	25.43%	946	28.03%	1542	26.96%
Not at all	221	9.43%	422	12.50%	643	11.24%
Grand Total	**2344**	**100.00%**	**3375**	**100.00%**	**5719**	**100.00%**

Combining the categories Extremely/Very/Moderately and the categories Slightly/Not-at-all and performing a Chi-square test on the resulting 2x2 matrix. indicates that:

- There was a significant tendency for women to be more likely to describe their research experience as frustrating than men ($\chi 2 = 18.89$; df = 1; p <.01)

3.8.6.6 Research experience is … exciting

Q37: Thinking of your experience as an early career researcher, indicate the extent to which you would describe it as...

Table 66: Exciting

	Count	%
Extremely	1051	18.30%
Very	2198	38.28%
Moderately	1608	28.00%

Slightly	725	12.63%
Not at all	160	2.79%
Grand Total	**5742**	**100.00%**

Exciting x gender

Table 67: Exciting x gender

	Count women	% Women	Count men	% Men	Total	%Total
Extremely	424	18.13%	622	18.42%	1046	18.30%
Very	904	38.65%	1283	37.99%	2187	38.26%
Moderately	660	28.22%	940	27.84%	1600	27.99%
Slightly	295	12.61%	428	12.67%	723	12.65%
Not at all	56	2.39%	104	3.08%	160	2.80%
Grand Total	**2339**	**100.00%**	**3377**	**100.00%**	**5716**	**100.00%**

Treating the data in the same way as for 'frustrating' above, we find no significant differences between men and women in the tendency to describe their research experience as exciting.

3.8.7 Career path - including 'opinions' (Q38-43)

3.8.7.1 Remaining in research in five years

Q38: Do you think you will still be working with research in five years' time?

Table 68: Remain in research

	Count	%
Yes - but not in an academic setting	1193	20.62%
Yes - in academic research	4189	72.39%
No	77	1.33%
Don't know	328	5.67%
Grand Total	**5787**	**100.00%**

Remaining in research in five years x gender

Table 69: Remain in research x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes - but not in an academic setting	539	22.84%	646	18.99%	1185	20.57%
Yes - in academic research	1617	68.52%	2556	75.15%	4173	72.44%
No	33	1.40%	43	1.26%	76	1.32%
Don't know	171	7.25%	156	4.59%	327	5.68%
Grand Total	**2360**	**100.00%**	**3401**	**100.00%**	**5761**	**100.00%**

It is striking that a very low proportion of respondents thought that they would definitely not be in research in five years' time (1% for both men and women). Separate Chi-square analyses were carried out for the 'don't know' respondents (5% women, 7% men). This indicated that:

- Women were more likely to say that they did not know if they would be in research in five years' time than men ($\chi 2 = 18.39$; df = 1; $p < .01$)

Then a second analysis was performed just on those respondents who said 'yes' (they did expect to remain in research).

- Of those people who intended to remain in research, men were more likely than women to expect to be doing research ***in an academic setting*** ($\chi 2 = 17.41$; df = 1; $p < .01$)

Caution should be exercised here because, at face value, we don't consider whether the individual is pursuing research in an academic setting in the first place. Therefore, we repeated the analysis solely for those who indicated that they currently work in a university setting.

Table 70: Remain in research x gender (university only)

	Count women	% Women	Count men	% Men	Total	%Total
Yes - but not in an academic setting	147	12.85%	150	9.08%	297	10.62%
Yes - in an academic setting	914	79.90%	1428	86.44%	2342	83.76%
No	14	1.22%	18	1.09%	32	1.14%
Don't know	69	6.03%	56	3.39%	125	4.47%
Grand Total	**1144**	**100.00%**	**1652**	**100.00%**	**2796**	**100.00%**

The same patterns emerge and are even more pronounced:

- The proportion of both men and women who expect not to remain in research is low
- Women were more likely to say that they did not know if they would be in research in five years' time than men ($\chi 2 = 11.04$; df = 1; $p < .01$)
- Of those people who intended to remain in research, men were more likely than women to expect to be doing research in an academic setting ($\chi 2 = 12.01$; df = 1; $p < .01$)

3.8.7.2 Statements of opinion

Q39 presented respondents with ten statements and asked them to respond on a scale from 'disagree completely' to 'agree completely'.

Table 71: Opinion

	Count	**%**
I am satisfied with my job		
Agree completely	1493	26%
Agree somewhat	2545	44%
Neither agree nor disagree	872	15%
Disagree somewhat	632	11%
Disagree completely	245	4%
Grand Total	**5787**	**100%**
My job allows me to maintain a good balance between my work and my life		
Agree completely	1165	20%
Agree somewhat	2495	43%
Neither agree nor disagree	887	15%
Disagree somewhat	847	15%
Disagree completely	393	7%
Grand Total	**5787**	**100%**
I like the organisational culture at my workplace		
Agree completely	921	16%

Agree somewhat	2147	37%
Neither agree nor disagree	1224	21%
Disagree somewhat	1025	18%
Disagree completely	470	8%
Grand Total	**5787**	**100%**
I am getting positive support from my supervisors		
Agree completely	1389	24%
Agree somewhat	2393	41%
Neither agree nor disagree	1070	18%
Disagree somewhat	621	11%
Disagree completely	314	5%
Grand Total	**5787**	**100%**
I have access to mentoring support for research and career development		
Agree completely	819	14%
Agree somewhat	1882	33%
Neither agree nor disagree	1152	20%
Disagree somewhat	1137	20%
Disagree completely	797	14%
Grand Total	**5787**	**100%**
I have experienced discrimination at my job because of my ethnicity		
Agree completely	278	5%
Agree somewhat	675	12%
Neither agree nor disagree	807	14%
Disagree somewhat	812	14%
Disagree completely	3215	56%
Grand Total	**5787**	**100%**
I have experienced discrimination at my job because of my gender		

Agree completely	221	4%
Agree somewhat	556	10%
Neither agree nor disagree	653	11%
Disagree somewhat	753	13%
Disagree completely	3604	62%
Grand Total	**5787**	**100%**
I feel like the work I do is being appropriately recognised by my colleagues		
Agree completely	930	16%
Agree somewhat	2555	44%
Neither agree nor disagree	1395	24%
Disagree somewhat	647	11%
Disagree completely	260	4%
Grand Total	**5787**	**100%**
My contract provides me with the job security I need		
Agree completely	983	17%
Agree somewhat	1802	31%
Neither agree nor disagree	1288	22%
Disagree somewhat	842	15%
Disagree completely	872	15%
Grand Total	**5787**	**100%**
More training and capacity building would enable me to progress in the work I do		
Agree completely	4015	69%
Agree somewhat	1187	21%
Neither agree nor disagree	379	7%
Disagree somewhat	120	2%
Disagree completely	86	1%
Grand Total	**5787**	**100%**

Opinion x gender

Table 72: Opinion x gender

	Count women	% Women	Count men	% Men	Total	%Total
I am satisfied with my job						
Agree completely	580	25%	911	27%	1493	26%
Agree somewhat	1044	44%	1488	44%	2545	44%
Neither agree nor disagree	386	16%	482	14%	872	15%
Disagree somewhat	259	11%	368	11%	632	11%
Disagree completely	91	4%	152	4%	245	4%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
My job allows me to maintain a good balance between my work and my life						
Agree completely	462	20%	700	21%	1165	20%
Agree somewhat	1006	43%	1482	44%	2495	43%
Neither agree nor disagree	353	15%	528	16%	887	15%
Disagree somewhat	375	16%	463	14%	847	15%
Disagree completely	164	7%	228	7%	393	7%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I like the organisational culture at my workplace						
Agree completely	351	15%	566	17%	921	16%
Agree somewhat	828	35%	1313	39%	2147	37%
Neither agree nor disagree	521	22%	697	20%	1224	21%
Disagree somewhat	463	20%	556	16%	1025	18%
Disagree completely	197	8%	269	8%	470	8%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I am getting positive support from my supervisors						
Agree completely	578	24%	806	24%	1389	24%
Agree somewhat	944	40%	1436	42%	2393	41%

Neither agree nor disagree	454	19%	612	18%	1070	18%
Disagree somewhat	255	11%	364	11%	621	11%
Disagree completely	129	5%	183	5%	314	5%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I have access to mentoring support for research and career development						
Agree completely	339	14%	477	14%	819	14%
Agree somewhat	781	33%	1093	32%	1882	33%
Neither agree nor disagree	458	19%	688	20%	1152	20%
Disagree somewhat	455	19%	676	20%	1137	20%
Disagree completely	327	14%	467	14%	797	14%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I have experienced discrimination at my job because of my ethnicity						
Agree completely	100	4%	177	5%	278	5%
Agree somewhat	261	11%	409	12%	675	12%
Neither agree nor disagree	314	13%	491	14%	807	14%
Disagree somewhat	324	14%	484	14%	812	14%
Disagree completely	1361	58%	1840	54%	3215	56%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I have experienced discrimination at my job because of my gender						
Agree completely	134	6%	85	2%	221	4%
Agree somewhat	373	16%	178	5%	556	10%
Neither agree nor disagree	308	13%	341	10%	653	11%
Disagree somewhat	396	17%	352	10%	753	13%
Disagree completely	1149	49%	2445	72%	3604	62%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
I feel like the work I do is being appropriately recognised by my colleagues						
Agree completely	303	13%	625	18%	930	16%
Agree somewhat	1023	43%	1521	45%	2555	44%

Neither agree nor disagree	636	27%	750	22%	1395	24%
Disagree somewhat	294	12%	349	10%	647	11%
Disagree completely	104	4%	156	5%	260	4%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
My contract provides me with the job security I need						
Agree completely	403	17%	578	17%	983	17%
Agree somewhat	711	30%	1087	32%	1802	31%
Neither agree nor disagree	548	23%	735	22%	1288	22%
Disagree somewhat	361	15%	471	14%	842	15%
Disagree completely	337	14%	530	16%	872	15%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**
More training and capacity building would enable me to progress in the work I do						
Agree completely	1636	69%	2362	69%	4015	69%
Agree somewhat	501	21%	679	20%	1187	21%
Neither agree nor disagree	151	6%	226	7%	379	7%
Disagree somewhat	46	2%	74	2%	120	2%
Disagree completely	26	1%	60	2%	86	1%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5787**	**100%**

There are many ways of looking at this data. One way is to collapse the categories into ‘agree’ (combining ‘agree completely’ and ‘agree somewhat’) and ‘disagree’ (combining ‘disagree somewhat’ and ‘disagree completely’), then compare the proportions to see if there is a gender difference. When we did this, the figures showed:

Table 73: Gender differences in opinion

More *men* believe…		
My job allows me to maintain a good balance between my work and my life		
Women	Men	
62%	64%	sig 5%

I like the organisational culture at my workplace		
Women	Men	
50%	55%	sig 1%
I have experienced discrimination at my job because of my ethnicity		
Women	Men	
15%	17%	sig 5%
I feel like the work I do is being appropriately recognised by my colleagues		
Women	Men	
56%	63%	sig 1%
More *women* believe…		
I *have experienced discrimination at my job because of my gender*		
Women	Men	
21%	8%	sig 1%

All other statements did not show any gender differences. All statistical significance was determined using Chi-square tests. It should be noted that, because of the large numbers of respondents, relatively small overall differences in proportions can be statistically significantly different.

3.8.7.3 Working abroad

Q41: Do you anticipate that your research career will lead to you working in another country?

Table 74: Working abroad

	Count	**%**
No, I will probably remain in my present country	978	17%

Possibly, there is a chance that I will move in the future	3387	59%
Probably, it is likely that I will move to another country	1422	25%
Grand Total	**5787**	**100%**

Table 75: Abroad x gender

	Count Women	**% Women**	**Count men**	**% Men**	**Total**	**% Total**
No, I will probably remain in my present country	499	21%	477	14%	976	17%
Possibly, there is a chance that I will move in the future	1347	57%	2026	60%	3373	59%
Probably, it is likely that I will move to another country	514	22%	898	26%	1412	25%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5761**	**100%**

A higher proportion of women than men believe that they will 'probably remain in their present country' and not work abroad ($\chi 2 = 50.18$; $df = 1$; $p < .01$)

Looking at all those countries where more than 100 respondents answered this question, we find that there are big differences between countries when it comes to the expectation of working abroad.

Table 76: Abroad x country

		No		**Possibly**		**Probably**
Nigeria	89	6%	974	64%	468	31%
Kenya	81	18%	263	60%	95	22%
Uganda	82	21%	221	58%	80	21%
Ethiopia	47	16%	182	61%	70	23%
Nepal	70	25%	173	61%	40	14%
United Republic of Tanzania	77	30%	134	52%	45	18%
Ghana	49	19%	136	53%	70	27%

India	42	22%	109	58%	37	20%
Pakistan	38	21%	93	51%	50	28%
Sri Lanka	33	26%	70	55%	25	20%
Vietnam	30	26%	68	59%	18	16%
Zambia	32	31%	60	59%	10	10%
Rwanda	16	17%	61	64%	19	20%
Sudan	9	10%	43	46%	42	45%

3.8.7.4 Importance of working abroad

Q42: How important is it to you to experience research in another country?

Table 77: Importance of working abroad

	Count	**%**
Very important	3870	67%
Important	1192	21%
Moderately Important	477	8%
Slightly Important	173	3%
Not Important at all	75	1%
Grand Total	**5787**	**100%**

Importance x gender

Table 78: Importance x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**% Total**
Very important	1446	61%	2408	71%	3854	67%
Important	522	22%	665	20%	1187	21%
Moderately important	253	11%	220	6%	473	8%
Slightly important	93	4%	80	2%	173	3%
Not important at all	46	2%	28	1%	74	1%
Grand Total	**2360**	**100%**	**3401**	**100%**	**5761**	**100%**

3.8.7.5 Opinion 2

Q43: A further set of 6 statements required the respondents to either agree or disagree (or respond ‘don’t know’ / ‘NA’).

Table 79: Additional opinion

	Count	%
My location is a disadvantage to developing a research career		
Agree	2407	42%
Don't Know or Not Applicable	1161	20%
Disagree	2201	38%
Grand Total	**5769**	**100%**
Research is a good career choice		
Agree	5078	89%
Don't Know or Not Applicable	430	8%
Disagree	201	4%
Grand Total	**5709**	**100%**
Women in research get less opportunities than men in similar positions		
Agree	1663	29%
Don't Know or Not Applicable	1902	33%
Disagree	2203	38%
Grand Total	**5768**	**100%**
Researchers have a responsibility to make their findings known outside of academia		
Agree	4911	85%
Don't Know or Not Applicable	627	11%
Disagree	232	4%
Grand Total	**5770**	**100%**

Researchers can make an impact on development in their country		
Agree	5482	95%
Don't Know or Not Applicable	177	3%
Disagree	106	2%
Grand Total	**5765**	**100%**
If I could go back in time, I would not choose a research career		
Agree	652	11%
Don't Know or Not Applicable	828	14%
Disagree	4275	74%
Grand Total	**5755**	**100%**

Opinion 2 x Gender

Table 80 Additional opinion x gender

	Count women	% Women	Count men	% Men	Total	%Total
My location is a disadvantage to developing a research career						
Agree	882	38%	1515	45%	2397	42%
Don't Know or Not Applicable	481	20%	676	20%	1157	20%
Disagree	989	42%	1200	35%	2189	38%
Grand Total	**2352**	**100%**	**3391**	**100%**	**5743**	**100%**
Research is a good career choice						
Agree	2037	88%	3022	90%	5059	89%
Don't Know or Not Applicable	200	9%	225	7%	425	7%
Disagree	90	4%	109	3%	199	4%
Grand Total	**2327**	**100%**	**3356**	**100%**	**5683**	**100%**

Women in research get less opportunities than men in similar positions						
Agree	1002	43%	652	19%	1654	29%
Don't Know or Not Applicable	693	29%	1199	35%	1892	33%
Disagree	657	28%	1539	45%	2196	38%
Grand Total	**2352**	**100%**	**3390**	**100%**	**5742**	**100%**
Researchers have a responsibility to make their findings known outside of academia						
Agree	1984	84%	2904	86%	4888	85%
Don't Know or Not Applicable	272	12%	352	10%	624	11%
Disagree	97	4%	135	4%	232	4%
Grand Total	2353	100%	3391	100%	5744	100%
Researchers can make an impact on development in their country						
Agree	2248	96%	3209	95%	5457	95%
Don't Know or Not Applicable	72	3%	105	3%	177	3%
Disagree	31	1%	74	2%	105	2%
Grand Total	**2351**	**100%**	**3388**	**100%**	**5739**	**100%**
If I could go back in time, I would not choose a research career						
Agree	239	10%	411	12%	650	11%
Don't Know or Not Applicable	395	17%	430	13%	825	14%
Disagree	1715	73%	2539	75%	4254	74%
Grand Total	**2349**	**100%**	**3380**	**100%**	**5729**	**100%**

Looking only at those who ‘agree’ vs ‘disagree’ (excluding the ‘don’t knows’), the statements where there was a significant gender difference (using Chi-square test) were:

Table 81: Gender differences in opinion 2

More *men* believe		

My location is a disadvantage to developing a research career		
Women	Men	
38%	45%	sig 1%
More *women* believe		
Women in research get less opportunities than men in similar positions		
Women	Men	
43%	19%	sig 1%
Researchers can make an impact on development in their country		
Women	Men	
96%	95%	sig 5%

All other statements did not show any gender differences. All statistical significance was determined using Chi-square tests. It should be noted that, because of the large numbers of respondents, relatively small overall differences in proportions can be statistically significantly different.

Location disadvantage x country

Responses to the statement 'my location is a disadvantage to developing a research career' were broken down by country. For the most significantly represented countries in the survey, the results were as follows:

Table 82: Location disadvantage x country

		Agree		**DK/NA**		**Disagree**		**Total**
Nigeria	791	52%	266	17%	468	31%	1525	100%
Kenya	144	33%	76	17%	217	50%	437	100%
Uganda	136	36%	56	15%	191	50%	383	100%
Ethiopia	109	37%	53	18%	135	45%	297	100%
Nepal	116	41%	69	24%	97	34%	282	100%

Ghana	88	35%	55	22%	112	44%	255	100%
United Republic of Tanzania	62	24%	39	15%	154	60%	255	100%
India	62	33%	50	27%	75	40%	187	100%
Pakistan	81	45%	45	25%	54	30%	180	100%
Sri Lanka	54	42%	31	24%	43	34%	128	100%
Vietnam	33	28%	41	35%	42	36%	116	100%
Zambia	36	35%	18	18%	48	47%	102	100%
Rwanda	29	30%	25	26%	42	44%	96	100%
Sudan	55	59%	14	15%	24	26%	93	100%

There were large differences between countries; e.g. only 24% of those from the Tanzania believe their location to be a disadvantage compared with 59% of those from Sudan.

3.8.8 Research outputs and opportunities (Q44-45)

3.8.8.1 Research activities

Q44: Please indicate which, if any, of the following research activities/outputs you have accomplished in the last year…

Because question 44 used a 'tick all that apply' type question, the data were processed *excluding all those who did not select at least one activity* (i.e., left all fields blank). This means that proportions below do not include respondents that did not select any of the activities listed. This is to avoid including respondents who did not engage with question 44 in the analysis of the data as this would lead to substantial underestimates of proportions when analysed by activity.

Table 83: Research activities

Published in an international journal		
Published in an 'international' journal	2847	51%
(blank)	2779	49%
Grand Total	**5626**	**100%**
Published in a national/local journal		
Published in a 'national/local' journal	1901	34%

(blank)	3703	66%
Grand Total	**5604**	**100%**
Published a book chapter		
Published a book chapter	884	16%
(blank)	4693	84%
Grand Total	**5577**	**100%**
Shared your research in a blog post or on social media		
Shared your research in a blog post or on social media	1409	25%
(blank)	4170	75%
Grand Total	**5579**	**100%**
Shared your research data online		
Shared your research data online	1011	18%
(blank)	4565	82%
Grand Total	**5576**	**100%**
Submitted your research to an open access repository		
Submitted your research to an open-access repository	1425	25%
(blank)	4168	75%
Grand Total	**5593**	**100%**
Presented your research at an international conference		
Presented your research at an international conference	1537	27%
(blank)	4054	73%
Grand Total	**5591**	**100%**
Presented your research at a national conference		
Presented your research at a national conference	1797	32%
(blank)	3797	68%
Grand Total	**5594**	**100%**

Presented your research at meetings of your colleagues in your own institution		
Presented your research at meetings of your colleagues in your own institution	2771	49%
(blank)	2844	51%
Grand Total	**5615**	**100%**
Written a policy brief		
Written a policy brief	598	11%
(blank)	4960	89%
Grand Total	**5558**	**100%**
Presented results to a policy maker		
Presented results to a policy maker	723	13%
(blank)	4843	87%
Grand Total	**5566**	**100%**

Research activities x gender

Table 84: Research activities x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**
Published in an international journal						
Published in an 'international' journal	1048	46%	1782	54%	2830	51%
(blank)	1236	54%	1534	46%	2770	49%
Grand Total	**2284**	**100%**	**3316**	**100%**	**5600**	**100%**
Published in a national/local journal						
Published in a 'national/local' journal	725	32%	1165	35%	1890	34%
(blank)	1549	68%	2139	65%	3688	66%
Grand Total	**2274**	**100%**	**3304**	**100%**	**5578**	**100%**

Published a book chapter						
Published a book chapter	330	15%	550	17%	880	16%
(blank)	1935	85%	2736	83%	4671	84%
Grand Total	**2265**	**100%**	**3286**	**100%**	**5551**	**100%**
Shared your research in a blog post or on social media						
Shared your research in a blog post or on social media	508	22%	892	27%	1400	25%
(blank)	1752	78%	2401	73%	4153	75%
Grand Total	**2260**	**100%**	**3293**	**100%**	**5553**	**100%**
Shared your research data online						
Shared your research data online	352	16%	652	20%	1004	18%
(blank)	1904	84%	2642	80%	4546	82%
Grand Total	**2256**	**100%**	**3294**	**100%**	**5550**	**100%**
Submitted your research to an open access repository						
Submitted your research to an open-access repository	495	22%	918	28%	1413	25%
(blank)	1768	78%	2386	72%	4154	75%
Grand Total	**2263**	**100%**	**3304**	**100%**	**5567**	**100%**
Presented your research at an international conference						
Presented your research at an international conference	626	28%	902	27%	1528	27%
(blank)	1639	72%	2398	73%	4037	73%
Grand Total	**2265**	**100%**	**3300**	**100%**	**5565**	**100%**
Presented your research at a national conference						
Presented your research at a national conference	693	31%	1098	33%	1791	32%
(blank)	1577	69%	2200	67%	3777	68%
Grand Total	**2270**	**100%**	**3298**	**100%**	**5568**	**100%**

Presented your research at meetings of your colleagues in your own institution						
Presented your research at meetings of your colleagues in your own institution	1137	50%	1621	49%	2758	49%
(blank)	1136	50%	1695	51%	2831	51%
Grand Total	**2273**	**100%**	**3316**	**100%**	**5589**	**100%**
Written a policy brief						
Written a policy brief	203	9%	392	12%	595	11%
(blank)	2049	91%	2888	88%	4937	89%
Grand Total	**2252**	**100%**	**3280**	**100%**	**5532**	**100%**
Presented results to a policy maker						
Presented results to a policy maker	224	10%	495	15%	719	13%
(blank)	2029	90%	2792	85%	4821	87%
Grand Total	**2253**	**100%**	**3287**	**100%**	**5540**	**100%**

Gender differences in activities

Table 85: Gender differences in activities

Published in an international journal (χ2 = 33.38; df = 1; p <.01)	
Women	Men
46%	54%
Published in a national/local journal (χ2 = 6.86; df = 1; p <.01)	
Women	Men
32%	35%
Published a book chapter (χ2 = 4.72; df = 1; p <.05)	
Women	Men
15%	17%

Shared your research in a blog post or on social media (χ2 = 6.70; df = 1; p <.01)	
Women	Men
22%	27%
Shared your research data online (χ2 = 15.86; df = 1; p <.01)	
Women	Men
16%	20%
Submitted your research to an open access repository (χ2 = 24.78; df = 1; p <.01)	
Women	Men
22%	28%
Presented your research at an international conference (NS)	
Women	Men
28%	27%
Presented your research at a national conference (χ2 = 4.71; df = 1; p <.05)	
Women	Men
31%	33%
Presented your research at meetings of your colleagues in your own institution (NS)	
Women	Men
50%	49%
Written a policy brief (χ2 = 11.99; df = 1; p <.01)	
Women	Men
9%	12%
Presented results to a policy maker (χ2 = 30.99; df = 1; p <.01)	

Women	Men
10%	15%

**statistically significant p<1% (chi-square test), * statistically significant p<5% (chi-square test), ns=not significant

The same information is shown graphically below:

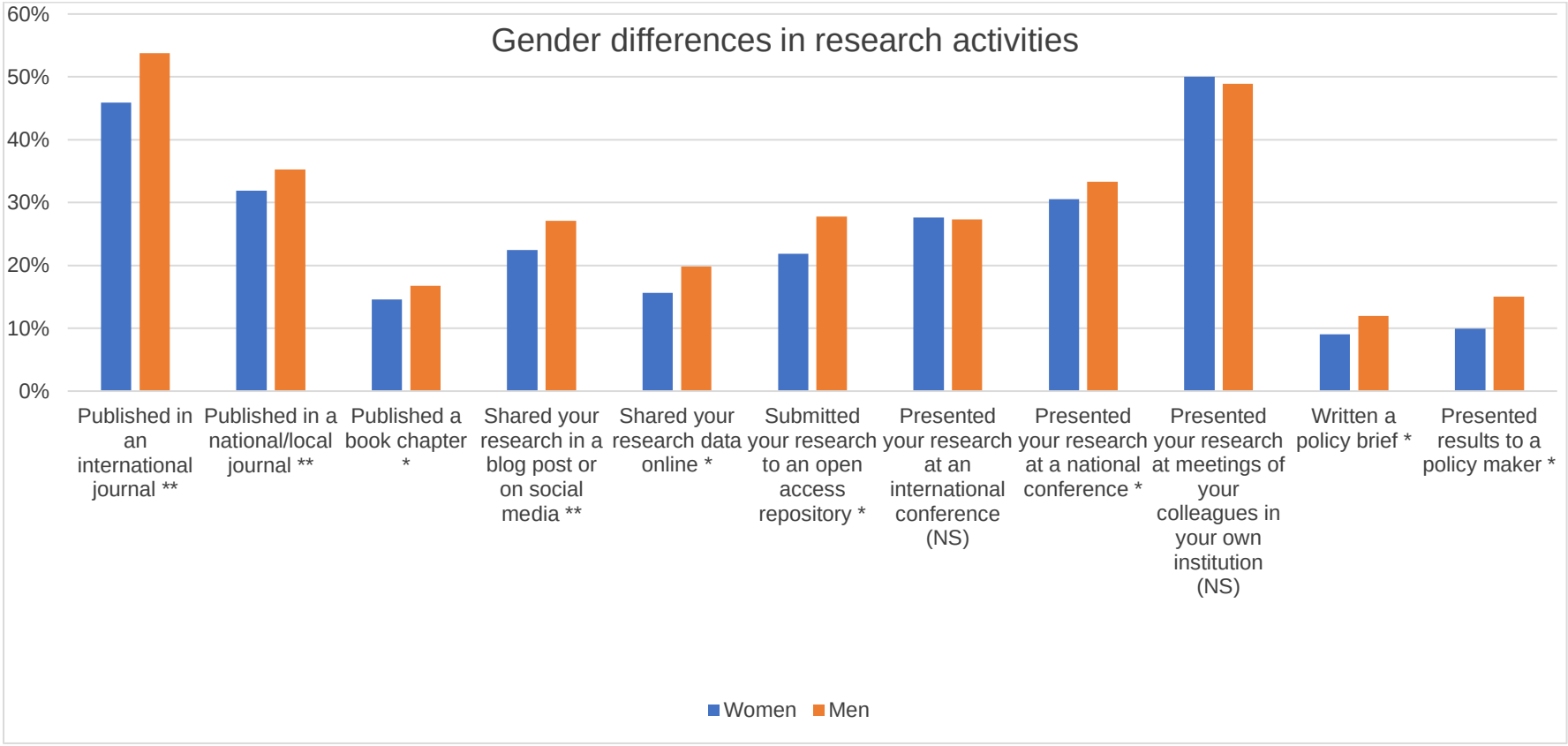


Figure 5: Gender differences in research activities

3.8.8.2 Activities simplified

There are many ways of analysing activity data. One way is to collapse the data into simpler categories. In this case we collapsed into the categories:

- Published (either in an international journal, national journal or a book chapter)
- Presented (at an international conference or a national conference)

Again, we filtered the data down to just those respondents who had registered doing at least one out of the eleven work-related activities specified (excluding those who left all activities blank on the basis that these may have been people who did not engage with the question).

Table 86: Published

	Count	%
Published	3695	65.02%
Not published	1988	34.98%
Grand Total	**5683**	**100.00%**

Table 87: Published x gender

	Count women	% Women	Count men	% Men	Total	%Total
Published	1430	61.93%	2244	67.03%	3674	64.95%
Not published	879	38.07%	1104	32.97%	1983	35.05%
Grand Total	**2309**	**100.00%**	**3348**	**100.00%**	**5657**	**100.00%**

The gender difference is statistically significant; more men have published than women ($\chi 2 = 15.57$; df = 1; $p < .01$).

Table 88: Presented

	Count	%
Presented	2447	43.06%
Not presented	3236	56.94%
Grand Total	**5683**	**100.00%**

Table 89: Presented x gender

	Count women	% Women	Count men	% Men	Total	%Total
Presented	979	42.40%	1458	43.55%	2437	43.08%
NOT Presented	1330	57.60%	1890	56.45%	3220	56.92%
Grand Total	**2309**	**100.00%**	**3348**	**100.00%**	**5657**	**100.00%**

The gender difference is *not* statistically significant; similar proportions of men and women presented their work at conferences.

3.8.8.3 Opportunities

Q45: Do you feel you have sufficient opportunities to present and promote your research work?

Table 90: Opportunities

	Count	%
No	2761	48.58%
Yes	2922	51.42%
Grand Total	**5683**	**100.00%**

Table 91: Opportunities x gender

	Count women	% Women	Count men	% Men	Total	%Total
No	1165	50.45%	1587	47.40%	2752	48.65%
Yes	1144	49.55%	1761	52.60%	2905	51.35%
Grand Total	**2309**	**100.00%**	**3348**	**100.00%**	**5657**	**100.00%**

The gender difference is statistically significant; more men than women believe they have sufficient opportunities to present and promote their research work ($\chi 2 = 5.09$; df = 1; $p < .05$).

3.8.9 Research funding (Q46-48)

3.8.9.1 Sufficient funding

Q46: In general, do you receive sufficient funding to carry out your research work?

Table 92: Sufficient funding

	Count	%
Yes	399	7.32%
No	4687	86.00%
Not applicable or don't know	364	6.68%
Grand Total	**5450**	**100.00%**

Table 93: Sufficient funding x gender

	Count women	% Women	Count men	% Men	Total	%Total
Yes	188	8.62%	205	6.32%	393	7.25%
No	1795	82.30%	2875	88.65%	4670	86.10%
Not applicable or don't know	198	9.08%	163	5.03%	361	6.66%
Grand Total	**2181**	**100.00%**	**3243**	**100.00%**	**5424**	**100.00%**

Looking only at those who responded 'yes' or 'no', the gender difference is statistically significant; more women than men believe that they receive sufficient funding to carry out their research ($\chi 2 = 13.44$; df = 1; $p < .01$).

3.8.9.2 Funding types

Q47: Have you received funding from the following sources:

1. International research grants or institutions
2. National funding bodies
3. Local or institutional research funds

Table 94: Funding types

	Count	%
International funding		
Yes	1084	20%
No, have not applied	3087	57%
Applied but did not receive	1279	23%
Grand Total	5450	100%
National funding		
Yes	990	18%
No, have not applied	3034	56%
Applied but did not receive	1356	25%
Grand Total	5380	100%

Local funding		
Yes	1465	27%
No, have not applied	2714	50%
Applied but did not receive	1201	22%
Grand Total	5380	100%

Funding Types x gender

Table 95: Funding types x gender

	Count women	**% Women**	**Count men**	**% Men**	**Total**	**%Total**
International funding						
Yes	470	22%	607	19%	1077	20%
No, have not applied	1251	57%	1828	56%	3079	57%
Applied but did not receive	459	21%	810	25%	1269	23%
Grand Total	**2180**	**100%**	**3245**	**100%**	**5425**	**100%**
National funding						
Yes	430	20%	555	17%	985	18%
No, have not applied	1251	58%	1770	55%	3021	56%
Applied but did not receive	473	22%	876	27%	1349	25%
Grand Total	**2154**	**100%**	**3201**	**100%**	**5355**	**100%**
Local funding						
Yes	579	27%	876	27%	1455	27%
No, have not applied	1122	52%	1581	49%	2703	50%
Applied but did not receive	450	21%	747	23%	1197	22%
Grand Total	**2151**	**100%**	**3204**	**100%**	**5355**	**100%**

The data were split in two different ways in order to examine application rates and success rates of applications. Firstly, the categories 'yes' and 'applied but did not receive' were combined and compared with the category 'no'; this effectively gives us a measure of application rate.

Table 96: Application rate x gender

International funding	No gender differences in application rate
National funding	More men (45%) have applied than women (42%) ($\chi 2 = 4.05$; df = 1; $p < .05$)
Local funding	More men (51%) have applied than women (48%) ($\chi 2 = 4.09$; df = 1; $p < .05$)

Secondly, the categories 'yes' and 'applied but did not receive' were compared in order to determine the success rates of applications.

Table 97: Success of applications x gender

International funding	More women (51%) have been successful than men (43%) ($\chi 2 = 13.59$; df = 1; $p < .05$)
National funding	More women (48%) have been successful than men (39%) ($\chi 2 = 17.71$; df = 1; $p < .05$)
Local funding	No gender differences in success rate

3.9 Positivity Index

In the first iteration of our 'Voices of Early Career Researchers' survey (2020), we piloted an index for 'research positivity' to help us understand the factors contributing to researchers' personal experience of a research career and perspectives on the context of their research (Dooley et al., 2021).

This research positivity index combines the responses from twenty individual questions in our survey. In addition to using the research positivity index to look at overall researcher positivity, we have also divided the index into two subscales. The first subscale is related to researchers' personal experience of a research career – whether it is a good career choice and offers opportunities for progression and development (we refer to this as 'personal positivity' – RPosP). The personal positivity subscale consists of twelve contributing questions. The second subscale is related to researchers' perception of the research context – including institutional, national and international infrastructure (we refer to this as 'context positivity' - RPosC). The context positivity subscale consists of eight contributing questions.[7] Higher overall numbers indicate higher levels of positivity.

[7] See Annex 3 - Questions in the Research Positivity Index

The two components representing ‘personal’ (RPosP) and ‘context’ (RPosC) positivity, are averaged to obtain an overall positivity measure (RPos).

RPos = (RPosP + RPosC) / 2

All positivity values are scaled to between 0 – 100%.

3.9.1.1 Positivity by gender

Table 98: Positivity x gender

	Count	RPosP	RPosC	RPos
Women	1811	50%	57%	53%
Men	2839	52%	56%	54%
Other	10	54%	71%	62%
Prefer not to say	12	50%	51%	50%
Grand Total	**4672**	**51%**	**56%**	**54%**

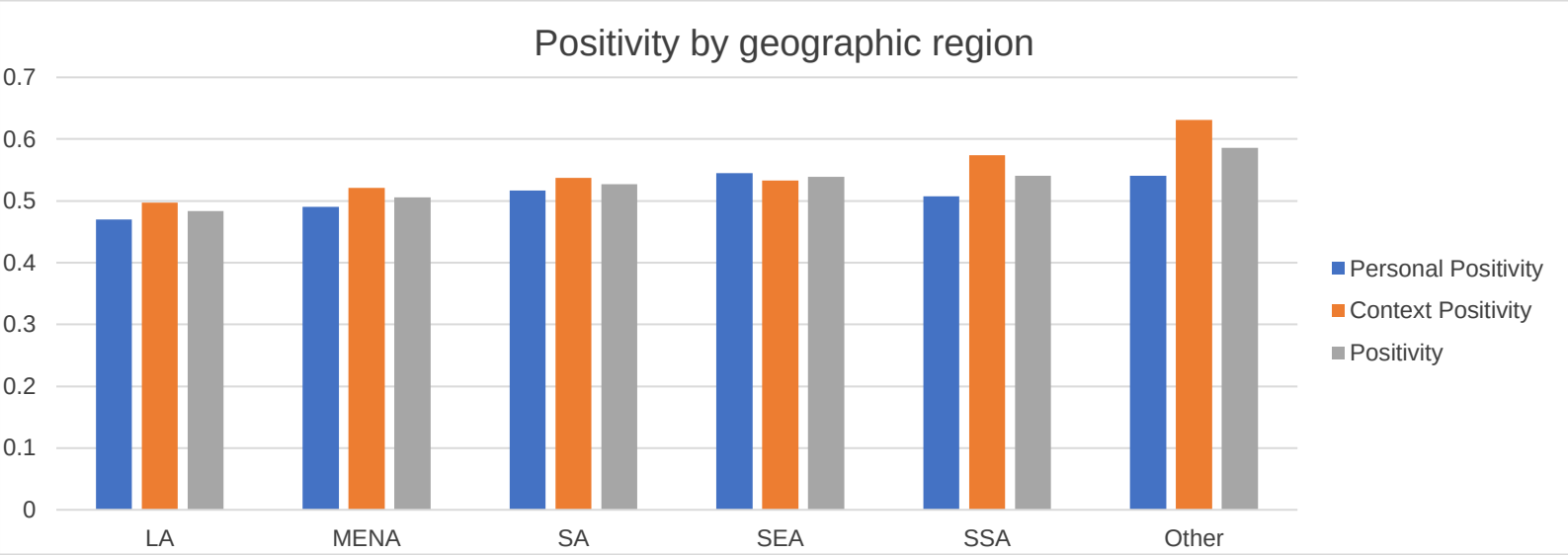
3.9.1.2 Positivity by Region

Table 99: Positivity by region

	Count	RPosP	RPosC	RPos
Latin America	190	47%	50%	48%
Middle East and North Africa	131	49%	52%	51%
South Asia	702	52%	54%	53%
South East Asia	184	54%	53%	54%
Sub-Saharan Africa	3272	51%	57%	54%
Other	193	54%	63%	59%
Grand Total	**4672**	**51%**	**56%**	**54%**

This is represented graphically below:

Figure 6: Positivity by Region



3.9.1.3 Positivity x country

For the most represented countries in the survey:

Table 100: Positivity x country

	RPosP	RPosC	RPos	RPosP
Nigeria	1259	49%	56%	53%
Kenya	360	51%	59%	55%
Uganda	311	51%	59%	55%
Ethiopia	253	53%	59%	56%
Nepal	237	50%	52%	51%
United Republic of Tanzania	212	57%	61%	59%
Ghana	206	52%	61%	56%
Pakistan	150	48%	52%	50%

India	146	54%	57%	55%
Sri Lanka	99	56%	56%	56%
Zambia	82	49%	56%	52%
Rwanda	81	55%	58%	56%
Vietnam	79	56%	54%	55%
Zimbabwe	72	46%	55%	50%

Table 101: Countries in order of overall positivity (RPos) expressed relative to mean country positivity score (countries over 20 respondents only)

Country	Total respondents	RposP	RPosC	Rpos
United States of America	36	9%	23%	16%
United Republic of Tanzania	212	8%	7%	7%
Indonesia	20	9%	4%	6%
South Africa	47	0%	12%	6%
Malawi	49	6%	6%	6%
Mozambique	21	7%	5%	6%
United Kingdom	32	0%	10%	5%
Ghana	206	2%	7%	5%
Rwanda	81	5%	4%	5%
Ethiopia	253	3%	6%	5%
Sri Lanka	99	6%	2%	4%
India	146	4%	4%	4%
Uganda	311	2%	6%	4%
Kenya	360	1%	5%	3%
Vietnam	79	6%	0%	3%
Philippines	46	5%	1%	3%
Bangladesh	57	7%	-2%	2%
Egypt	32	0%	4%	2%

Nigeria	1259	-1%	3%	1%
Zambia	82	-1%	2%	1%
Burundi	23	3%	-2%	0%
Sudan	66	3%	-4%	0%
Nepal	237	0%	-1%	0%
Somalia	28	5%	-7%	-1%
Zimbabwe	72	-4%	2%	-1%
Pakistan	150	-2%	-1%	-1%
Cameroon	53	-4%	-1%	-2%
Mexico	51	-3%	-3%	-3%

NB: baseline figures are average positivity *by country:* RPosP= 50%; RPosC=53%; RPos=52%.

3.9.1.4 Positivity by organisation type

Using the reclassified 'simplified' list of organisation types:[8]

Table 102: Positivity x organisation

	Count	**RPosP**	**RPosC**	**RPos**
Academy+	88	55%	56%	55%
Government	505	51%	56%	54%
Hospital	513	49%	52%	51%
NGO	344	53%	57%	55%
Research Institute	592	54%	59%	56%
University	2321	50%	57%	54%
Other	246	49%	56%	53%
Grand Total	**4609**	**51%**	**56%**	**54%**

[8] See 1.6.1.8 Organisation Reclassified (NewOrg)

3.9.1.5 Positivity x disability

Comparing positivity for those indicating any disability with those indicating no disability:

Table 103: Positivity x disability

	Count	RPosP	RPosC	RPos
No disability	4443	51%	57%	54%
Disability	229	51%	54%	52%
Grand Total	**4672**	**51%**	**56%**	**54%**

3.9.1.6 Positivity x disability type

Table 104: Positivity x disability type

	Count	RPosP	RPosC	RPos
Hearing	39	49%	52%	51%
Vision	115	49%	54%	52%
Learning /cognitive	61	59%	56%	57%
Motor/physical	48	49%	51%	50%

3.9.1.7 Positivity x context

Table 105: Positivity x context

	Count	RPosP	RPosC	RPos
I am based in a large urban area not the capital city	1767	51%	57%	54%
I am based in a relatively small city in my country	896	50%	56%	53%

I am based in a remote area	64	52%	53%	53%
I am based in a rural area	314	51%	56%	54%
I am based in the capital city of my country	1620	51%	56%	53%
Grand Total	**4661**	**51%**	**56%**	**54%**

3.9.1.8 Positivity x urban/rural

Table 106: Positivity x urban/rural

	Count	RPosP	RPosC	RPos
Rural	1274	51%	56%	53%
Urban	3387	51%	57%	54%
Grand Total	**4661**	**51%**	**56%**	**54%**

3.9.1.9 Positivity x discipline

Table 107: Positivity x discipline

	Count	RPosP	RPosC	RPos
Arts and Humanities	279	51%	57%	54%
Biological Sciences	492	50%	57%	53%
Engineering and Technology	367	51%	56%	53%
Life Sciences and Agriculture	609	52%	59%	55%
Medicine and Healthcare	1584	50%	56%	53%
Physical Sciences and Mathematics	229	50%	55%	52%
Social Sciences and Business	733	52%	57%	55%
Other (please specify)	379	52%	57%	55%
Grand Total	**4672**	**51%**	**56%**	**54%**

3.9.1.10 Positivity x qualification

Table 108: Positivity x qualification

	Count	RPosP	RPosC	RPos
Bachelor's degree or equivalent	978	52%	57%	55%
Master's degree or equivalent	2350	51%	57%	54%
PhD/Doctorate or equivalent	1297	50%	56%	53%
No academic degree	47	50%	55%	52%
Grand Total	**4672**	**51%**	**56%**	**54%**

3.9.2 Positivity Regression Analyses

For all the positivity regression analyses, the following table of means best represents the average values of positivity associated with each factor.

Table 109: Means for positivity regressions

	RPosP	RposC	Rpos
Women	50%	57%	53%
Men	52%	56%	54%
Grand Total	**51%**	**56%**	**54%**
Latin America	47%	50%	48%
Middle East and North Africa	49%	52%	51%
South Asia	52%	54%	53%
South East Asia	54%	53%	54%
Sub-Saharan Africa	51%	57%	54%
Other	54%	63%	58%
Grand Total	**51%**	**56%**	**54%**
Arts and Humanities	51%	57%	54%
Biological Sciences	50%	57%	53%

Engineering and Technology	51%	56%	53%
Life Sciences and Agriculture	52%	59%	55%
Medicine and Healthcare	50%	56%	53%
Physical Sciences and Mathematics	50%	55%	52%
Social Sciences and Business	52%	57%	54%
Other (please specify)	52%	57%	55%
Grand Total	**51%**	**56%**	**54%**

3.9.3 Factors Associated with RPosP

A regression was performed with ‘gender’, ‘region’ and ‘study area’ as factors.

Table 110: RPosP regression

Regression analysis			RPosP				
OVERALL FIT							
Multiple R	0.132553		AIC	-17709.5			
R Square	0.01757		AICc	-17709.3			
Adjusted R Square	0.014603		SBC	-17612.8			
Standard Error	0.148696						
Observations	4650						
ANOVA				Alpha	0.05		
	df	*SS*	*MS*	*F*	*p-value*	*sig*	
Regression	14	1.832829	0.130916	5.921028	1.07E-11	yes	
Residual	4635	102.4818	0.02211				
Total	4649	104.3146					
	coeff	*std err*	*t stat*	*p-value*	*lower*	*upper*	*vif*
Intercept	0.656903	0.061364	10.7051	1.96E-26	0.536601	0.777205	

GENDER#1	-0.02412	0.004525	-5.3311	1.02E-07	-0.03299	-0.01525	1.023789
RegOther	-0.0962	0.061769	-1.55743	0.119438	-0.2173	0.024896	30.49479
RegSEA	-0.0881	0.06183	-1.42485	0.154267	-0.20932	0.033118	30.07736
RegSSA	-0.12873	0.060852	-2.1154	0.034449	-0.24803	-0.00943	163.0029
RegSA	-0.11633	0.061077	-1.90462	0.056891	-0.23607	0.003411	99.96974
RegLA	-0.16151	0.061729	-2.61645	0.008914	-0.28253	-0.04049	31.0894
RegMENA	-0.14351	0.062132	-2.30972	0.020947	-0.26532	-0.0217	22.22777
DisARTS	-0.0151	0.011775	-1.28279	0.19963	-0.03819	0.00798	1.638965
DisSOCSCI	-0.00288	0.009452	-0.3046	0.760685	-0.02141	0.015652	2.470078
DisMED	-0.0198	0.008522	-2.32307	0.020218	-0.0365	-0.00309	3.421766
DisLIFE	-8E-05	0.009764	-0.00819	0.993462	-0.01922	0.019062	2.275676
DisBIO	-0.01742	0.010198	-1.708	0.087704	-0.03741	0.002575	2.069393
DisENG	-0.01735	0.010981	-1.58001	0.114172	-0.03888	0.004178	1.838848
DisPHYS	-0.02444	0.012472	-1.95935	0.050132	-0.04889	1.41E-05	1.531649

All factors significant <5% are highlighted.

For RPosP, men are more positive than women, there are regional effects and those studying medicine score lower than other disciplines.

3.9.4 Factors Associated with RPosC

A regression was performed with ‘gender’, ‘region’ and ‘study area’ as factors.

Table 111: RPosC Regression

Regression Analysis			RPosC				
OVERALL FIT							
Multiple R	0.192803		AIC	-18179.4			
R Square	0.037173		AICc	-18179.3			
Adjusted R Square	0.034265		SBC	-18082.7			

Standard Error	0.141368						
Observations	4650						
ANOVA				Alpha	0.05		
	df	*SS*	*MS*	*F*	*p-value*	*sig*	
Regression	14	3.576317	0.255451	12.78212	4.58E-30	yes	
Residual	4635	92.63064	0.019985				
Total	4649	96.20696					
	coeff	*std err*	*t stat*	*p-value*	*lower*	*upper*	*vif*
Intercept	0.687775	0.05834	11.78913	1.25E-31	0.573401	0.802148	
GENDER#1	0.012191	0.004302	2.834085	0.004616	0.003758	0.020625	1.023789
RegOther	-0.06201	0.058725	-1.056	0.291023	-0.17714	0.053115	30.49479
RegSEA	-0.1571	0.058783	-2.67246	0.007556	-0.27234	-0.04185	30.07736
RegSSA	-0.11413	0.057854	-1.97276	0.048583	-0.22755	-0.00071	163.0029
RegSA	-0.1505	0.058068	-2.59177	0.009578	-0.26434	-0.03666	99.96974
RegLA	-0.19459	0.058687	-3.31571	0.000921	-0.30964	-0.07953	31.0894
RegMENA	-0.16572	0.05907	-2.80545	0.005046	-0.28153	-0.04991	22.22777
DisARTS	-0.00145	0.011194	-0.12985	0.896695	-0.0234	0.020493	1.638965
DisSOCSCI	0.002231	0.008986	0.248297	0.803916	-0.01539	0.019849	2.470078
DisMED	-0.01221	0.008102	-1.5077	0.131701	-0.0281	0.003668	3.421766
DisLIFE	0.015262	0.009283	1.644062	0.100231	-0.00294	0.033461	2.275676
DisBIO	-0.00425	0.009696	-0.43857	0.660994	-0.02326	0.014756	2.069393
DisENG	-0.01092	0.01044	-1.0458	0.295706	-0.03138	0.009549	1.838848
DisPHYS	-0.02314	0.011857	-1.95193	0.051007	-0.04639	0.000101	1.531649

All factors significant <5% are highlighted.

For RPosC, women are more positive than men, there are regional effects, but no effect of area of study.

3.9.5 Factors Associated with RPos

A regression was performed with ‘gender’, ‘region’ and ‘study area’ as factors.

Table 112: RPos Regression

Regression Analysis			Rpos				
OVERALL FIT							
Multiple R	0.153883		AIC	-19555.2			
R Square	0.02368		AICc	-19555			
Adjusted R Square	0.020731		SBC	-19458.5			
Standard Error	0.121929						
Observations	4650						
ANOVA				Alpha	0.05		
	df	*SS*	*MS*	*F*	*p-value*	*sig*	
Regression	14	1.671296	0.119378	8.029913	3.24E-17	yes	
Residual	4635	68.90714	0.014867				
Total	4649	70.57843					
	coeff	*std err*	*t stat*	*p-value*	*lower*	*upper*	*vif*
Intercept	0.672339	0.050318	13.36192	5.5E-40	0.573693	0.770985	
GENDER#1	-0.00597	0.00371	-1.60774	0.10796	-0.01324	0.001309	1.023789
RegOther	-0.07911	0.05065	-1.56184	0.118394	-0.1784	0.020191	30.49479
RegSEA	-0.1226	0.0507	-2.41809	0.015641	-0.22199	-0.0232	30.07736
RegSSA	-0.12143	0.049898	-2.43353	0.01499	-0.21925	-0.0236	163.0029
RegSA	-0.13341	0.050083	-2.66386	0.007752	-0.2316	-0.03523	99.96974
RegLA	-0.17805	0.050617	-3.51758	0.00044	-0.27728	-0.07882	31.0894
RegMENA	-0.15461	0.050948	-3.03475	0.002421	-0.2545	-0.05473	22.22777
DisARTS	-0.00828	0.009655	-0.85747	0.391229	-0.02721	0.01065	1.638965

DisSOCSCI	-0.00032	0.007751	-0.04179	0.966667	-0.01552	0.014871	2.470078
DisMED	-0.01601	0.006988	-2.29056	0.022034	-0.0297	-0.00231	3.421766
DisLIFE	0.007591	0.008007	0.948093	0.343132	-0.00811	0.023287	2.275676
DisBIO	-0.01084	0.008362	-1.29572	0.195136	-0.02723	0.005559	2.069393
DisENG	-0.01413	0.009004	-1.5697	0.116552	-0.03179	0.003519	1.838848
DisPHYS	-0.02379	0.010227	-2.3263	0.020045	-0.04384	-0.00374	1.531649

All factors significant <5% are highlighted.

Overall, there is no significant effect of gender, but some effect of region and study area.

4 References

Dooley, G., Barrett, A., Nobes, A., & Warne, V. (2021). *Voice of Early Career Researchers Study 2020*. INASP. https://www.inasp.info/voice-ECRs-2020

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Annex 1: 2021 Voices of Early Career Researchers survey questions

Question 1: Full name (optional)

Question 2: What is your gender?

- Female
- Male
- Other
- Prefer not to say

Question 3: Please select the type of organisation that you primarily work in

- Government
- Government – regional
- Hospital
- Learned/Professional Society
- Library Consortium
- Academy of science
- National Research and Education Network (NREN)
- Research network
- University network
- International NGO
- National or regional NGO
- Open access advocacy group
- Publishing platform
- Research institute - international
- Research institute - private
- Research institute - public
- University - private
- University - public
- Other (please specify)

Question 4: Which of the following best describes your main area of research or study?

- Arts and Humanities
- Biological Sciences
- Engineering and Technology
- Life Sciences and Agriculture
- Medicine and Healthcare
- Physical Sciences and Mathematics
- Social Sciences and Business
- Other (please specify)

Question 5: Do you consider yourself to have any of the following?

- Hearing impairment
- Visual impairment
- Learning/cognitive difficulties
- Motor/physical difficulties
- N/A
- Prefer not to say

Question 6: Did you complete the previous voices of early career researchers survey in 2020?

- Yes
- No
- Not sure/Do not remember

Question 7: Which option best describes the context in which you are based?

- I am based in the capital city of my country
- I am based in a large urban area that is not the capital city
- I am based in a rural area
- I am based in a remote area

- I am based in a relatively small city in my country

Question 8: In what country do you live?

- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Anguilla
- Antigua and Barbuda
- Argentina
- Armenia
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Denmark
- Djibouti
- Dominica
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Equatorial Guinea
- Eritrea
- Estonia
- Ethiopia
- Fiji
- Finland
- France
- Libya
- Liechtenstein
- Lithuania
- Luxembourg
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Mauritania
- Mauritius
- Mexico
- Samoa
- San Marino
- Sao Tome and Principe
- Saudi Arabia
- Senegal
- Serbia
- Seychelles
- Sierra Leone
- Singapore
- Slovakia
- Slovenia
- Solomon Islands
- Somalia
- South Africa

- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bhutan
- Bolivia (Plurinational State of)
- Bosnia and Herzegovina
- Botswana
- Brazil
- British Virgin Island
- Brunei Darussalam
- Bulgaria
- Burkina Faso
- Burundi
- Cabo Verde
- Gabon
- Gambia
- Georgia
- Germany
- Ghana
- Greece
- Grenada
- Guatemala
- Guinea
- Guinea Bissau
- Guyana
- Haiti
- Holy See
- Honduras
- Hungary
- Iceland
- India
- Micronesia (Federated States of)
- Monaco
- Mongolia
- Montenegro
- Montserrat
- Morocco
- Mozambique
- Myanmar
- Namibia
- Nauru
- Nepal
- Netherlands
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Norway
- South Sudan
- Spain
- Sri Lanka
- State of Palestine
- Sudan
- Suriname
- Swaziland
- Sweden
- Switzerland
- Syrian Arab Republic
- Tajikistan
- Thailand
- North Macedonia
- Timor-Leste
- Togo
- Tonga
- Trinidad and Tobago

- Cambodia
- Cameroon
- Canada
- Cayman Islands
- Central African Republic
- Chad
- Chile
- China
- Colombia
- Comoros
- Congo
- Costa Rica
- Côte D'Ivoire
- Croatia
- Cuba
- Indonesia
- Iran (Islamic Republic of)
- Iraq
- Ireland
- Israel
- Italy
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kuwait
- Kyrgyzstan
- Lao People’s Democratic Republic
- Oman
- Pakistan
- Palau
- Panama
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Poland
- Portugal
- Qatar
- Republic of Korea
- Republic of Moldova
- Romania
- Russian Federation
- Tunisia
- Turkey
- Turkmenistan
- Turks and Caicos
- Tuvalu
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom of Great Britain and Northern Ireland
- United Republic of Tanzania
- United States of America
- Uruguay
- Uzbekistan
- Vanuatu
- Venezuela (Bolivarian Republic of)

- Cyprus
- Czech Republic
- Democratic People's Republic of Korea
- Democratic Republic of the Congo
- Latvia
- Lebanon
- Lesotho
- Liberia
- Rwanda
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Vietnam
- Yemen
- Zambia
- Zimbabwe

Question 9: If Cambodia, please select the region in which you live.

- Banteay Meanchey
- Battambang
- Kambong Cham
- Kambong Chhang
- Kampong Speu
- Kampong Thom
- Kampot
- Kandal
- Koh Konh
- Kratie
- Mondulkiri
- Phonm Penh
- Preah Vihear
- Prey Veng
- Pursat
- Ratak Kiri
- Siem Reap
- Preah Sihanouk
- Stung Treng
- Svay Rieng
- Takeo
- Oddar Meanchey
- Kep
- Pailin

Question 10: If Ethiopia, please select the region in which you live

- Addis Ababa City
- Afar Region
- Dire Dawa City
- Gambela Region
- Sidama Region
- Somali Region

- Amhara Region
- Benushangul-Gumuz Region
- Harari Region
- Oromia Region
- Southern Nations, Nationalities and Peoples' Region
- Tigray Region

Question 11: If Tanzania, please select the region in which you live.

- Arusha
- Dar es Salaam
- Dodoma
- Geita
- Iringa
- Kagera
- Katavi
- Kigoma
- Kilimanjaro
- Lindi
- Manyara
- Mbeya
- Morogoro
- Mtwara
- Njombe
- Pemba North
- Pemba South
- Pwani
- Rukwa
- Ruvuma
- Shinyanga
- Simiyu
- Singida
- Tabora
- Tanga
- Zanzibar

Q12: If Uganda, please select the region in which you live

- Northern Uganda
- Eastern Uganda
- Central Uganda
- Western Uganda

Q13: What is the highest academic degree you have completed?*

- Bachelor's degree or equivalent
- Master's degree or equivalent
- PhD/Doctorate or equivalent
- No academic degree

**Depending on their answer to this question respondents were led to either Q14 or Q15 next*

Q14: Since starting your PhD, how many years have you spent working with research?*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 25 or more

**For respondents who had answered 'PhD/Doctorate or equivalent' to Q13*

Q15: Including training, how many years of research experience do you have?*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25

**For respondents who had answered 'Bachelor's degree or equivalent', 'Master's degree or equivalent' or 'No academic degree' to Q13*

- 25 or more

Q16: Complete the following sentence: "Excellent research is research which..." *(free text answer)*

Q17: Which factors are most important for your research? (please select the THREE (3) factors you consider the most important)

- to be published in high-impact journals
- to have a rigorous methodology
- to make a difference to society
- to be frequently cited in the literature
- to be novel or innovative
- to be accessible to a wide range of readers
- to make a contribution to your nation's scientific development
- to be recognised internationally

Q18: Is your research work routinely evaluated for quality and impact by an institutional research body?

- Yes
- No
- Don't know

Q19: Is your research work routinely evaluated for quality and impact by a national or government body ?

- Yes
- No
- Don't know

Q20: What indicators or metrics are used to assess you as a researcher (for career and promotion purposes)? (tick all that apply)

- Number of papers published in peer-reviewed journals
- Metrics of peer-reviewed journals in which you publish (for example Journal Impact Factor)
- Quantity of citations of your research (or H-index)
- Conference presentations given
- Impact case studies produced
- Datasets or protocols produced
- Broader recognition in media or social media
- Book chapters or monographs published
- Technology transfer / patents
- Policy briefs produced
- Other (please specify)

Q21: What do you feel has the biggest impact on your opportunities for promotion as a researcher? *(free text answer)*

Q22: Please state whether you agree or disagree with the following statements:

	Agree	Don't Know or Not Applicable	Not applicable
I feel that the quality of my research is recognised at my institution			
I feel that the quality of my research is rewarded at my institution			

Q23: Do you have anything to add about how your research is evaluated by either institutional, national or government bodies? *(Free text answer)*

Q24: Who are the main users of your research? (Tick all that apply)

- Other academics
- Corporate/business/industrial sector

- Policymakers
- Practitioners
- Other (please specify)

Q25: How important is it to you to do collaborative research with other researchers outside your own institution?

- Very important
- Moderately important
- Not at all important

Q26: Do you feel that you have sufficient opportunities to do collaborative research?

- Yes
- No

Q27: Have you ever carried out any collaborative research with anyone in another institution in your own country?

- Yes
- No

Q28: Have you ever carried out any collaborative research with anyone in another country?

- Yes
- No

Q29: In your last international collaboration, do you think your expertise and contribution to the project was sufficiently recognised?

- Yes
- No
- Not applicable / don't know
- If 'no' in what way was your contribution not recognised? *(free text answer)*

Q30: Has the Covid-19 pandemic changed the way in which you collaborate with other researchers? If yes, how? If no, why do you think it has not? *(free text answer)*

Q31: To what extent do the following affect your ability to do collaborative research:

	Not a problem / does not affect me	To a small extent	To a moderate extent	To a great extent
• Lack of funding opportunities				
• Lack of institutional support				
• Lack of time and resources for collaborative research				
• Lack of access to collaborators				
• Please share any other barriers you have experienced to collaborative research *(free text answer)*				

Q32: Would you like to carry out more collaborative research if you had the opportunity to do so?

- Yes
- No

Q33: Why do you not want to do more collaborative research?* *(free text answer)*

**Only for respondent who answered yes to Q32*

Q34: How much recognition do you think the research produced in your country receives?

	High recognition	Sufficient recognition	Low recognition	Unsure

• Nationally				
• Internationally				

Q35: What is the most significant thing that could be done to improve recognition of research produced in your country? *(free text answer)*

Q36: How would you broadly describe the status of...

	In Crisis	Poor	Moderate	Good	Thriving
• Research in YOUR DEPARTMENT					
• Research across disciplines within YOUR INSTITUTION					
• Research in your discipline IN YOUR COUNTRY					
• INTERNATIONAL RESEARCH in your discipline					

Q37: Thinking of your experience as an early career researcher, indicate the extent to which you would describe it as...

	Not at all	Slightly	Moderately	Very	Extremely
• Challenging					
• Frustrating					
• Exciting					

Q38: Do you think you will still be working with research in 5 years time?

- Yes - in an academic research
- Yes - but not in an academic setting
- No*
- Don’t know*

**If no or don't know, why not? (free text answer)*

Q39: To what extent do you agree with the following statements:

	Disagree completely	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Agree completely
• I am satisfied with my job					
• My job allows me to maintain a good balance between my work and my life					
• I like the organisational culture at my workplace					
• I am getting positive support from my supervisors					

• I have access to mentoring support for research and career development					
• I have experienced discrimination at my job because of my ethnicity					
• I have experienced discrimination at my job because of my gender					
• I feel like the work I do is being appropriately recognised by my colleagues					
• My contract provides me with the job security I need					
• More training and capacity building would enable me to progress in the work I do					

Q40: What do you think are the most important traits of a good mentor? *(free text answer)*

Q41: Do you anticipate that your research career will lead to you working in another country?

- No, I will probably remain in my present country
- Possibly, there is a chance that I will move in the future
- Probably, it is likely that I will move to another country

Q42: How important is it to you to experience research in another country?

- Very important
- Important
- Moderately Important
- Slightly Important
- Not Important at all

In what ways is it important (or not)? *(free text answer)*

Q43: Indicate to what extent you agree/disagree with the following statements...

	Agree	Don't Know or Not Applicable	Disagree
• My location is a disadvantage to developing a research career			
• Research is a good career choice			
• Women in research get less opportunities than men in similar positions			
• Researchers have a responsibility to make their findings known outside of academia			

• Researchers can make an impact on development in their country			
• If I could go back in time, I would not choose a research career			

Q44: Please indicate which, if any, of the following research activities/outputs you have accomplished in the last year:

- Published in an 'international' journal
- Published in a 'national/local' journal
- Published a book chapter
- Shared your research in a blog post or on social media
- Shared your research data online
- Submitted your research to an open-access repository
- Presented your research at an international conference
- Presented your research at a national conference
- Presented your research at meetings of your colleagues in your own institution
- Written a policy brief
- Presented results to a policy maker

Q45: Do you feel that you have sufficient opportunities to present and promote your research work?

- Yes
- No
- If 'No', then in what way could things be improved...? *(free text answer)*

Q46: In general, do you receive sufficient funding to carry out your research?

- Yes

- No
- Not Applicable or Don't Know

Q47: Have you received funding from the following sources

- International research grants or institutions
- National funding bodies
- Local or Institutional research funds

Q48: If you or your institution could receive additional financial support, what should be invested in, to ultimately help you achieve your research goals? *(free text answer)*

Q49: What impact, if any, do you think that the Covid-19 pandemic has had or will have on your research work? *(free text answer)*

Q50: If you could improve the research system in your country, how would you do that? *(free text answer)*

Annex 2: Regions

Latin America

- Argentina
- Bolivia (Plurinational State of)
- Brazil
- Chile
- Colombia
- Costa Rica
- Cuba
- Dominican Republic
- Ecuador
- El Salvador
- Guatemala
- Guyana
- Honduras
- Jamaica
- Mexico
- Nicaragua
- Panama
- Paraguay
- Peru
- Saint Kitts and Nevis
- Trinidad and Tobago
- Uruguay
- Venezuela (Bolivarian Republic of)

Middle East and North Africa

- Algeria
- Egypt
- Iran (Islamic Republic of)
- Iraq
- Israel
- Jordan
- Kuwait
- Lebanon
- Libya
- Mauritania
- Morocco
- Oman
- Qatar
- Saudi Arabia
- Syrian Arab Republic
- Tunisia
- Turkey
- United Arab Emirates
- Yemen

South Asia

- Afghanistan
- Bangladesh
- Bhutan
- India
- Maldives
- Nepal
- Pakistan
- Sri Lanka

South East Asia

- Brunei Darussalam
- Cambodia
- Indonesia
- Malaysia
- Myanmar
- Philippines
- Singapore
- Thailand
- Vietnam

Sub-Saharan Africa

- Angola
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cabo Verde
- Cameroon
- Chad
- Comoros
- Congo
- Côte D'Ivoire
- Democratic Republic of the Congo
- Eritrea
- Ethiopia
- Gabon
- Gambia
- Ghana
- Guinea
- Kenya
- Lesotho
- Liberia
- Madagascar
- Malawi
- Mali
- Mauritius
- Mozambique
- Namibia
- Niger
- Nigeria
- Rwanda
- Senegal
- Sierra Leone
- Somalia
- South Africa
- South Sudan
- Sudan
- Swaziland
- Togo
- Uganda
- United Republic of Tanzania
- Zambia
- Zimbabwe

Other

- Albania
- Andorra
- Australia
- Belarus
- Belgium
- Bulgaria
- Canada
- China
- Cyprus
- Czech Republic
- Democratic People's Republic of Korea
- Denmark
- Fiji
- Finland
- France
- Kyrgyzstan
- Mongolia
- Montenegro
- Netherlands
- New Zealand
- Norway
- Papua New Guinea
- Poland
- Portugal
- Republic of Korea
- Romania
- Russian Federation
- Serbia
- Slovakia
- Spain
- Sweden
- Switzerland
- Turkmenistan

- Georgia
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Japan
- Kazakhstan
- Ukraine
- United Kingdom of Great Britain and Northern Ireland
- United States of America

Annex 3: Questions in the Research Positivity Index

The research positivity index consists of twenty components/questions. Twelve contributing to 'personal positivity' and eight contributing to 'context positivity'.

Questions included in the positivity index	Personal positivity	Context positivity
Q22.1 I feel that the quality of my research is recognised at my institution	X	
Q22.2 I feel that the quality of my research is rewarded at my institution	X	
Q26 – Do you have sufficient opportunities to do collaborative research?	X	
Q31.1 – to what extent does lack of funding affect ability to do collaborative research?	X	
Q31.2 – to what extent does lack of institutional support affect ability to do collaborative research?	X	
Q31.3 – to what extend do lack of time and resources for collaborative research affect ability to do collaborative research?	X	
Q34.1 – how much recognition does work produced in your country receive NATIONALLY		X
Q34.2 – how much recognition does work produced in your country receive INTERNATIONALLY		X
Q36.1 – Rate the status of DEPARTMENTAL RESEARCH		X
Q36.2 – Rate the status of INSTITUTIONAL RESEARCH		X
Q36.3 – Rate the status of NATIONAL RESEARCH		X
Q36.4 – Rate the status of INTERNATIONAL RESEARCH		X
Q37.2 – Is research FRUSTRATING?	X	
Q37.3 – Is research EXCITING?	X	
Q43.1 - my location is a disadvantage to developing a research career		X
Q43.2 – Research is a good career choice.	X	
Q43.5 - Researchers can make an impact on development in their country		X
Q43.6 – If I could go back, I would still choose research career.	X	
Q45 – Do you have sufficient opportunity to promote and present your research?	X	
Q46 – Do you have sufficient funding?	X	