



Profile of postdoctoral researchers in the UK eligible for Royal Society early-career fellowship programmes - 2025

A report commissioned by the Royal Society

By the Careers Research & Advisory Centre (CRAC) Ltd

March 2025

Published by the Careers Research & Advisory Centre (CRAC)

© Careers Research & Advisory Centre (CRAC) Ltd 2025

Careers Research & Advisory Centre (CRAC) Ltd
22 Signet Court
Cambridge CB5 8LA
www.vitae.ac.uk

Contact:

Robin Mellors-Bourne, Director of Research & Intelligence
robin.mellors-bourne@crac.org.uk

About CRAC

The Careers Research & Advisory Centre (CRAC), registered as a charity in 1964, provides research, expertise and innovation services for all those who support career development, at all ages and across all sectors. CRAC's research and consultancy work focuses on career-related learning, employability development and career transitions, including STEM and researcher careers. CRAC also owns and manages the Vitae programme, which enhances support for the professional and career development of researchers and, increasingly, development of the research environment and positive and inclusive research culture.

Contents

1. Executive summary.....	1
2. Introduction and project aims	4
2.1. Aims, objectives and scope	4
2.2. The equality, diversity and inclusion context.....	5
3. Data and approach to analysis.....	6
3.1. Approach.....	6
3.2. Adjustments for this study.....	6
3.3. Presentation of profile data.....	7
4. Profile of those eligible for RS early-career fellowships	8
4.1. Overall profile	8
4.2. Key personal characteristics and how these are changing.....	10
4.3. Employment characteristics	15
5. Subject-based and other selected profiles	17
5.1. Broad subject group profiles and trends	17
5.2. Subject-specific profiles	22
5.3. Institutional group profiles.....	27
6. Intersectionality and other insights	30
7. Emerging findings, issues and recommendations	34
7.1. Overall summary	34
7.2. Underlying data issues	34
7.3. Recommendations.....	36
Appendix 1: Profile of eligible researchers, 2018/19 to 2022/23.....	38
Appendix 2: RS A-side and B-side subject group profiles	40
Appendix 3: Profiles for selected subjects, 2022/23 and 2018/19	44

1. Executive summary

The principal aim of this project was to establish an updated diversity profile for postdoctoral researchers in the UK eligible for the Royal Society's early-career fellowship programmes, that aim to support outstanding early-career scientists to transition to independent research leadership in the UK. Such a diversity profile acts as a benchmark against which diversity data collected about applicants for these awards and awardees can be compared, to indicate whether or not award-making is reflecting the full diversity of those eligible for awards.

A methodology to produce such benchmark profiles from Higher Education Statistics Agency's (HESA) Staff Record data was developed in 2021. To model the profile of researchers who fulfil award eligibility criteria, staff data were filtered using certain specific data items while proxies were used to map other data items to aspects of eligibility. Such analysis produced a series of profiles in 2021 which revealed the key diversity characteristics of postdoctoral researchers eligible for these fellowships in the years leading up to 2018/19, against which the Society was able to compare the diversity of applicants at that time.

This new report contains updated results, using a similar approach, through to the 2022/23 academic year. Profiles of eligible researchers are presented for each year since 2018/19, enabling comparisons over time to be made and identifying trends of change. Similar profiles are presented for high-level subject groupings, some individual subjects and other key groups of eligible postdoctoral scientists.

Emerging trends and issues

On this basis, the pool of eligible researchers in the UK between 2018/19 and 2022/23 has:

- Not improved in terms of gender balance, with 41% of the overall eligible population female, but this masks significant variations with subject and also with nationality;
- Shifted in terms of nationality balance, with the proportion of EU nationals decreasing but proportion of non-UK and non-EU nationals rising to more than compensate, with a slight decrease in the proportion of UK nationality;
- Diversified slightly in terms of ethnicity, with over 16% of UK nationals of known ethnicity having a minority ethnic background, up from 13% in 2018/19. The increase was driven mostly by researchers with an Asian background, while those with a Black background remain under-represented at under 2% (a proportion which has grown only slowly);
- Diversified more strongly in ethnicity when all nationalities are considered together, resulting in a much higher proportion (36%, or 40% of those of known ethnicity) of minority ethnic background, particularly driven by those of Asian origin. However, the total with a Black background remains at only 3% even within this larger aggregate;
- Become 'more diverse' in relation to disability, with 5% declaring some form of disability (including neurodiversity and mental ill-health) compared with 3% in 2018/19. This increase was driven by more UK scientists, in particular, declaring a mental health condition or cognitive/learning difference, whereas physical or medical conditions have not increased;
- Remained broadly stable in terms of institutional profile, with three-quarters working at Russell Group member institutions, and geographically within the UK, with 84% in England;
- Not seen an increase in flexible working, with only 12% working part-time (although this overall figure masks large variances between different sub-groups, with the rate amongst female researchers double that of male, and UK researchers double that of non-UK).

This report deliberately provides more insights into variances in the profile of researchers and how these variances in characteristics intersect with each other. The subject-based profiles developed are presented and attention is paid to how these profiles differ in relation to gender, nationality, disability and employment mode. Key aspects of intersectionality are drawn out, with the hope of informing better understanding of issues such as:

- Gender balance (including, for example, how that is affected by shifts in nationality);
- The increasing prevalence of declared disability, which intersects strongly with gender, nationality and, perhaps more surprisingly, subject area, within which there are also variances in terms of types of condition;
- Flexible working, as employment mode shows strong variances with gender, nationality and disability.

The size of the eligible population defined this way fell very slightly between 2018/19 and 2021/22 but then more sharply for 2022/23. Investigation revealed concerns about some of the key Staff Record data items, for which higher proportions of data were returned as unknown and/or incomplete, that year, as well effects of some institutional reporting practices in relation to employment contracts. This suggests some aspects of the 2022/23 data, and hence some results, are less robust than in previous years (and the population decrease could be an artefact of those issues); this raises questions about whether this approach to developing these profiles can be sustained in future.

Recommendations

- The profiles in this report should be used as benchmarks with which to assess the diversity profile of applicants for the Royal Society's early-career fellowships; we urge the Society to continue to publish the results of these comparisons as part of its diversity data, and encourage other funders to follow suit;
- We are concerned about the apparent decrease in the extent and nature of data being provided by institutions to HESA for certain data fields, especially those we use to identify eligible postdoctoral researchers. We recommend that HESA investigates systemic, or substantial institution-specific, trends in returning less complete data, and that efforts are made in the sector and data collection to continue to provide complete data;
- Linked to this, more consistency in the reporting of employment contract types (and transparency in this) would be valuable to develop meaningful analyses in future. Emerging knowledge about variations in the use of different types of employment contract for postdoctoral researchers suggests this is clouding efforts to identify this key population and understand its evolving characteristics;
- At the time of writing, Jisc/HESA was consulting on potential changes to Staff Record data collection. Pending any agreed changes, it could yet be valuable for the sector to agree any specific further data that could be returned to HESA to identify early-career researchers more robustly, potentially including items such as year of doctoral qualification or prior employment. This would enhance understanding about postdoctoral researchers and their career paths and trajectories, as well as improving diversity monitoring of the workforce;
- The sector needs to decide how ethnicity within this workforce should best be considered, monitored and reported, in the light of the increasingly international composition of the workforce. Consistent data reporting would aid efforts being made to counter under-representation of ethnic minorities in the UK academic workforce;

- The very low (and only slightly rising) proportion of Black researchers, at under 2% of UK nationals, and under 3% across all nationalities, stands out. We know much work is underway to understand and increase the level of Black participation in STEM doctoral programmes and early research careers to address this and encourage parties to work together to progress this to best effect;
- The relatively low incidence of reporting of certain disability conditions by early-career researchers needs to be better understood, especially the very low levels of mental health and neurodivergent conditions, which stand in contrast to the high and increasing levels reported by first-degree and doctoral students. It would be valuable to know whether this simply reflects their respective ages or other reasons related to workplace or career.

2. Introduction and project aims

2.1. Aims, objectives and scope

In March 2021 we (the Careers Research & Advisory Centre, CRAC) published a report of a study commissioned by the Royal Society in which we attempted to establish a baseline profile of researchers in the UK eligible to apply for its early-career fellowship programmes.¹ The aim was to develop a diversity profile of the eligible population to use as a benchmark with which to compare key aspects of the profiles of those who submit applications for such (which are recorded by the Society).

The purpose of such comparisons is to assess the extent to which the schemes are reaching the width of the eligible pool and whether the award-making process is inclusive. The latter may help to identify any inherent bias in the award-making and selection process. These fellowships are a key part of the pipeline into research leadership in the UK. As part of its commitment to equality, diversity and inclusion (EDI), the Society needs to know whether its fellowship schemes are resulting in a more diverse or narrower profile of scientists making the transition to research leadership. If the profile of applicants to the schemes is not representative of those who are eligible, it could seek to address this through changes to the way it promotes the schemes or to the schemes themselves.

As a result of that research, the Society was able to conclude that the proportions of female applicants in 2020 and 2021 were lower than the proportions of female researchers eligible to apply (although the selection process itself was resulting in a slightly higher proportion of female awardees than applicants).² Similarly, the proportions of applicants from Black and minority ethnic backgrounds were lower than the respective proportions of researchers in the eligible pool (and in this case proportionately fewer of these applicants were winning awards).

The Society re-commissioned CRAC in 2024 to provide a revised benchmark profile of the applicants eligible to apply for the Society's University Research Fellowship and Dorothy Hodgkin Fellowship schemes. These support talented postdoctoral researchers who have the potential to become research leaders in their fields to conduct their scientific research in the UK. The fellowships aim to help them establish an independent research career, i.e. to become an independent research leader. The Dorothy Hodgkin Fellowship scheme is positioned explicitly to support scientists in early career who require a flexible working pattern due to personal circumstances.

Subsidiary objectives of the research were to:

- Identify trends over time in that profile to assess how the applicant pool may be changing;
- Identify any particularly prominent profile differences for key individual subjects;
- Highlight prominent intersectionalities between different demographic or other aspects of profile, to understand more about variances in profile and their causes.

¹ *The profile of postdoctoral researchers in the UK eligible for Royal Society early career fellowship schemes*, CRAC, 2021. <https://royalsociety.org/-/media/policy/publications/2021/trends-ethnic-minorities-stem/profile-of-postdoctoral-researchers-in-uk-eligible-for-rs-early-career-fellowship-programmes.pdf>

² *Diversity data report 2021*, The Royal Society, 2021. <https://royalsociety.org/-/media/policy/topics/diversity-in-science/2021-diversity-data-report.pdf>

2.2. The equality, diversity and inclusion context

Since our last report, there has been an increase in the attention paid to EDI in the science and research workforces, in the UK and worldwide. In 2021 the UK Government published its '*R&D People and Culture Strategy*' in which it laid out ambitions to:

- Attract, retain and develop talented people from all backgrounds, career stages and sectors; and
- Develop a positive and inclusive research culture and environment in which all people can engage and contribute to research and innovation.³

In science fields where there is an insufficient supply of talent, or a risk of that in future, diversity has a role to play in maximising the pool of potential research talent. In the private sector, workforce diversity is increasingly seen as a competitive benefit, so organisations can draw upon the widest possible diversity of thought in a world where the ability to be innovative is increasingly crucial. These arguments are, of course, in addition to the underpinning rationale that there should be fairness of opportunity.

Funders and others in the research sector have increased their efforts to enhance diversity and inclusion, through published EDI strategies and initiatives too numerous to mention here focused on enhancements to the research and work environment and to research culture. Many funders now publish diversity data, although these have tended to place more emphasis on their selection processes rather than considering inclusion in relation to who does or does not apply to them.

The Royal Society recognises that science needs people with the widest range of talents, backgrounds, perspectives and experiences, and states its commitment to contribute to removing barriers that unfairly prevent people from accessing scientific education and careers. Its stated goal is to help ensure that anyone with the passion and talent for science can study, work and thrive in STEM.⁴ Enhancing the participation of talented scientists from currently under-represented groups is part of this commitment to diversity.

³ R&D People and Culture Strategy: People at the heart of R&D, Department for Business, Energy & Industrial Strategy, 2021. https://assets.publishing.service.gov.uk/media/60f804228fa8f50c768387c5/r_d-people-culture-strategy.pdf

⁴ Science, Technology, Engineering, Mathematics

3. Data and approach to analysis

3.1. Approach

A key aim of our previous study in 2021 was to establish a mechanism by which the profile of eligible early-career researchers in UK HE institutions could be measured, so that profiles could be developed for benchmarking on a consistent basis over time.⁵ The 2021 study laid out the eligibility criteria for the early-career fellowship schemes within scope, and how Staff Record data from the Higher Education Statistics Agency (HESA) could be acquired and used to determine profiles. As HESA data do not directly identify postdoctoral research staff, a series of filters were introduced during analysis to identify relevant staff and then to act as proxies for those staff who would be eligible for these fellowship schemes. The aim of this new study was to repeat that methodology as closely as practically possible, so as to develop profiles that would be consistent and therefore comparable with those in the 2021 report.

The key aspects of eligibility for the schemes in scope continue to be:

- Subject of research to be within the Society's range of interest (remit);
- 3-8 years of postdoctoral experience (for URF) or up to 6 years (for DHF);
- Absence of a permanent (open-ended) contract of employment.

It was agreed with the Society that HESA staff data for academic years 2019/20, 2020/21, 2021/22 and 2022/23 would be acquired and analysed, in order to extend trends reported in the 2021 study, within which 2018/19 was the latest year.

3.2. Adjustments for this study

We continued to use filters so that the target population comprised individuals with the following characteristics:

- Classified as academic staff (not professional services or administrative);
- Having a 'research-only', 'teaching-only' or 'research and teaching' contract;⁶
- Employed in occupations classified as Level K or L using HESA's UCEA/XperTHR categorisation of academic jobs. Although some staff in its Level J would be eligible for the fellowships, that Level is broad and specifically includes staff on named postdoctoral fellowship schemes such as the URF, so we chose to exclude staff at this Level;
- Employment on a fixed-term contract rather than a permanent (open-ended) contract;
- Highest qualification known to be at doctorate level;
- Aged under 50 years.

As in the previous study, we did not consider it feasible to develop populations eligible for the URF and DHF schemes separately, as the eligibility criteria for the two schemes only differ on the basis of the duration of postdoctoral experience (and even these overlap). Thus, we considered staff with up to 8 years of postdoctoral experience to be in scope. In the previous study we argued that a series of filters acting in combination was needed to provide a proxy for up to 8 years postdoctoral experience, as date of doctorate is not recorded for staff. These

⁵ *The profile of postdoctoral researchers in the UK eligible for Royal Society early career fellowship schemes*, CRAC, 2021. <https://royalsociety.org/-/media/policy/publications/2021/trends-ethnic-minorities-stem/profile-of-postdoctoral-researchers-in-uk-eligible-for-rs-early-career-fellowship-programmes.pdf>

⁶ This approach differs from that used in some data reports by others – the rationale for using this wider range of contracts was laid out in the previous report

included having a doctorate as highest qualification, being aged under 50, and having a duration of employment at the current HE institution of up to 8 years. However, since the 2021 report, institutions have not reported to HESA the date of commencement of employment of staff and therefore such data can no longer be used to calculate duration of employment. Instead, we had to use the duration of current contract of employment, as the start date of current contract continues to be recorded in the staff data returns. This was the only data item available to use as an alternative proxy for the duration of postdoctoral employment experience we sought. Comparison of profiles for the 2018/19 population constructed using either the duration of employment field or the duration of contract (both set at up to 8 years) suggested they were very similar, so introducing this alternative filter was not considered problematic (although recognising that it continues to be part of an imperfect proxy for this eligibility criterion). This change in the data available means this would be an even weaker basis to attempt to profile URF and DHF eligible populations separately, than previously, reconfirming our choice to establish a single profile.

In addition to the list above, the remaining data item used was the primary discipline of the academic staff, as we used a combination of disciplines to match the subject scope of the Society's early-career fellowship schemes. After 2018/19, HESA switched the classification it uses for the academic discipline/s currently being researched or taught by individual staff members, from the Joint Academic Coding System (JACS) to the Higher Education Classification of Subject (HECoS). In principle this could have introduced a lack of comparability with new results and those up to 2018/19, but in practice the subjects in scope map well across the two classifications and we do not believe this change had any material effect on the profile of the population identified. Only primary subject (discipline) was used, although HESA records up to three such subjects per individual, for simplicity.

3.3. Presentation of profile data

Results in this report are based on data for 2022/23 (the most recent currently available), along with comparative profiles for 2021/22, 2020/21 and 2019/20 from analysis of the newly acquired data. Results for 2018/19 are presented as a comparator, taken from the 2021 report.

In section 7.2 we raise some concerns about the 2022/23 results in particular, concluding that a number of data issues may contribute to these being less robust than for other years. Our view is that we have high confidence in the profile data for years up to 2021/22, but the 2022/23 results need to be treated with some caution due to these data issues.

As required in publication of results derived from HESA data, the size of any sub-group was rounded to the nearest 5 prior to presentation. Due to this, some results will appear as zero (numerically) even if there are 1-2 individuals within that group; this applies, for example, to the instance of Black researchers within certain disciplines as their numbers tend to be particularly small. It also means that the numerical sizes of some sub-groups, after rounding, may not sum exactly to the expected total. Percentages shown in the report were calculated from the rounded data. The data were obtained from HESA on a full-person equivalent basis, unweighted.

4. Profile of those eligible for RS early-career fellowships

4.1. Overall profile

Table 4.1 illustrates the characteristics of individuals we considered eligible for the early-career fellowships, derived using the filters and proxies outlined, for 2022/23 and 2021/22, with results for 2018/19 from the previous report for comparison. As noted in section 7.2, the 2022/23 profile results may be less robust than previous years, so we suggest both these results and those for 2021/22 are used by the Society against which to benchmark key aspects of the profile of applicants to these schemes and awardees.

In Appendix 1 we present similar profiles for each of the years of data analysed in this study, from which trends in the results over this period can be seen. In the next section, a full description of such trends is given, with some additional analysis to illustrate how some of the changes are related to each other. Nonetheless, we highlight the following as key differences in personal characteristics between the most recent and 2018/19 eligible populations, expressed on the basis of the 'new' result in comparison with the 2018/19 counterpart result, but also noting where the 2021/22 result may be the more reliable:

- The apparent size of the eligible population fell significantly in 2022/23, which triggered our reflections on the robustness and sustainability of this method for assessing the profile of the eligible population in section 7.2. Between 2018/19 and 2021/22, the size of the population fell more slightly (by around 1% per year, on average);
- The proportion of female researchers has fallen very slightly (40.8% in 2022/23, 41.6% in 2021/22, from 42.1% in 2018/19);
- The proportion of older researchers, i.e. aged between 35 and 49, has risen (35.4% to 40.6%) and the proportion aged below 35 fallen;
- There has been some adjustment in the balance between the proportions of nationals from different parts of the world. Between 2018/19 and 2021/22, a fall in those of EU nationalities (29.1% to 22.6%) was roughly counterbalanced by a rise in those of nationalities outside the UK or EU, with the UK proportion remaining stable. However, the 2022/23 results show a decrease in UK nationality in favour of non-UK and non-EU, with the latter becoming the largest sub-group;
- The proportion of researchers of UK nationality from an ethnic minority background has risen (12.2% to around 15%) although the proportion of unknown background has also risen. The proportion of Black researchers of UK nationality remains very low at around 1.5% and has not risen to the same extent as all minority ethnic researchers;
- When ethnicity is considered for all nationalities, not just those of UK nationality, the rise in proportion of researchers from minority ethnic backgrounds is more marked still, with those of white background comprising only just over half (although this was 59% of those of a known ethnic background). The proportion of Black researchers was, however, still low at under 3%;
- The proportion of researchers declaring some kind of disability or health condition has risen to 5.0% from 3.1%, and was nearly 6% in 2021/22, with the increase driven principally by rises in the proportions reporting a mental health or cognitive/learning condition.

More detailed analysis of a number of these changes over time is given in section 4.2, based on the four years of new profiles shown in Appendix 1.

Table 4.1 Profile of eligible researchers within RS remit subjects, for key years

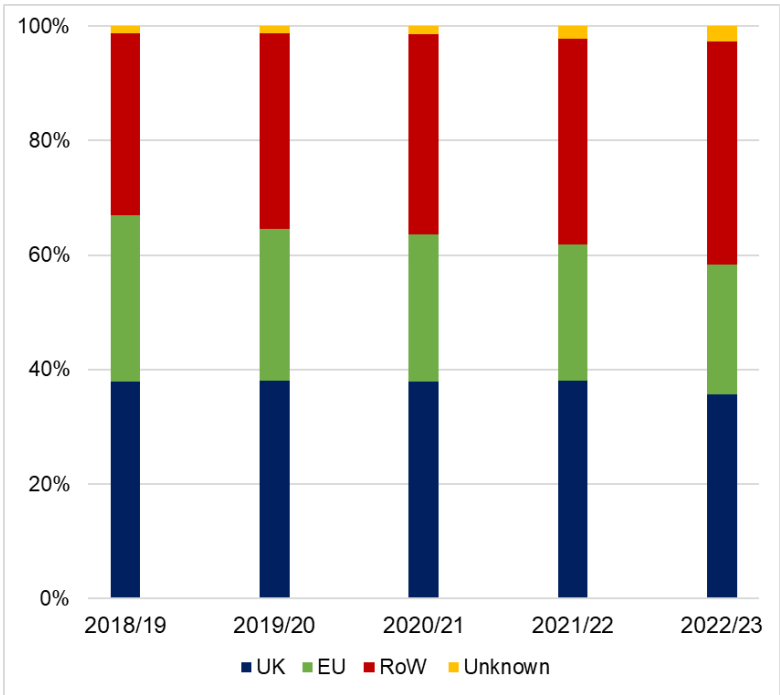
	2022/23		2021/22		2018/19	
	N	%	N	%	N	%
Total population	11555		12985		13405	
Gender						
Female	4695	40.8%	5400	41.6%	5640	42.1%
Male	6800	59.1%	7570	58.3%	7760	57.9%
Other	10	0.1%	15	0.1%	5	0.0%
Age						
< 35	6860	59.4%	7550	58.1%	8660	64.6%
35-49	4695	40.6%	5435	41.9%	4750	35.4%
Nationality						
UK	4125	35.7%	4945	38.1%	5070	37.8%
EU	2610	22.6%	3085	23.8%	3900	29.1%
Rest of World (RoW)	4510	39.0%	4665	35.9%	4275	31.9%
Unknown	310	2.7%	290	2.2%	160	1.2%
Ethnicity (UK nationals)						
White	3170	76.8%	3840	77.7%	4135	81.6%
Minority ethnic groups	625	15.2%	735	14.9%	620	12.2%
Asian	365	8.8%	425	8.6%	380	7.5%
Black	60	1.4%	80	1.7%	65	1.3%
Mixed	120	2.9%	125	2.6%	135	2.7%
Other	80	1.9%	105	2.1%	40	0.7%
Unknown	330	8.0%	370	7.4%	315	6.2%
Ethnicity (all nationalities)						
White	6085	52.6%	7245	55.8%	8450	63.0%
Minority ethnic groups	4155	35.9%	4410	33.9%	3820	28.5%
Asian	2850	24.7%	3000	23.1%	2875	21.4%
Black	340	2.9%	345	2.7%	260	1.9%
Mixed	445	3.8%	460	3.6%	400	3.0%
Other	520	4.5%	605	4.7%	285	2.1%
Unknown	1320	11.4%	1330	10.3%	1140	8.5%
Disability						
No known disability	9610	95.0%	11280	94.3%	13000	96.9%
Known disability	505	5.0%	685	5.7%	410	3.1%
Cognitive/learning	175	1.7%	180	1.5%	125	0.9%
Mental health	115	1.1%	110	0.9%	70	0.5%
Sensory/Medical/Physical	140	1.4%	140	1.2%	135	1.0%
Other/multiple	75	0.7%	260	2.2%	80	0.6%
Russell Group institution	8695	75.2%	9350	72.0%	9700	72.4%
Location of institution						
England	9685	83.8%	11020	84.9%	11480	85.6%
Scotland	1175	10.2%	1150	8.9%	1045	7.8%
Wales	420	3.6%	490	3.8%	520	3.9%
N Ireland	275	2.4%	320	2.5%	365	2.7%
Mode of employment						
Full time	10185	88.1%	11020	84.9%	11620	86.7%
Part time	1375	11.9%	1965	15.1%	1785	13.3%

4.2. Key personal characteristics and how these are changing

4.2.1. Nationality

UK nationals comprised the largest group within the overall profiles until 2021/22, having been consistently around 38% of the eligible population, but in 2022/23 this apparently fell to under 36% and this group was overtaken in size and proportion by those with a nationality other than UK or EU (i.e. 'Rest of the world', RoW). Otherwise trends since 2018/19 have largely continued those seen in the few years prior to that, with the proportion of EU nationalities declining since a peak of around 31% in 2015/16 to 23% in 2022/23, while the RoW proportion rose risen to 36% in 2021/22 (and apparently 39% in 2022/23) from around 27% over the same period (Figure 4.1).

Figure 4.1 Nationality of eligible researchers, 2018/19 to 2022/23



Nationality is an aspect of profile that intersects strongly with several others, as will be highlighted in later sections, including subject, gender and disability, while its relationship with ethnic background is also considered later in this report.

4.2.2. Gender (sex)

We recorded in the 2021 report that 42% of eligible researchers within the subject scope were female,⁷ and that this had decreased fractionally in the previous 10 years. The proportion in 2021/22 was just under 42%, but in 22/23 was just under 41%, which would be a slightly further fall. The absence of a rise is potentially interesting given the consistent efforts made in the past decade to enhance the progression of female staff in many disciplines within academic research, but needs to be considered in the light of intersections with other characteristics.

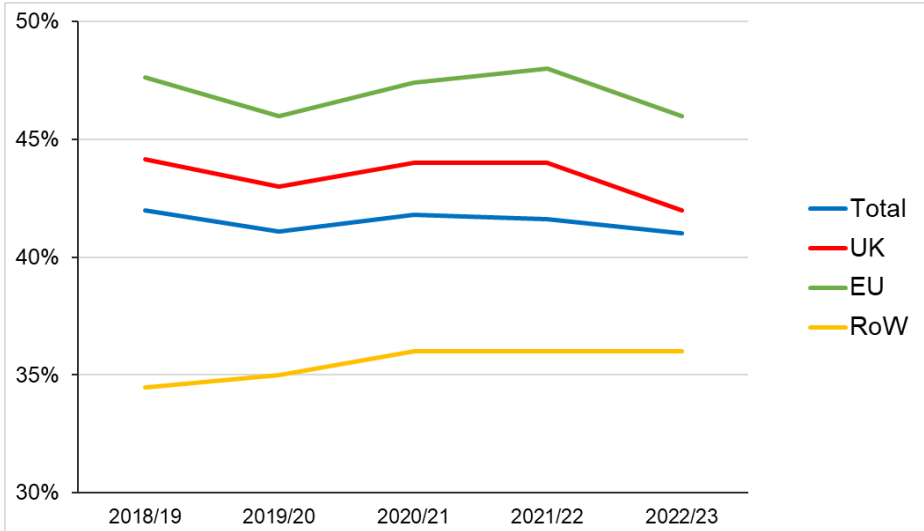
⁷ Defined on the basis of HESA's sex data item

For comparison, female staff accounted for 49% of all academic staff in UK HE in 2022/23 (i.e. at all grades and in all types of academic role), according to HESA open data.⁸ Interestingly, that total proportion has also not shifted much at all over the past 10 years, although the total size of the academic workforce has increased considerably. In 2022/23, female students made up 52% of those studying doctorates and 56% of those studying first degrees.⁹

There are intersections of gender with both subject and nationality, leading to differences over time within certain sub-groups which may be masked by the relatively consistent or fractionally falling proportion overall. In line with the trend recorded in the 2021 report, the proportion of female researchers in the physical sciences and engineering subjects ('A-side' subjects) was lower than overall at 29%, which was slightly lower than the 31% seen in 2018/19. On the other hand, female staff comprised a slight majority of the eligible pool (55%) in the biological/biomedical sciences ('B-side' subjects) in 2022/23, albeit this too was fractionally below the 56% recorded in 2018/19.

By broad nationality grouping, there were also substantive differences in the gender profile (Figure 4.2). The highest proportion of female researchers has been within those of an EU nationality, with the lowest amongst those of RoW nationalities. Although the proportions have fluctuated year on year, the slight overall decrease in proportion of female researchers has been driven by decreases in the proportion amongst UK staff and EU staff, which have outweighed a small increase in their proportion amongst RoW nationalities.

Figure 4.2 Proportion of female eligible researchers by nationality, by year



4.2.3. Age

Given that an age filter (under 50 years) was applied in order to establish the profiles, there was limited potential in analysing eligible researchers' ages in detail. However, we recorded in the 2021 report that a fairly consistent two thirds proportion of those in the eligible pool were aged under 35, and there is some evidence now that this proportion has since fallen. In

⁸ <https://www.hesa.ac.uk/news/16-01-2024/sb267-higher-education-staff-statistics#working>

⁹ <https://www.hesa.ac.uk/news/08-08-2024/sb269-higher-education-student-statistics/numbers>

2022/23, the proportion aged under 35 was 59% (and 58% in 2021/22), well below the 65% recorded for 2018/19. A higher proportion of those in A-side subjects were aged under 35 (64% in 2022/23) than amongst those in B-side subjects (54%).

It is possible that the Covid-19 pandemic has had some impact on the apparent age of researchers at a particular career stage, as many funding schemes were extended in response. The overall 'ageing' of the eligible population in this way is interesting to note in relation to observed experiences by the Society that applicants to the URF scheme in particular are on average having increasing amounts of postdoctoral experience with time.¹⁰ It had been thought that this was due either to self-selection on the part of applicants or an effect of selection, but to this we appear now to have to add that the eligible population may be ageing over time too.

4.2.4. *Ethnicity*

The ethnic background of staff is most robustly considered for those of UK nationality, for whom the current categorisation used by HESA was designed. In 2018/19, just over 12% of the staff in the eligible pool were of Black, Asian or other minority ethnic backgrounds (referred to collectively as 'minority ethnic' in this report). This was 13% of those whose ethnic background was known, while 82% of UK staff (or 87% of those of known ethnic background) were of a white background. The corresponding proportion in 2022/23 was 15% minority ethnic staff (or 16.5% of those of known ethnicity), a clear rise in comparison with the 2018/19 proportion and reflecting a steadily rising trend. The increase has been driven mainly by rises in the proportion of Asian background (9.5% of those of known ethnicity, up from 8%) and Other backgrounds (which doubled to around 2%). On the other hand, the proportion of UK Black researchers in the pool has risen only very fractionally, reaching 1.6%.¹¹ Numerically, this group reached its highest in 2021/22 when, after rounding, 80 individuals were in the eligible pool, amongst a total of 4575 UK-domiciled staff of known ethnic background. The number has been between 60 and 80 in each year, after rounding.¹² Thus, there remains a strong under-representation of Black postdoctoral researchers, compared with the proportion amongst doctoral students (around 5% currently, itself an under-representation in relation to first degree students of which 8-9% are Black).¹³

We note that some other funders are recording publishing ethnicity of the researchers they fund (or those who apply to them) for all nationalities together (based on the same ethnicity categories, although these work less well for nationalities outside the UK), not just UK nationals. On that basis, the proportion of minority ethnic staff in the eligible pool has rose from 28% in 2018/19 to 36% in 2022/23 (or, 31% to nearly 40% respectively when stated as proportions of those of known ethnicity). This approach presents a much more diverse canvas ethnically than results stated only for UK nationals, although further analysis shows that these minority ethnic researchers are dominantly of Asian heritage (28% of those of known ethnicity) and still only 3% are Black. Comparable proportions for 2018/19 were 23% Asian and 2%

¹⁰ *Royal Society early-career research fellowships: Career pathway tracker 2024*, CRAC for the Royal Society (in press)

¹¹ Note that the small size of this sub-group means that the HESA rounding convention may have a significant influence on the annual figures

¹² A smaller number (60) is recorded for 2022/23, but this is within a smaller overall population calculated, which is considered later in this report

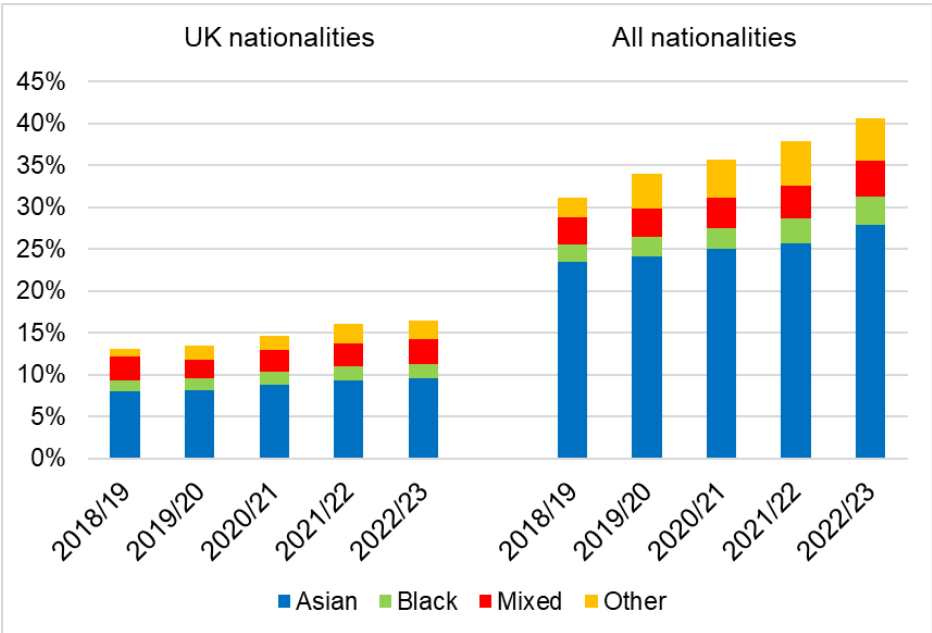
¹³ These proportions are from HESA open data for all subjects combined, all years of student, 2022/23.

Black, respectively. This picture reflects a large number of Asian researchers of non-UK nationality who have undertaken mobility to the UK from countries in Asia including China.

In Figure 4.3, the ethnic backgrounds of researchers of known ethnicity are shown for both UK nationals and all nationalities combined, for the period now studied. The rise in proportion of minority ethnic researchers of UK nationality is clearly seen, reflecting an increase in number from 620 in 2018/19 to 735 in 2021/22. However, the decreasing proportion of all researchers in the pool that are of UK nationality over time limits the effect of the proportional rise in minority ethnic researchers to this point.

The chart also includes the results for all nationalities together. This illustrates that while the proportion of UK researchers of minority ethnic backgrounds has risen very slightly, there has been a faster rise in the proportion of minority ethnic staff overall, and in those of Asian origin in particular, when all nationality groups are aggregated. The number of Black researchers grew from 260 to 340 in the same period, but this was still under 3% of the total. Thus, Black researchers remain strongly under-represented irrespective of whether UK nationals or all nationalities are considered.

Figure 4.3 Proportion of eligible researchers of minority ethnic background, with broad nationality, 2018/19 to 2022/23. Data from Appendix 1



Comparisons with students in the pipeline to the research workforce are limited to those of UK nationality due to HESA conventions. However, as a benchmark the 16.5% of UK-national minority ethnic researchers (of known ethnicity) in the 2022/23 profile is somewhat lower than the proportion amongst all doctoral students (21%) or first degree students (29%) in 2022/23, but broadly in line or above the proportion in the working age population in the UK (14%).¹⁴

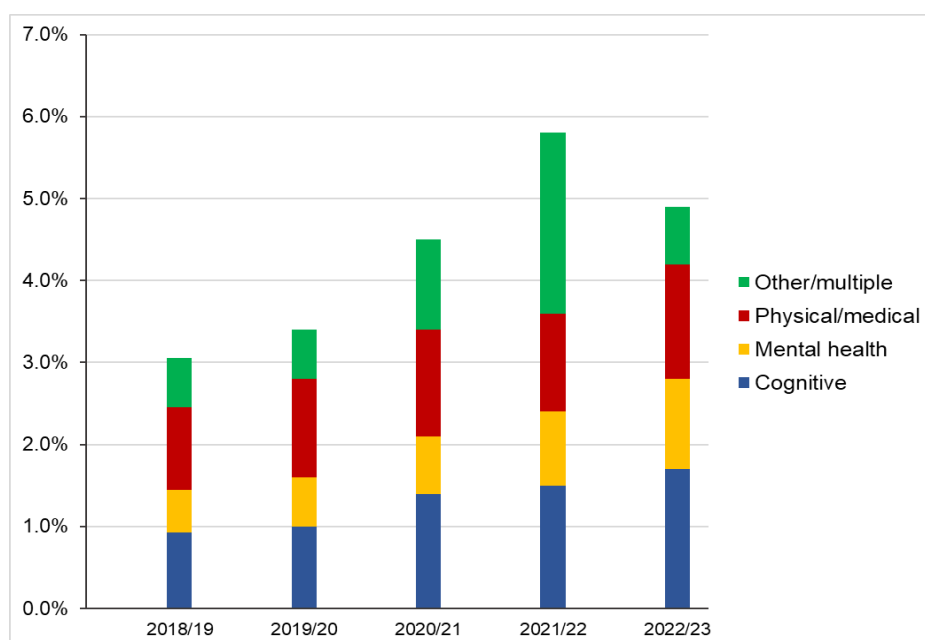
¹⁴ Based on the Annual Population Survey

4.2.5. Disability

Since the 2021 study, when 3.1% of researchers in the eligible pool in 2018/19 were reported to have disclosed a disability, this proportion has increased further, nearly doubling by 2021/22 (5.7%) although apparently falling back slightly to 5% for 2022/23. Numerically this was an increase from 410 individuals in 2018/19 to 685 in 2021/22, despite a decrease of 3% in the total population size. We suspect that the apparent fall back to 505 individuals in 2022/23 is an artefact of the data and analytical approach, as noted previously. Despite the overall rise, the proportion remains somewhat lower than that reported for all academic staff (7% in 2022/23) according to HESA Staff Record open data, and much lower than the proportions within the undergraduate population (19%) or those undertaking doctoral study (16%) that year.¹⁵ The greatest differences between these results and for students were in relation to mental health and cognitive/learning differences, which were much higher amongst students.

Figure 4.4 shows the overall increase with time in the reporting of disability in the profiles and that the increase is being driven by rising proportions disclosing either a mental health condition or a cognitive or learning difference, or multiple conditions, while the proportions declaring a long-term medical condition or 'physical' disability (including blindness or deafness) are remaining roughly constant. It is unclear whether the high proportion of other/multiple conditions in 2021/22 (and/or relatively low proportion in 2022/23) was an extension or deviation from the trend, or an artefact of the reported data in one of those years.

Figure 4.4 Proportion of eligible researchers disclosing different types of disability/condition, 2018/19 to 2022/23. N values range from 410 (2018/19) to 685 (2021/22).



It is interesting that the declared incidences of mental health conditions in these profiles rose but only from under 1% to below 2%, which is much lower than reported in the student population (which was already 5% in 2020/21).¹⁶ It seems highly likely that the number and

¹⁵ <https://www.hesa.ac.uk/news/08-08-2024/sb269-higher-education-student-statistics/numbers>

¹⁶ Proportions of students declaring different types of disability/condition are not released as HESA open data, so this figure is as reported from an earlier year: <https://commonslibrary.parliament.uk/research-briefings/cbp-8593/>

proportion of postdoctoral researchers disclosing mental health issues, in particular, and a variety of forms of learning condition or neurodivergence will rise in future, as more young researchers with a higher propensity to declare such conditions enter the research workforce.

4.3. Employment characteristics

4.3.1. Mode of employment

13% of researchers in the 2018/19 profile, reported in our 2021 study, had been working part-time, which was well below the percentage in the entire academic workforce (around one third) or the UK workforce as a whole (24%).¹⁷ During the period covered by this new report, this proportion rose through to 2021/22 (then being 15%) but was apparently only 12% in 2022/23. The 2021/22 proportion accorded well with statistics from respondents self-identifying as postdoctoral research staff in the UK in the 2021 CEDARS survey (also 15%).¹⁸ We suspect the apparent decline for 2022/23 may be an artefact of incomplete data within our analytical approach, but were any of the decline to be real, more detailed research would be necessary to understand why, as it would appear to run counter to many efforts to make the working environment more inclusive and flexible.

This aspect of employment intersects strongly with several other characteristics, including gender, disability and nationality. For example, based on 2022/23 data, the proportion of women in the eligible pool working part time was over 16%, above the proportion amongst men (9%). The proportion working part-time was 18% amongst UK nationals but half that amongst others. More insights into how these characteristics intersect, resulting in some widely varying proportions of certain sub-groups who work part-time, can be found in chapter 6.

4.3.2. Academic employment function

For the years studied, the vast majority of researchers we considered to be in the eligible pool were employed on a research-only employment contract (89%), with 8% on teaching-only and just 3% on a 'research and teaching' contract in 2019/20. This balance shifted slightly with time, so that in 2021/22 86% were on a research-only contract and 10% a teaching-only contract. Amongst female staff, the proportion on a teaching-only contract was 12%, while it was 8% amongst their male counterparts, and 16% amongst those who declared a disability. In 2022/23, however, the overall proportions appeared to return to those seen in 2019/20. Our understanding of local variations in use of different contract types leads us to continue to believe that up to one in 10 of all researchers in the eligible pool may be employed on a teaching-only contract, despite being early-career who seek to undertake research and eligible for an early-career research fellowship, and this is higher amongst certain sub-groups.

4.3.3. Institution type and location

The researchers in the profile are highly concentrated in research-intensive universities, such as the member institutions of the Russell Group; that proportion has varied between 72% and 75% across the period studied, continuing the trend reported in the 2021 study. It is known that quite high proportions of early-career fellowship applications are made by researchers at a relatively limited range of institutions, typically large Russell Group member universities, several of which are located within the so-called Golden Triangle in London and SE England.

¹⁷ Annual Population Survey data, 2022

¹⁸ <https://www.vitae.ac.uk/impact-and-evaluation/cedars>

Most researchers in the eligible pool continue to be at institutions in England (consistently around 85%), with between 8% and 10% in Scotland, 4% in Wales and 2% in Northern Ireland. This presumably reflects the 20 of the 24 members of the Russell Group that are in England (83%), and that several of the largest in terms of researcher numbers are in England.

5. Subject-based and other selected profiles

A range of additional profiles were developed in our 2021 report to illustrate that some aspects of the diversity profile of eligible researchers varied significantly by subject. In this chapter, the key characteristics of the profile of eligible researchers in the Royal Society 'A-side' subjects (broadly, the physical sciences and engineering) and its 'B-side' subjects (biological and biomedical sciences), respectively, are summarised, with some consideration of how these have changed over the period covered. In addition, a range of more specific profiles are shown, for comparative purposes, including for physics, chemistry, the engineering disciplines, and for mathematics and computing combined. Full tables can be found in Appendices 2 and 3 respectively, where *N* values can be seen (showing that certain sub-groups within individual subjects can be small and potentially such results less reliable).

5.1. Broad subject group profiles and trends

5.1.1. A-side and B-side subjects 2022/23

Appendix 2 contains tabulated profiles across the period studied for the Society's A-side subjects together (physical sciences, mathematics, engineering, computer sciences and technology) and B-side subjects (broadly, the biological and biomedical sciences). This supports consideration of key differences in profile between these two broad groupings later in this chapter. Table 5.1 presents profiles for these two broad groups for the 2022/23 year.

From Table 5.1, the following clear differences in key aspects of profile quickly emerge – albeit based purely on comparison of results from the 2022/23 data, results that we have elsewhere noted may not be as robust as for previous years. That said, there is no evidence to suggest that any such reductions in robustness would affect A-side results more or less than B-side, so it is likely that differences between the two groups will continue to be valid. Thus, the profile of eligible researchers in the B-side subjects:

- Was much more balanced by gender (54.7% female) than A-side (28.2%);
- Tended to be somewhat older (46.0% between 35 and 49 years) compared with A-side (35.9%);
- Of UK nationality had a slightly higher proportion with a minority ethnic background (15.5%, or 16.7% of those of known background) than A-side (14.5%, or 16.0% of known background). On the other hand, when ethnicity was considered for all nationalities, the reverse was the case with a far high proportion of A-side researchers having a minority ethnic background (41.1%, or 46.7% of those of known ethnicity), that difference being almost entirely in the proportion of Asian background;
- Included a somewhat higher proportion declaring a disability or condition (5.5%) than A-side (4.5%);
- Featured a somewhat higher proportion working part-time (13.8%) compared with their A-side counterparts (10.2%), noting that this characteristic was one for which we believe the overall 2022/23 result may be impacted by artefacts of the data within our approach.

Table 5.1 Profile of eligible researchers within A-side and B-side subject groups, 2022/23

	A-side subjects		B-side subjects	
	N	%	N	%
Population	6125		5430	
Gender				
Female	1725	28.2%	2970	54.7%
Male	4360	71.2%	2440	44.9%
Other	5	0.1%	5	0.1%
Age				
< 35	3930	64.1%	2930	54.0%
35-49	2200	35.9%	2500	46.0%
Nationality				
UK	1835	30.0%	2290	42.2%
EU	1255	20.5%	1360	25.0%
Rest of World (RoW)	2905	47.5%	1600	29.5%
Unknown	130	2.1%	180	3.3%
Ethnicity (UK nationals)				
White	1395	75.9%	1775	77.5%
Minority ethnic groups	265	14.5%	355	15.5%
<i>Asian</i>	160	8.6%	205	8.9%
<i>Black</i>	25	1.4%	35	1.4%
<i>Mixed</i>	50	2.8%	70	2.9%
<i>Other</i>	30	1.7%	50	2.1%
Unknown	175	9.6%	160	7.0%
Ethnicity (all nationalities)				
White	2880	47.0%	3205	59.0%
Minority ethnic groups	2515	41.1%	1635	30.1%
<i>Asian</i>	1815	29.6%	1035	19.1%
<i>Black</i>	180	3.0%	155	2.9%
<i>Mixed</i>	220	3.6%	225	4.1%
<i>Other</i>	300	4.9%	220	4.0%
Unknown	730	11.9%	590	10.8%
Disability				
No known disability	5120	95.5%	4490	94.5%
Known disability	245	4.5%	260	5.5%
<i>Cognitive/learning</i>	90	1.7%	85	1.8%
<i>Mental health</i>	55	1.0%	60	1.2%
<i>Sensory/Medical/Physical</i>	65	1.2%	75	1.6%
<i>Other/multiple</i>	30	0.6%	45	0.9%
Russell Group institution	4510	73.6%	4185	77.1%
Location of institution				
England	5150	84.1%	4535	83.5%
Scotland	625	10.2%	550	10.1%
Wales	230	3.7%	195	3.6%
N Ireland	125	2.0%	155	2.8%
Mode of employment				
Full time	5505	89.8%	4680	86.2%
Part time	625	10.2%	750	13.8%

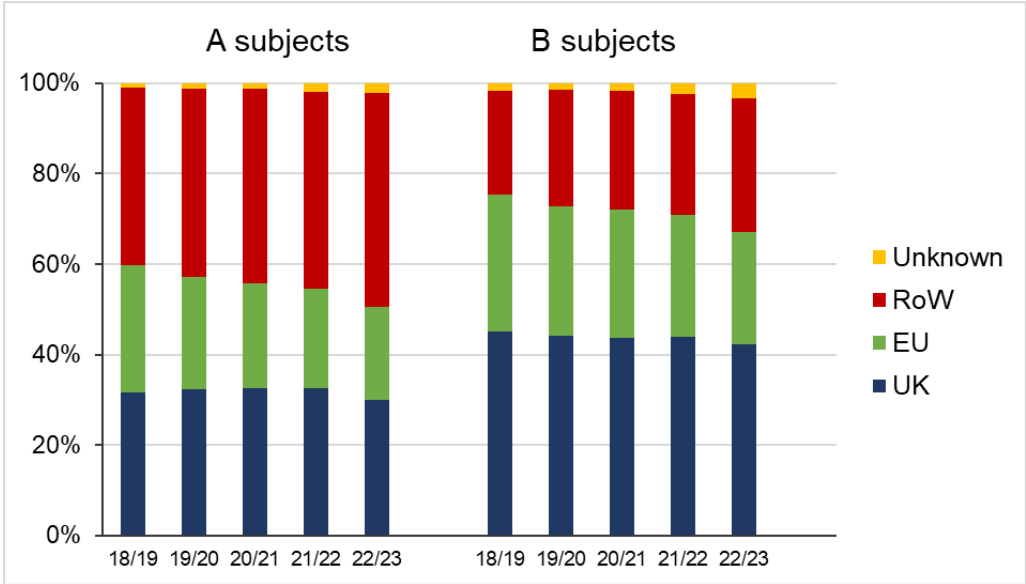
A further important difference was the balance of nationalities. More of the B-side researchers tended to be of UK nationality (42.2%), with 25.0% EU nationalities and under 30% of a RoW nationality, whereas the respective proportions for A-side researchers were 30.0%, 20.5% and 47.5% respectively. Thus, far more of the A-side researchers were from outside the UK or EU by nationality, and fewer were of UK or an EU nationality. A much more minor difference could be seen in the type of institution at which they study, with a slightly higher proportion of B-side researchers in Russell Group members institutions.

5.1.2. A-side and B-side trends with time

Nationality

As noted in the previous section, there continue to be significant differences in the nationality profiles of eligible researchers for the two broad subject groupings, as seen in the 2021 study, with a higher proportion of UK nationals in B-side subjects and particular large proportion from outside the EU or UK in the A-side subjects. Figure 5.1 shows how the proportion of UK nationals has declined very slightly since 2018/19, but with more substantive decline in the proportions of EU nationals compensated by rises in the proportions of other nationalities, for both groupings.

Figure 5.1 Nationality of eligible researchers with time, by broad subject grouping

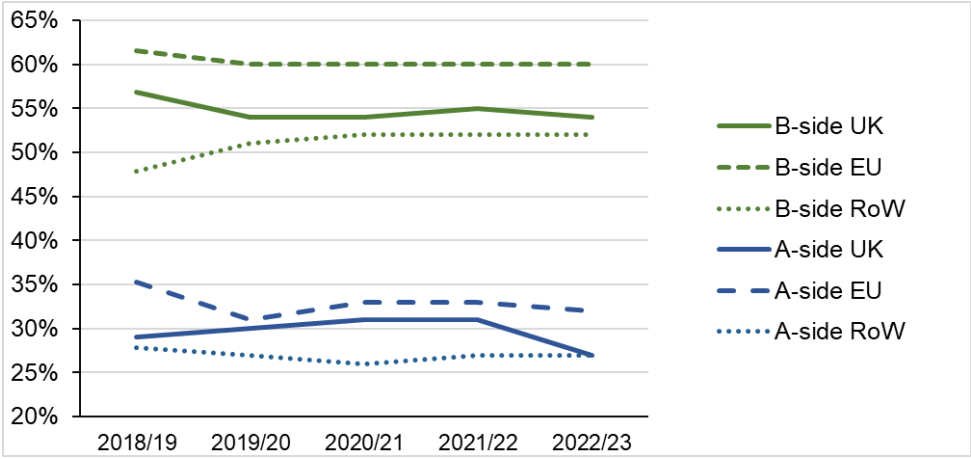


Gender

The clear difference in gender profile for A- and B-side subjects was highlighted earlier, with the proportion of female researchers twice as high on the B-side (55%) as A-side (28%) in 2022/23. When these proportions were analysed by both nationality group and broad subject group together, for the years 2018/19 to 2022/23, the trends in Figure 5.2 were obtained. This not only demonstrates the higher proportion of female researchers in B-side sub-groups, but also that the proportions of female researchers in B-side subjects of UK and EU nationalities have fallen in recent years, while this was not the case amongst their RoW counterparts. In the A-side subjects, the trends were less clear other than a fall in the proportion of female

researchers of EU nationality. These changes need also to be seen in the context of the shifting proportions of different nationalities, including the growth in proportion of researchers of RoW nationalities.

Figure 5.2 Proportion of female eligible researchers with time, by broad subject and nationality¹⁹



Ethnicity

Amongst UK nationals, the proportion of researchers of minority ethnic background in B-side subjects rose more than for A-side subjects, and was higher for the first time in 2022/23. Figure 5.3(a) shows the proportions for the two broad subject sides and how they have changed with time, demonstrating both the very slight rise on the A-side and relatively greater rise within the B-side subjects.

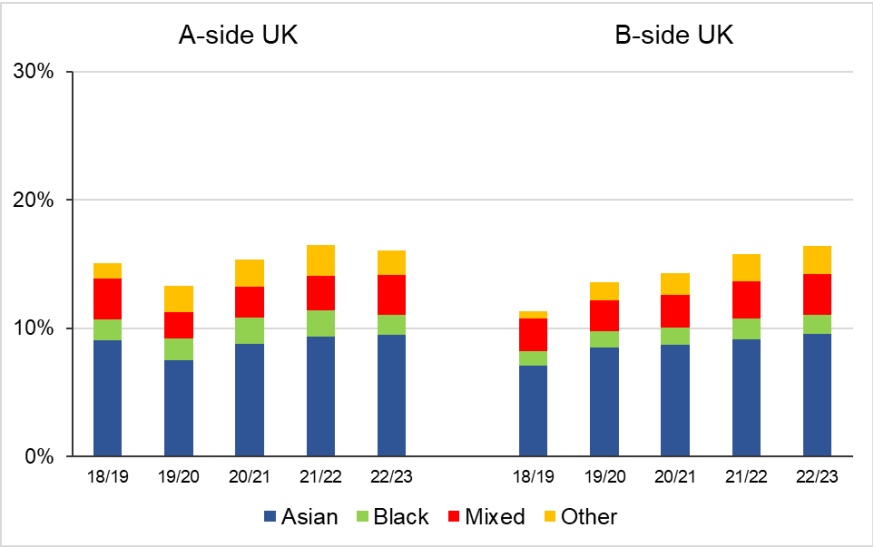
Researchers of UK nationality with a Black background continued to be very few, and numerically have not risen consistently during the study period, with between 25 and 45 (after rounding) on the A-side and 30 and 40 on the B-side.

When ethnicity was considered across all nationalities together, similar trends but of a relatively greater magnitude emerged in terms of proportions, as shown in Figure 5.3(b) noting that the scale is different due to the larger proportions. Figure 5.3(b) shows the significant increase in proportion of minority ethnic researchers with time for both A- and B-side groups, driven very largely by increases in the proportions with an Asian background. A slight increase in the proportion of Black researchers was evident, but the proportions remained low amongst all nationalities (being about twice the proportion seen amongst UK nationals). Again, the context of a rising proportion of non-UK researchers, in both subject groups, should be noted, so these percentage rises were reflected in relatively greater numeric increases.

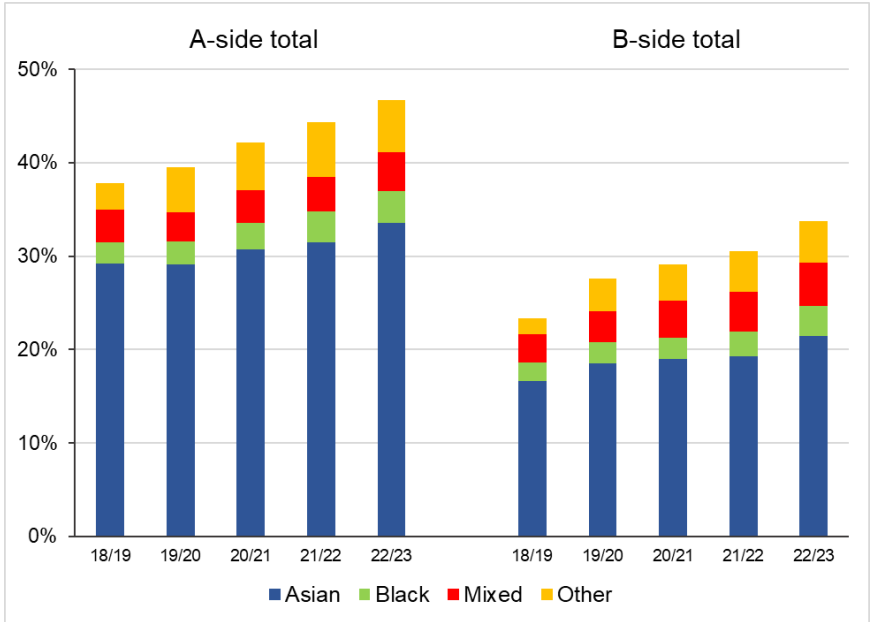
¹⁹ Data from years prior to 2013/14 not comparable

Figure 5.3 Proportions of minority ethnic researchers, by broad subject group, 2018/19 to 2022/23, as percentage of known ethnicity: (a) of UK nationality; (b) for all nationalities combined. N values can be found in Appendix 2.

(a)



(b)



Disability

As noted in the earlier section, 5.5% of eligible researchers in B-side subjects and 4.5% in A-side subjects were reported to have declared a disability in 2022/23, and that proportion had risen roughly steadily for each group from 2018/19, continuing the rising trend identified in the 2021 report from previous years.

Analysis of the categories of condition which make up these results in detail suggests that cognitive and learning conditions (neurodivergence) and mental ill-health accounted for most of the rise for B-side researchers, whereas there was growth in all the categories for A-side subjects, including multiple conditions. However, it should be cautioned that the size of all the

sub-populations concerned was under 100 individuals (and in many cases under 50), which could lead to changes in results based on only a few additional individuals, due to rounding.

Employment characteristics

The results for the proportions of eligible researchers who were currently working in Russell Group member institutions fluctuated between 70% and 75% for A-side subjects across the period studied, and between 68% and 77% for B-side subjects. The slightly higher proportion, on average, for B-side subjects is counter to the pattern observed in our 2021 report.

There was some difference, however, in relation to their mode of employment. In 2018/19, only around 10% of A-side researchers worked part-time, whereas this was nearly 18% of those in B-side subjects. On the A-side, the proportion has since varied between 10% and 14%, although was only 10% in 2022/23, whereas on the B-side the results were more consistent and formed a slight downward trend with time, to just under 14% in 2022/23. Deeper analysis of these results revealed that in 2022/23 the proportion of men working part-time was 8% overall, with a similar percentage for both A-side and B-side researchers. However, amongst female researchers, 14% in A-side subjects but 18% in B-side subjects were working part time. Thus, for female researchers there was some difference with broad subject area, while for males there was no such difference, and the underlying variance by gender was larger. Some of the differences in proportions working part-time between A- and B-side researchers were almost certainly due to differing gender and nationality balances of these two groups, due to the strong intersections of employment mode with these characteristics.

5.2. Subject-specific profiles

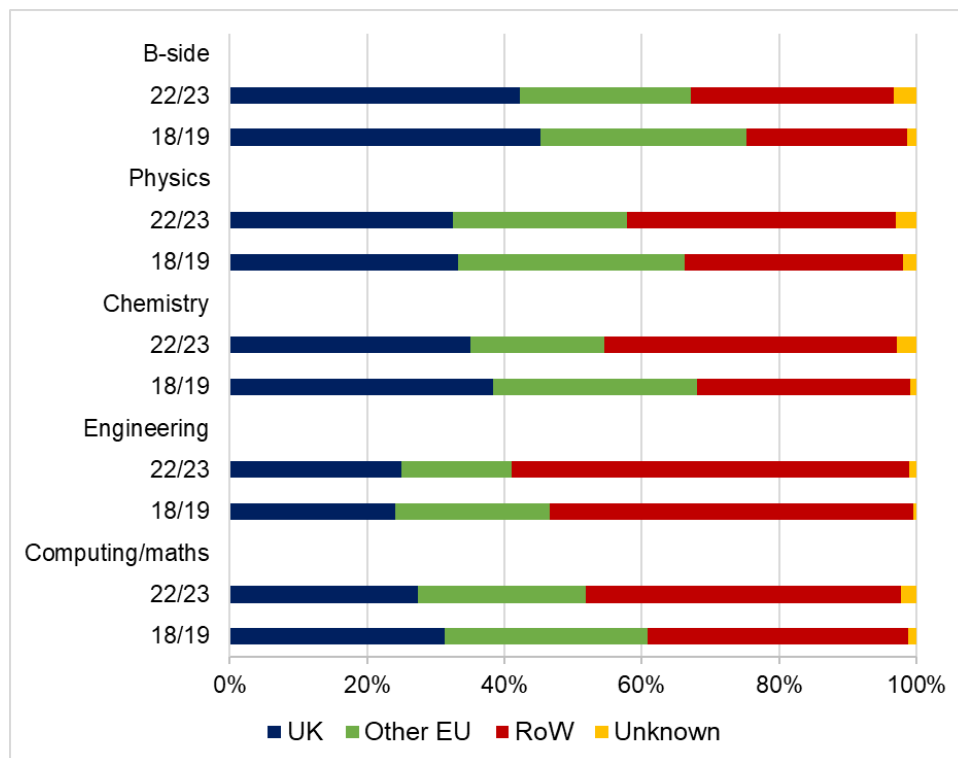
As in the 2021 study, a new range of profiles was developed for the 2022/23 year to illuminate key differences in the diversity profile of eligible researchers in specific major subjects/groups: physics and chemistry individually, the engineering disciplines as a group, and mathematics and computing combined (either of which is rather small individually). These are tabulated in Appendix 3, with results for 2018/19 for comparison, where values for *N* can be seen for the charts that follow. Key differences and characteristics of these profiles are described in this section, again set out by main theme, with some comparisons made with the overall subject scope for this study and for B-subjects (biological and biomedical sciences) as a group. The potential reduced robustness of the 2022/23 results should also be borne in mind, although it is likely that the factors underlying this would not impact differentially by subject.

Nationality

Figure 5.5 summarises the broad nationality profiles for 2022/23 and 2018/19 for key subjects and groups, showing quite substantial variations between certain subjects. For example, while over 42% of researchers in the B-side subjects were of UK nationality (in 2022/23, which was slightly lower than the 45% seen in 2018/19), this nationality group comprised a smaller proportion within chemistry (35%) and physics (32%), and a markedly lower proportion in computing/maths (27%) and engineering (25%), based on 2022/23 results. By contrast, the proportion of RoW nationalities comprised over half for engineering (58%), 46% for computing/maths, 42% for chemistry and 39% for physics, making them the largest sub-group in several of these subjects in both years studied. In the next chapter, further insights into the intersection between subject, nationality and gender will be considered too.

Subject to the caveat of possible reduced robustness of the 2022/23 results, comparison of the profiles of the pairs of bars for the two years in Figure 5.5 shows that in almost all cases the proportion of UK nationals has fallen since 2018/19, and the proportion of EU nationals fallen faster in all subjects, while the proportion of other nationalities has risen in every subject. This reinforces our interpretation that the early-career workforce in physical and engineering sciences has progressively more international, through inward migration of researchers from outside Europe for doctoral study or postdoctoral research, and continues to become more so.

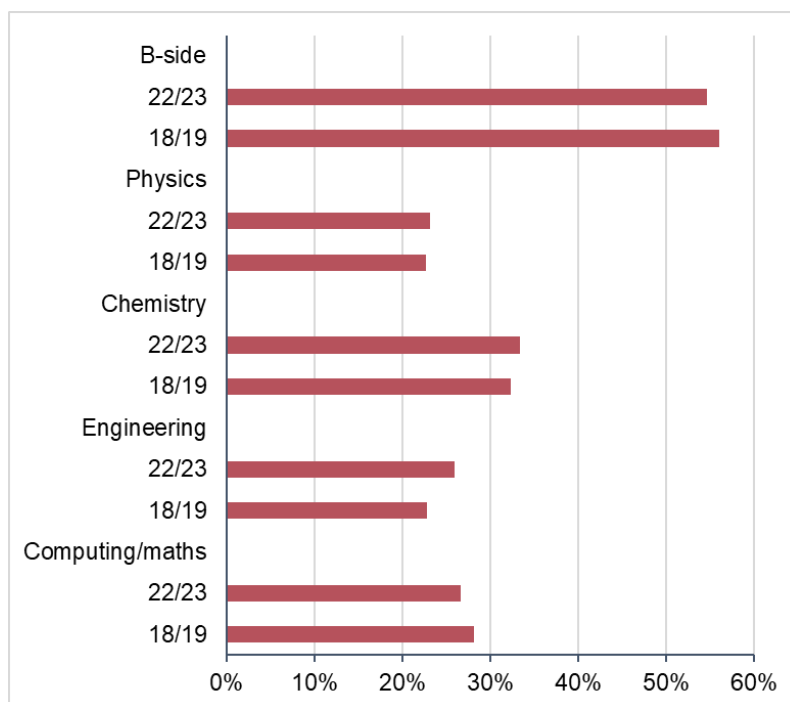
Figure 5.5 Proportion of eligible researchers by nationality group, for key subjects/groups, 2022/23 and 2018/19



Gender

Analysis of the profiles for individual subjects brings home how gender (im)balance varies by subject and, to an extent, how it has been changing in recent years, or not. Figure 5.6 plots the proportion of female eligible researchers, illustrating that female researchers only made up the majority of the eligible pool in the B-side subjects (in either year shown) and remained distinct minority groups in subjects including engineering, physics, and computing and maths. This chart suggests that there was some increase in the proportion of female researchers between 2018/19 and 2022/23 in engineering and very small increases in chemistry and physics, despite no overall increase, but a decrease in computing and maths (and also in the B-side subjects when taken together).

Figure 5.6 Proportion of female researchers in selected subjects/groups, 2022/23 and 2018/19



Ethnicity

Figure 5.7(a) illustrates the proportions of UK nationals of known ethnicity for the different subjects, for 2018/19 and 2022/23. These showed a common pattern of variance, with the total proportion of minority ethnic researchers lowest in physics, slightly lower than for B-side subjects, while the proportions in computing and maths and especially engineering were significantly higher, in both years. The largest sub-groups in all cases were researchers with an Asian background, and variances in the proportion of this group drove the overall differences, although variances were seen for all ethnic groupings. Comparison of the two years shows that higher proportions of minority ethnic researchers in 2022/23, in all cases.

The proportion of Black researchers (amongst UK nationals) in the profile was 2% or lower in almost all cases, other than in 2022/23 for engineering at just under 3%. It was recorded as zero for chemistry or physics in 2018/19 and for physics in 2022/23: these are instances with so few researchers that their number was rounded down to zero. The *N* values for sub-groups within individual subjects were generally small, other than for those of Asian background.

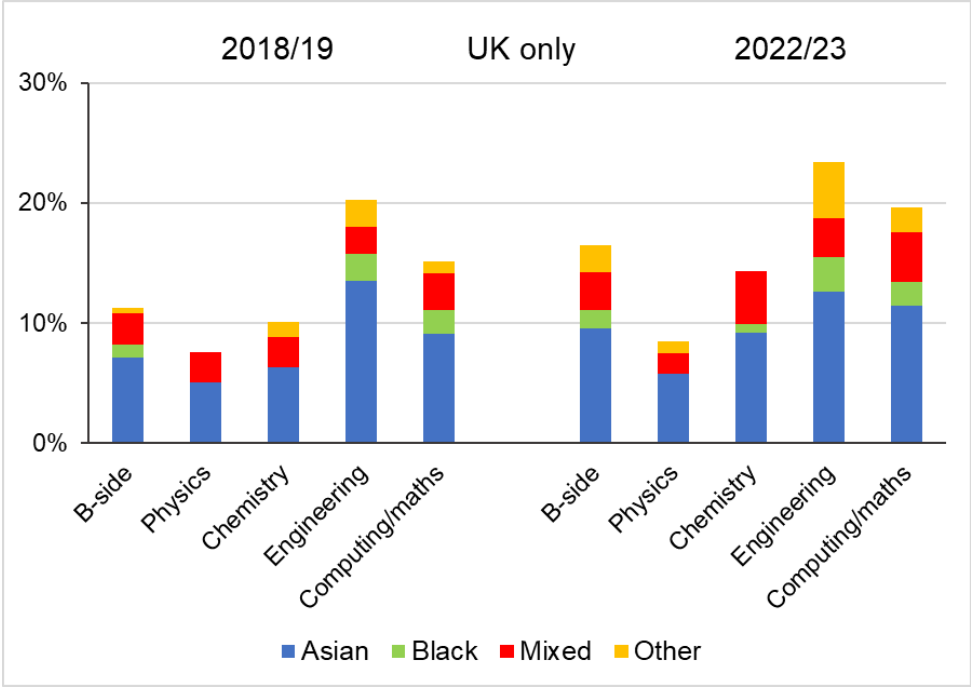
In comparison, proportions of minority ethnic background for all nationalities combined were much larger, in all cases (Figure 5.7b), with considerably higher proportions of minority ethnic researchers in every subject than amongst UK nationals. The extent of relative variances between subjects, however, was much the same as amongst UK nationals. Interestingly, minority ethnic researchers together (58%) comprised a greater proportion than white researchers in engineering in 2022/23.

Again, those with an Asian background comprised by far the largest portion of minority ethnic researchers, when all nationalities are considered, and far larger than for UK nationalities, while the proportions of other sub-groups were of similar magnitude, including of Black background. Engineering researchers of Asian background became the largest ethnic group

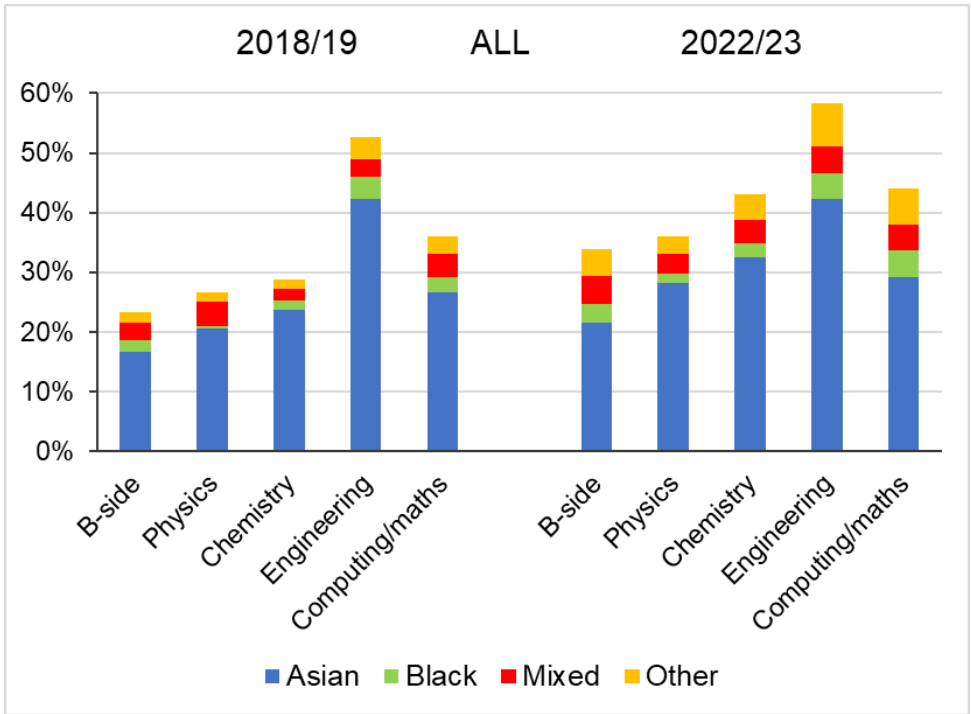
in 2022/23, surpassing those of white background. Again, there was evidence for growth in the proportion of minority ethnic researchers between 2018/19 and 2022/23, for all sub-groups.

Figure 5.7 Proportions of eligible researchers of minority ethnic background, expressed as percentage of those of known ethnicity, for key subjects, 2018/19 and 2022/23: (a) for UK nationals only; (b) for all nationalities. N values can be found in Appendix 3

(a)



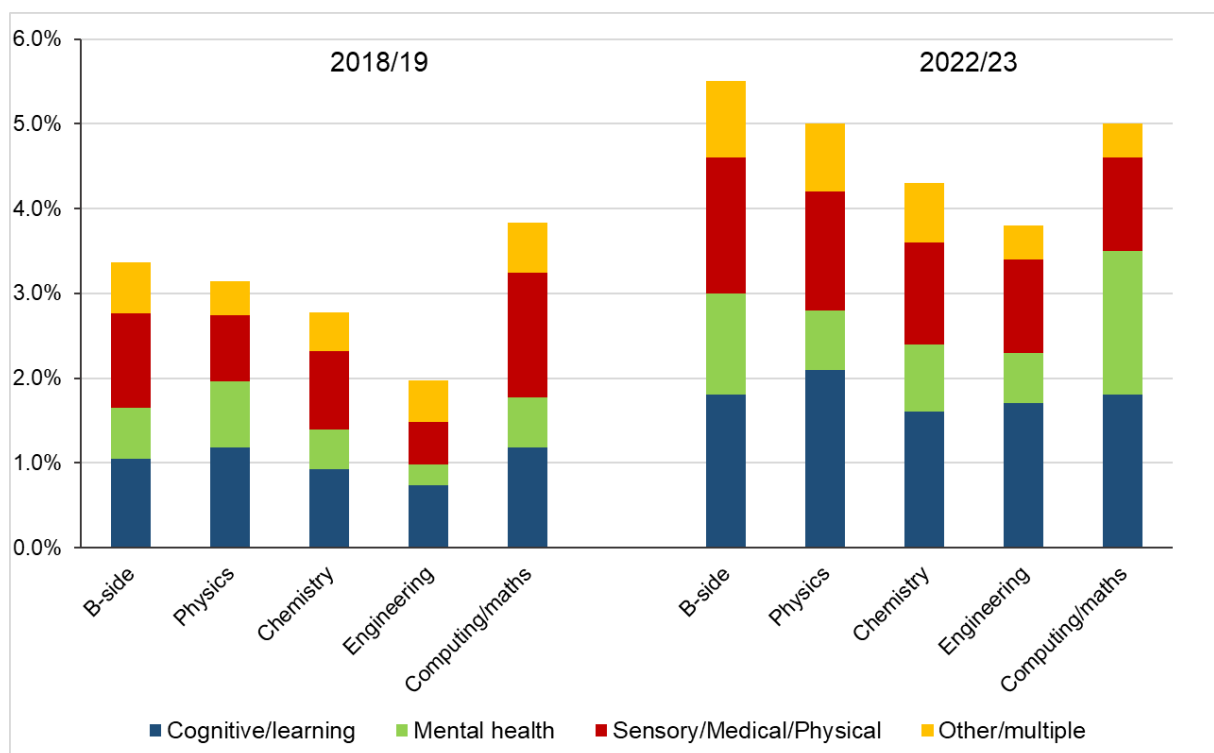
(b)



Disability

The proportion of researchers reporting a disability was higher in 2022/23 than 2018/19 within every subject group analysed, with broadly similar variances across the main subject areas analysed. (Figure 5.8). It should be noted with caution that *N* values were small at this level of analysis (for example, as few as 30 individuals in chemistry reporting some kind of disability, split between the four types). However, as seen in 2018/19, disability was least commonly reported in engineering subjects, at under 4% in total – although this was nearly double the extent in 2018/19. With that caveat on sample size, the pattern by type of disability was also roughly consistent across the subjects, with some evidence that the largest increases related to cognitive and learning conditions and mental ill health (with a particularly large increase in the latter in computing and maths, on the basis of these limited data).

Figure 5.8 Proportion of eligible researchers declaring disability of varying types, by subject area, for 2022/23 and 2018/19. N values: B-side 205, 260; physics 40,45; chemistry 30,30; engineering 40,65; computing/maths 65, 65; respectively



Age

Full analysis of the age of researchers in the different subject areas was not possible due to the use of age as a filter in the development of profiles. However, purely comparing the proportions in the profiles of those under 35 years of age and those aged 35 and over, respectively, there was some evidence that differences in age have tended to increase since 2018/19. Researchers in B-side subjects tended to be older (46% being 35 or over) than those in physics and chemistry (30%), with those in engineering and computing and maths being somewhere in between. While this pattern was also seen in 2018/19, the differences appear to be somewhat greater in 2022/23. The data available do not provide any evidence for why this difference occurred, such as whether doctoral study takes place at younger ages in physics

and chemistry, for example, or whether it is due to other factors. As the age bands were very broad, it is also possible that these apparent variations might not be replicated using different age groupings.

Employment mode

As seen in 2018/19, there were substantive differences in the proportion of eligible researchers working part-time between different subjects in 2022/23. For example, part-time work was much less common amongst those working in physics or chemistry (at about 6%) than in B-side subjects (14%). As it is known that mode of employment intersects strongly with gender, some of these variations could result from the varying gender profiles of the subjects. However, it was notable that the proportions working part-time in computing and maths (14%) and in engineering (just under 11%) – subjects within which female researchers comprise the minority – were higher than in physics or chemistry, which presumably may reflect subject-based or other drivers rather than the influence of gender differences. Another contributing factor could be nationality, as fewer non-UK researchers work part time, overall, and the nationality profiles of the subjects also vary to some extent. This is investigated further in the next chapter, on intersectionalities.

5.3. Institutional group profiles

As in the 2021 study, a profile was developed for eligible researchers solely at the 10 institutions from which most applications for the early-career schemes have been made in the years covered. This is potentially valuable – when compared with the overall profile – to assess whether any concentration of award-making at these institutions is impacting on the diversity of the researchers being funded.

Table 5.2 shows key aspects of the profile of eligible researchers in the ‘Top 10’ institutions for 2022/23 and 2018/19. Interestingly, this sub-population was larger in 2022/23 than in 2018/19, despite the overall picture seen of a total eligible population that has been declining to some extent. This difference could reflect a number of factors including that the Top 10 comprised different institutions in the two years studied. The 2022/23 profile also features slightly higher proportions of researchers who were female, who were on average older and who worked part-time, but slightly lower proportions of those declaring a disability, compared with 2018/19 results, while similar proportions of UK nationality had a minority ethnic background (once normalised). In terms of nationality profile, there was a higher proportion of researchers of EU nationalities and somewhat lower of UK nationals, compared with the position in 2018/19.

On this basis, the profile of eligible researchers in these Top 10 institutions was also not clearly ‘more’ or ‘less’ diverse overall than the overall profile of eligible researchers (as in Table 3.1), as the differences were nuanced, and hence any concentration of award-making in these institutions should not have had a substantive effect on the overall profile of awardees. However, caution is needed because one of the institutions in this grouping is University College London, which for 2022/23 reported all its postdoctoral researchers to be employed on open-ended contracts.²⁰ In order to include UCL researchers in this analysis, the filter excluding those with open-ended employment contracts was not applied to its population (as

²⁰ UCL utilises contracts which are open-ended but subject to funding, <https://www.ucl.ac.uk/human-resources/termination-procedure-fixed-term-contracts-and-redundancies>. These are currently reported to HESA as open-ended. HESA is considering adjustments to reporting options for contract type in its 2025 consultation

was the case in the 2018/19 analysis) unlike for other institutions. In addition, we noticed that the highest level of qualification for a large proportion of its relevant staff was not recorded in the data, so that filter (i.e. doctorate) was also relaxed this time, which had not been the case in 2018/19. That additional change contributed to the size of the UCL population being larger than in 2018/19, and to some extent to the larger Top 10 eligible population as a whole, and the analysis may have drawn in additional staff with a different diversity profile (which could, in turn, have contributed to shape of the Top 10 profile).

Table 5.2 Profile of eligible researchers in selected groups of institutions, 2022/23 and 2018/19

	'Top 10' institutions				Russell Group	
	2022/23		2018/19		2022/23	
	N	%	N	%	N	%
Population	7095		6225		8695	
Gender						
Female	3045	42.9%	2540	40.8%	3555	40.9%
Male	3995	56.3%	3690	59.2%	5085	58.5%
Other	10	0.1%	-	-	10	0.1%
Age						
< 35	4810	67.8%	4245	68.1%	5365	61.7%
35-49	2285	32.2%	1985	31.9%	3330	38.3%
Nationality						
UK	2260	31.9%	1950	31.3%	2975	34.2%
EU	1865	26.3%	1995	32.0%	2050	23.6%
RoW	2655	37.4%	2130	34.2%	3365	38.7%
Unknown	325	4.6%	150	2.4%	300	3.4%
Ethnicity (UK nationals)						
White	1525	67.5%	1545	79.0%	2300	77.3%
Minority ethnic groups	310	13.8%	165	8.5%	435	14.6%
Asian	190	8.5%	60	3.1%	260	8.7%
Black	30	1.4%	25	1.3%	35	1.2%
Mixed	65	3.0%	15	0.8%	90	3.0%
Other	25	1.1%	40	2.0%	50	1.7%
Unknown	425	18.8%	240	12.3%	240	8.1%
Disability						
No known disability	6810	96.0%	6085	97.8%	8315	95.6%
Known disability	285	4.0%	140	2.2%	380	4.4%
Cognitive/learning	100	1.4%	35	0.6%	135	1.6%
Mental health	75	1.1%	25	0.4%	90	1.0%
Sens./Medic./Physical	70	1.0%	55	0.9%	105	1.2%
Other/multiple	40	0.6%	25	0.4%	55	0.6%
Employment mode						
Full time	6080	85.7%	5745	92.3%	7880	91.0%
Part time	1015	14.3%	480	7.7%	820	9.0%
Location of HEI						
England	6515	91.8%	5800	93.2%	7695	88.5%
Scotland	585	8.2%	425	6.8%	580	6.7%
Wales	-	-	-	-	210	2.4%
N Ireland	-	-	-	-	210	2.4%

Table 5.2 also includes a 2022/23 profile for eligible researchers at all Russell Group institutions (excluding UCL, as the standard filters were maintained in this particular analysis). This quite closely resembled the overall 2022/23 eligible population profile in almost all respects (other than a lower proportion working part-time). That similarity is perhaps not unexpected, given that three quarters of the entire eligible population were employed at these institutions. It also suggests that widening the range of institutions at which awards are made might not have a substantive effect on the total diversity of awardees in most respects, as the eligible population beyond the Russell Group institutions is not markedly more diverse in profile.

6. Intersectionality and other insights

During the data analysis from which we developed eligible researcher profiles in our 2021 study, the presence of significant intersections was noted, i.e. the extent to which a particular characteristic is more prominent in – and/or related to – the presence of another characteristic. That report illustrated several of the most evident intersections within the data for years leading up to 2018/19. Our new analysis of the subsequent years of data confirmed that many of these intersections have persisted; to avoid repetition, rather than re-presenting them all here the reader is referred to the 2021 report's treatment of this aspect of the analysis.²¹ However, some key aspects of intersectionality are summarised here using 2022/23 data. These may be important when considering apparent trends in the profiles generated – i.e. a change seen in one characteristic could be related to another underlying characteristic with which it intersects.

A number of substantive co-variations arose with gender, including:

- As noted in section 5.1, a strong relationship between gender and subject, with higher proportions of researchers in B-side subjects (around 55%) being female than for A-side subjects (29%). Thus, when considering all female eligible researchers, almost two thirds were working on B-side subjects (63%) – far higher than the proportion of all male eligible researchers in B-side subjects (36%);
- There were also differences in relation to nationality: overall, female researchers comprised 42% of UK nationals in the eligible pool in 2022/23, and 47% of EU nationals, but only 36% of those of RoW nationalities. However, when broad subject and nationality group were considered together, it was interesting to note that female researchers comprised around 55% of those working on B-side subjects both amongst those who were UK nationals and those of other nationalities. Similarly, female researchers comprised around 28% of A-side researchers irrespective broad nationality group. This is potentially evidence that it is the subject group that drives the overall gender balance rather than the nationality group;
- Disclosure of disability: 5% of female researchers in the profile declared a disability, which was higher than the 4% recorded for their male counterparts, although in the 2022/23 data the extent of difference appears to have reduced somewhat since 2018/19;
- A somewhat higher proportion of female researchers was aged 35 or over (44%) compared with male researchers (38%), from which it could be inferred that female researchers in the eligible pool tended to be somewhat older on average. This could align with more female researchers taking a career break prior to or while they are at the postdoctoral stage;
- Considering only those of UK nationality, a somewhat higher proportion of female researchers in the eligible pool had a minority ethnic background (17%) than male researchers (13%). Viewed the other way around, this meant that female researchers slightly outnumbered male amongst those with an ethnic minority background, of UK nationality, and this was also the case amongst Black researchers. This was in contrast to the overall picture where female researchers were the minority (around 41%);
- By contrast, when ethnicity was considered for all nationalities combined, rather than just of UK nationals, the proportion of minority ethnic researchers was higher amongst male

²¹ *The profile of postdoctoral researchers in the UK eligible for Royal Society early career fellowship schemes*, CRAC, 2021. <https://royalsociety.org/-/media/policy/publications/2021/trends-ethnic-minorities-stem/profile-of-postdoctoral-researchers-in-uk-eligible-for-rs-early-career-fellowship-programmes.pdf>

(38%) than female (33%) eligible researchers. And, in turn, when viewing the population of ethnic minority researchers as a whole, the majority were male (63%), unlike the position for those specifically of UK nationality where females outnumbered males slightly;

- A much higher proportion of eligible female researchers (17%) worked part time, compared with male (9%), which meant that over half (56%) of all those working part time were female.

To highlight some other intersections, we note that:

- There were very prominent variations in the ethnic composition of those of different nationality groups, as expected. While 15% of UK nationals in the eligible pool were of ethnic minority origin, this was lower still amongst EU nationals (7%), but of course much higher amongst other (RoW) nationalities (74%, or 81% of those with known ethnicity – which brings into question the label ‘minority ethnic’ in this context). Over half of all those with a RoW nationality had an Asian background (54%, and 59% of those with known ethnicity), although only 6% of them had a Black background;
- While the rate of declared disability amongst UK-national eligible researchers was nearly 9% in 2022/23 (i.e. around double the rate for the overall pool), it was only 3% for EU nationals and under 2% amongst other nationalities. While we suspect that the lower overall rate in 2022/23 than previous years may be an artefact of the data and our approach, these relative differences have persisted
- We previously stated that differences in rates of declared disability with nationality were thought to reflect that the process of international mobility itself impacts on diversity, i.e. those with a disability may practically be less able to undertake international migration or may have less confidence in their ability to do so and hence not attempt it. These issues and perceptions could restrict the diversity of those who can be internationally mobile in terms of disability. New analysis sheds further light on this intersection, as well as how aspects of it might be changing with time (Table 6.1). The small size of some sub-groups within the analysis means that these trends should only be considered as indicative. First, the table shows the clear growth in total disability, using 2019/20 as a baseline (as 2018/19 data were not available to us for the detailed parts of this analysis), as well as a higher extent of disability amongst UK researchers (nearly 9% in 2022/23) than non-UK, and with more growth amongst the UK researchers (although there was some increase for non-UK researchers too, albeit at lower overall levels). When proportions were isolated by broad type of disability, a much higher proportion of UK researchers reported a cognitive or learning condition than of EU or other nationalities, especially, and growth in reporting these conditions was much the strongest amongst UK researchers. A similar although somewhat less pronounced pattern was seen for mental health conditions, while the extent of growth was far less for physical and medical conditions.

Table 6.1 Proportion of eligible researchers with declared disability of key types, with broad nationality (2019/20 and 2022/23)

	2019/20				2022/23			
	UK	EU	RoW	Total	UK	EU	RoW	Total
Total disability	6.2%	1.8%	1.4%	3.4%	8.7%	2.7%	1.7%	5.0%
Cognitive/learning	2.2%	0.3%	0.2%	1.0%	3.5%	0.7%	0.2%	1.7%
Mental health	1.0%	0.4%	0.3%	0.6%	1.9%	0.6%	0.5%	1.1%
Sensory/physical/medical	1.9%	0.8%	0.7%	1.2%	2.0%	1.4%	0.7%	1.4%

There were also minor differences in the reporting of different groups of disability by gender, with a greater proportion of female researchers overall (1.5%) reporting a physical or medical condition than male (1.0%), and a fractionally higher proportion mental ill-health, but a slightly lower proportion a cognitive or learning condition.

- Part-time work was more common amongst UK-national researchers (18%) than other nationalities (EU 10%, RoW under 8%), as well as being roughly twice as high amongst female researchers as male, as noted above. When gender and nationality were considered together, the extent of part-time working was highest amongst UK female researchers (27%, compared with 12% of male UK) and least popular amongst men of a RoW nationality (6%, compared with 10% of female researchers of those nationalities);
- Part-time working was also relatively high amongst disabled researchers (16% in 2022/23), above the proportion for those who were known not to be disabled (10%). When considered together with gender, 18% of female disabled researchers worked part-time, higher than the 14% amongst male disabled researchers. Although there was a broadly similar intersection with nationality, wherein 17% of UK disabled researchers worked part-time compared with 14% of non-UK disabled researchers, the picture became less clear when both nationality and gender were considered, although the highest proportion working part-time was amongst disabled female UK nationals (22%). In practice, the sizes of sub-groups of non-UK nationality with disability were too small for robust analysis.
- As noted in the previous chapter, substantive differences were seen in the proportions of eligible researchers working part-time in different subjects. Part-time employment was less common amongst in certain A-side subjects (notably physics and chemistry at about 6%) than in B-side subjects (14%), although this was not the case for all A-side subjects. For example, 14% of researchers in computing and maths and 11% in engineering were working part-time. Given the known strong intersection between gender and part-time employment, it might be expected that part-time employment would be lower overall in subjects like physics within which female researchers are a minority. However, engineering and computing also feature similar gender imbalances and yet part-time working was seen to be much more common in those subjects, than in physics. Another contributing factor could be nationality, as the nationality profiles of these subjects also vary to some extent. Deeper analysis of these data revealed the results in Table 6.2, which demonstrates that there were variances in the extent of part-time work by gender and by broad nationality group, overall and within each of the subjects analysed, but also that differences between subjects persisted independent of gender and nationality. It also shows the effect of some combinations of intersections, in terms of the much higher proportions working part-time

within certain sub-groups, especially female researchers of UK nationality within some subjects. Amongst these, as many as 30% could be part-time – which emphasises the importance of potential flexibility in fellowship funding programmes, and for some subjects in particular.

Table 6.2 Proportion of eligible researchers working part-time (2022/23)

Subject group	Nationality	Total	Male	Female
Physics & chemistry				
	All	6%	4%	11%
	UK	8%	6%	14%
	Non-UK	4%	4%	9%
Engineering				
	All	11%	10%	13%
	UK	19%	16%	29%
	Non-UK	8%	8%	10%
Computing & maths				
	All	14%	12%	21%
	UK	19%	16%	30%
	Non-UK	12%	11%	18%
B-side subjects				
	All	14%	9%	18%
	UK	21%	12%	29%
	Non-UK	9%	6%	10%

7. Emerging findings, issues and recommendations

7.1. Overall summary

Based on the methodological approach devised in our 2021 study, with minor accommodation due to the ending of collection of one data item that was used as a proxy for one of the research fellowship eligibility criteria, we have again devised profiles for the population of postdoctoral researchers we believe are eligible for the Society's early-career fellowships. These are provided so that the profiles in terms of diversity characteristics for recent years can be used as benchmarks against which the diversity profile of applicants to these schemes in those years can be compared. This should enable judgement of whether the schemes are drawing applicants inclusively from across the range of individuals in the eligible pool, or whether the application process is narrowing this pipeline towards research leadership.

Accompanying these profiles are a series of more detailed statistics based on analysis of the characteristics of these researchers and their diversity, and how these have been changing in the years between 2018/19 and 2022/23. Many of the trends observed and reported in our 2021 study appear to have continued since then, although (as explored in the next section) there is some evidence within the 2022/23 profile derived of results that appear to be counter to what was a general trend towards greater diversity in the eligible pool. One example is the apparent further slight reduction in the proportion of female researchers, which had previously been essentially stable despite the sector's efforts over decades to enhance female participation. In our 2021 study, we argued that the lack of improvement in gender balance was due to the increase in inward migration of researchers from outside Europe, the majority of whom have been male, which outweighed any increase in participation of UK female researchers. However, in the 2022/23 results there is now some evidence of a reduction in the proportion of female researchers of UK nationality too, if those results are fully robust. Equally, there is some sign that fewer overall are working part-time, which seems surprising given efforts to make the workforce environment more rather than less flexible and inclusive. It is possible that the Covid-19 pandemic could have affected this aspect of the results during the period. However, most worrying, perhaps, is an apparent fall in the size of the pool of eligible researchers, based on the same proxies as before.

Further iterations of research and analysis may be needed in future to assess whether these most recent changes are signs of genuine trends or artefacts in the data available due to changes in collection and reporting of the data about staff by institutions and/or our approach to defining the eligible researcher population. The possibility of shortcomings in the results due to such data issues is considered in the next section.

7.2. Underlying data issues

It was noted in our 2021 report that developing diversity profiles for this population (i.e. postdoctoral researchers eligible for these particular early-career fellowships) was challenging, despite the existence of a wide range of data about HE academic staff that are systematically collected by HESA on an annual basis. Its Staff Record is probably one of the most detailed and complete datasets about HE staff held by any country. Yet a range of approximations and proxies were needed to filter the data in such a way to obtain profiles that we believed roughly represented the eligible researchers. This is because the 'problem' that we were trying to solve using these data was very specific, i.e. identifying staff who would comply with some very particular eligibility criteria for the fellowship schemes. As noted in the methodology section,

several of those criteria do not map simply to existing data items (or combinations of them) in the Staff Record. We note that a consultation underway currently about the Staff Record pays some attention to identification of staff in early careers who undertake research, as well as the reporting of contract types.

We reported in 2021 a concern over some inconsistency between approaches taken by different HE providers in relation to certain employment issues recorded in the data. This was not to suggest that HE providers were reporting data incorrectly, but was more an issue of interpretation and/or practice locally. For example, we highlighted that one large research-intensive institution (University College London) was widely using an alternative form of employment contract for its postdoctoral researchers – ‘open-ended but subject to funding’ – but in the Staff Record these staff were reported as having a contract that was ‘open-ended’. In 2022/23, none of its early-career staff identified in this study were listed as having a fixed-term contract. In practice, as the absence of an open-ended contract is an eligibility criterion, we understand that the Society accepts applications from UCL postdoctoral staff on the basis that their contracts are not permanent. However, in our data analysis, UCL postdoctoral staff were excluded due to the use of the same filters across the entire dataset²² and this clearly limited the robustness of the profiles we obtained to some extent. While it could be possible filter UCL staff separately, so as to include them, this begs the question of the extent to which any other providers have also reported contract types for their staff in a non-standard way.

We have mentioned already that the proxy used for length of postdoctoral experience had to be changed in this analysis, due to the cessation of collection of date of employment with institution, which somewhat weakens what was already a crude proxy approach.

We note in this analysis that the size of the eligible population of researchers defined has fallen, gently at first since 2018/19 and then more abruptly for 2022/23 (by 11% compared with the previous year). We suspect that the latter reduction of 11% was due to data issues rather than a genuine fall in the postdoctoral population. Our concerns are heightened by a number of results for that year which seem to be somewhat ‘off trend’ compared with patterns in the data in previous years. The lower proportion of female researchers in 2022/23 is one example, and the proportion working part-time also stands out as unexpectedly low. We also note that the proportions of several of the ‘unknown’ categories – within characteristics such as ethnicity – were higher in 2022/23 than in immediately prior years, although there is some evidence that this has been an upward trend for several years.

The apparent abrupt fall in population size for 2022/23 led us to examine data within certain fields, including those we used for proxies. When we released both the contract type and highest qualification filters, the population in 2022/23 was almost the same size as in 2021/22 (in fact 1% higher, rather than smaller as shown for the tabulated profile). This suggests that the apparent fall in population could be an artefact of the data and our analytical approach, and we know of no other independent evidence for an overall in size of the early-career researcher population. Reintroducing the contract filter (but not the doctorate qualification) led to the 2022/23 population becoming around 1500 smaller than in 2021/22. Reintroducing the doctorate qualification but not the contract filter resulted in a fall of nearly 2000 staff between the two years. Interestingly, 1500 more staff were recorded as having an unknown highest qualification in 2022/23 than the previous year.

²² Except in the ‘Top 10’ institutions analysis, where we adjusted the filters for UCL staff specifically, in order that they were included

These observations suggest that there are significant issues with data in both of these fields, which led to closer investigation at institutional level for a range of larger institutions. This revealed that a range of institutions recorded higher numbers of their early-career staff as having open-ended contracts in 2022/23 than 2021/22, but also that some reported far higher numbers of staff as 'unknown' when it came to their highest qualification, than they had the previous year. While we cannot track individual staff members between years, it seems highly likely that this is an example of increased levels of incomplete reporting in 2022/23 (which leads to a decrease in the eligible population due to the proxies being used).

Further examination revealed a 25% rise in the proportion of staff reported as non-UK domiciles for whom neither their ethnicity nor their disability status was known (to over 2000 staff). Again, this is contributory evidence to an increasing level of incomplete reporting of data (and/or of incomplete data collection) by some institutions.

We conclude that the 2022/23 profile obtained may be less robust than those of previous years, due to these artefacts of reporting. We are also concerned about whether such a trend of increasing levels of incomplete data may continue in future, which would further lessen the robustness of our approach and of the profiles obtained in future and would also reduce the extent of knowledge more generally about the diversity of early-career research and academic staff in the UK.

Nonetheless, we believe that the results in this report are useable as the best potentially available currently, albeit the 2022/23 results may be somewhat less reliable than those in the preceding years. We also hope that stating these concerns is valuable to stakeholders in the HE research sector who have an interest in the size and composition of the workforce and use HESA staff data.

7.3. Recommendations

- The profiles in this report should be used as benchmarks with which to assess the diversity profile of applicants for the Royal Society's early-career fellowships; we urge the Society to continue to publish the results of these comparisons as part of its diversity data, and encourage other funders to follow suit;
- We are concerned about the apparent decrease in the extent and nature of data being provided by institutions to HESA for certain data fields, especially those we use to identify eligible postdoctoral researchers. We recommend that HESA investigates systemic, or substantial institution-specific, trends in returning less complete data, and that efforts are made in the sector and data collection to continue to provide complete data;
- Linked to this, more consistency in the reporting of employment contract types (and transparency in this) would be valuable to develop meaningful analyses in future. Emerging knowledge about variations in the use of different types of employment contract for postdoctoral researchers suggests this is clouding efforts to identify this key population and understand its evolving characteristics;
- At the time of writing, Jisc/HESA was consulting on potential changes to Staff Record data collection. Pending any agreed changes, it could yet be valuable for the sector to agree any specific further data that could be returned to HESA to identify early-career researchers more robustly, potentially including items such as year of doctoral qualification or prior employment. This would enhance understanding about postdoctoral researchers and their career paths and trajectories, as well as improving diversity monitoring of the workforce;

- The sector needs to decide how ethnicity within this workforce should best be considered, monitored and reported, in the light of the increasingly international composition of the workforce. Consistent data reporting would aid efforts being made to counter under-representation of ethnic minorities in the UK academic workforce;
- The very low (and only slightly rising) proportion of Black researchers, at under 2% of UK nationals, and under 3% across all nationalities, stands out. We know much work is underway to understand and increase the level of Black participation in STEM doctoral programmes and early research careers to address this and encourage parties to work together to progress this to best effect;
- The relatively low incidence of reporting of certain disability conditions by early-career researchers needs to be better understood, especially the very low levels of mental health and neurodivergent conditions, which stand in contrast to the high and increasing levels reported by first-degree and doctoral students. It would be valuable to know whether this simply reflects their respective ages or other reasons related to workplace or career.

Appendix 1: Profile of eligible researchers, 2018/19 to 2022/23

	2022/23		2021/22		2020/21		2019/20		2018/19	
Population	11555		12985		13060		13590		13405	
Gender										
Female	4695	40.8%	5400	41.6%	5465	41.8%	5590	41.1%	5640	42.1%
Male	6800	59.1%	7570	58.3%	7580	58.0%	7990	58.8%	7760	57.9%
Other	10	0.1%	15	0.1%	15	0.1%	10	0.1%	5	0.0%
Age										
< 35	6860	59.4%	7550	58.1%	7810	59.8%	8210	60.4%	8660	64.6%
35-49	4695	40.6%	5435	41.9%	5250	40.2%	5380	39.6%	4750	35.4%
Nationality										
UK	4125	35.7%	4945	38.1%	4945	37.9%	5160	38.0%	5070	37.8%
EU	2610	22.6%	3085	23.8%	3360	25.7%	3610	26.6%	3900	29.1%
Rest of World	4510	39.0%	4665	35.9%	4560	34.9%	4650	34.2%	4275	31.9%
Unknown	310	2.7%	290	2.2%	195	1.5%	165	1.2%	160	1.2%
Ethnicity (of UK nationals)										
White	3170	76.8%	3840	77.7%	3930	79.5%	4190	81.2%	4135	81.6%
Minority ethnic groups	625	15.2%	735	14.9%	680	13.8%	650	12.8%	620	12.2%
<i>Asian</i>	365	8.8%	425	8.6%	405	8.2%	390	7.6%	380	7.5%
<i>Black</i>	60	1.4%	80	1.7%	75	1.5%	70	1.4%	65	1.3%
<i>Mixed</i>	120	2.9%	125	2.6%	115	2.3%	110	2.2%	135	2.7%
<i>Other</i>	80	1.9%	105	2.1%	85	1.7%	80	1.6%	40	0.7%
Unknown	340	8.2%	370	7.4%	335	6.8%	320	6.1%	315	6.2%

	2022/23		2021/22		2020/21		2019/20		2018/19	
Ethnicity (all nationalities)										
White	6085	52.6%	7245	55.8%	7635	58.5%	8225	60.5%	8450	63.0%
Minority ethnic groups	4155	35.9%	4410	33.9%	4240	32.4%	650	31.4%	3820	28.5%
<i>Asian</i>	2850	24.7%	3000	23.1%	2970	22.7%	3035	22.3%	2875	21.4%
<i>Black</i>	340	2.9%	345	2.7%	305	2.3%	305	2.2%	260	1.9%
<i>Mixed</i>	445	3.8%	460	3.6%	435	3.3%	405	3.0%	400	3.0%
<i>Other</i>	520	4.5%	605	4.7%	530	4.1%	530	3.9%	285	2.1%
Unknown	1320	11.4%	1330	10.3%	1185	9.1%	1095	8.1%	1140	8.5%
Disability										
Known disability	505	5.0%	685	5.7%	530	4.5%	445	3.4%	410	3.1%
<i>Cognitive/learning</i>	175	1.7%	180	1.5%	160	1.4%	130	1.0%	125	0.9%
<i>Mental health</i>	115	1.1%	110	0.9%	85	0.7%	75	0.6%	70	0.5%
<i>Sensory/Medical/Physical</i>	140	1.4%	140	1.2%	155	1.3%	155	1.2%	135	1.0%
<i>Other/multiple</i>	75	0.7%	260	2.2%	130	1.1%	85	0.6%	80	0.6%
No known disability	9610	95.0%	11280	94.3%	11190	95.5%	12790	96.6%	13000	96.9%
Russell Group institution	8695	75.2%	9350	72.0%	9580	73.4%	10015	73.7%	9700	72.4%
Location of institution										
England	9685	83.8%	11020	84.9%	11195	85.7%	11670	85.9%	11480	85.6%
Scotland	1175	10.2%	1150	8.9%	1085	8.3%	1070	7.9%	1045	7.8%
Wales	420	3.6%	490	3.8%	490	3.8%	520	3.8%	520	3.9%
N Ireland	275	2.4%	320	2.5%	290	2.2%	330	2.4%	365	2.7%
Mode of employment										
Full time	10185	88.1%	11020	84.9%	11195	85.7%	11705	86.1%	11620	86.7%
Part time	1375	11.9%	1965	15.1%	1865	14.3%	1885	13.9%	1785	13.3%

Appendix 2: RS A-side and B-side subject group profiles

A-side subjects

	2022/23		2021/22		2020/21		2019/20		2018/19	
Population	6125		6915		6775		7145		7295	
Gender										
Female	1725	28.2%	2040	29.5%	1990	29.4%	2055	29.8%	2215	30.4%
Male	4360	71.2%	4860	70.3%	4780	70.6%	5085	71.2%	5080	69.6%
Other	5	0.1%	10	0.2%	5	0.1%	5	0.1%	0	0.0%
Age										
< 35	3930	64.1%	4340	62.7%	4350	64.2%	4635	64.9%	4990	68.4%
35-49	2200	35.9%	2575	37.3%	2425	35.8%	2510	35.1%	2310	31.6%
Nationality										
UK	1835	30.0%	2280	32.9%	2200	32.5%	2315	32.4%	2310	31.6%
EU	1255	20.5%	1460	22.1%	1575	23.2%	1765	24.7%	2060	28.2%
Rest of World	2905	47.5%	3035	43.9%	2910	43.0%	2985	41.7%	2865	39.2%
Unknown	130	2.1%	140	2.0%	90	1.3%	80	1.1%	65	0.9%
Ethnicity (of UK nationals)										
White	1395	75.9%	1730	76.0%	1715	77.9%	1870	80.7%	1820	78.8%
Minority ethnic groups	265	14.5%	340	15.0%	310	14.1%	290	12.1%	325	14.1%
Asian	160	8.6%	195	8.5%	180	8.1%	165	7.0%	195	8.4%
Black	25	1.4%	45	1.9%	40	1.9%	35	1.6%	35	1.5%
Mixed	50	2.8%	55	2.4%	50	2.2%	45	1.9%	70	3.0%
Other	30	1.7%	50	2.2%	40	1.9%	45	1.9%	25	1.1%
Unknown	175	9.6%	205	9.0%	175	8.0%	160	6.9%	165	7.1%

	2022/23		2021/22		2020/21		2019/20		2018/19	
<i>Ethnicity (all nationalities)</i>										
White	2880	47.0%	3420	58.5%	3540	52.2%	3905	54.7%	4135	56.7%
Minority ethnic groups	2515	41.1%	2725	32.6%	2575	38.0%	2630	36.8%	2505	34.3%
<i>Asian</i>	1815	29.6%	1935	28.0%	1880	27.7%	1935	27.1%	1940	26.6%
<i>Black</i>	180	3.0%	195	2.9%	175	2.6%	165	2.3%	150	2.1%
<i>Mixed</i>	220	3.6%	230	3.3%	210	3.1%	205	2.9%	230	3.2%
<i>Other</i>	300	4.9%	365	5.2%	310	4.6%	320	4.5%	185	2.5%
Unknown	730	11.9%	770	11.1%	660	9.8%	610	6.9%	655	9.0%
<i>Disability</i>										
Known disability	245	4.5%	350	5.5%	250	4.2%	240	3.5%	205	2.8%
<i>Cognitive/learning</i>	90	1.7%	90	1.4%	75	1.2%	75	1.1%	55	0.8%
<i>Mental health</i>	55	1.0%	55	0.8%	40	0.7%	40	0.6%	40	0.5%
<i>Sensory/Medical/Physical</i>	65	1.2%	65	1.0%	75	1.2%	85	1.2%	45	0.6%
<i>Other/multiple</i>	30	0.6%	140	2.2%	65	1.1%	40	0.6%	65	0.9%
No known disability	5120	95.5%	5980	94.5%	5735	95.8%	6705	96.5%	7095	97.2%
<i>Russell Group</i>	4510	73.6%	4835	69.9%	4815	71.1%	5115	71.6%	5515	75.6%
<i>Location of HEI</i>										
England	5150	84.1%	5900	85.3%	5800	85.6%	6150	86.1%	6265	85.8%
Scotland	625	10.2%	610	8.8%	555	8.2%	535	7.5%	620	8.5%
Wales	230	3.7%	270	3.9%	280	4.1%	290	4.1%	255	3.5%
N Ireland	125	2.0%	140	2.0%	145	2.1%	165	2.3%	160	2.2%
<i>Mode of employment</i>										
Full time	5505	89.8%	5960	86.2%	5900	87.1%	6235	87.3%	6585	90.3%
Part time	625	10.2%	955	13.8%	875	12.9%	910	12.7%	710	9.7%

B-side subjects

	2022/23		2021/22		2020/21		2019/20		2018/19	
Population	5430		6065		6290		6445		6110	
Gender										
Female	2970	54.7%	3355	55.3%	3480	55.3%	3535	54.9%	3425	56.1%
Male	2440	44.9%	2705	44.6%	2800	44.5%	2905	45.1%	2680	43.9%
Other	5	0.1%	5	0.1%	10	0.1%	5	0.1%	5	0.1%
Age										
< 35	2930	54.0%	3210	52.9%	3460	55.1%	3575	55.5%	3670	60.1%
35-49	2500	46.0%	2860	47.1%	2825	44.9%	2870	44.5%	2440	39.9%
Nationality										
UK	2290	42.2%	2665	44.0%	2740	43.6%	2845	44.1%	2760	45.2%
EU	1360	25.0%	1625	26.8%	1785	28.4%	1845	28.6%	1840	30.1%
Rest of World	1600	29.5%	1630	26.8%	1650	26.3%	1670	25.9%	1410	23.1%
Unknown	180	3.3%	150	2.4%	105	1.7%	90	1.4%	95	1.6%
Ethnicity (of UK nationals)										
White	1775	77.5%	2110	79.1%	2210	80.7%	2320	81.5%	2315	83.9%
Minority ethnic groups	355	15.5%	395	14.8%	370	13.5%	370	12.9%	295	10.7%
Asian	205	8.9%	230	8.6%	225	8.2%	230	8.0%	185	6.7%
Black	35	1.4%	40	1.5%	35	1.3%	35	1.2%	30	1.1%
Mixed	70	2.9%	70	2.7%	65	2.4%	65	2.3%	65	2.4%
Other	50	2.1%	55	2.0%	45	1.6%	40	1.3%	15	0.5%
Unknown	160	7.0%	165	6.1%	160	5.8%	160	5.6%	150	5.4%

	2022/23		2021/22		2020/21		2019/20		2018/19	
<i>Ethnicity (all nationalities)</i>										
White	3205	59.0%	3825	63.1%	4095	65.2%	4320	67.2%	4315	70.6%
Minority ethnic groups	1635	30.1%	1680	27.7%	1665	26.5%	1645	25.5%	1315	21.5%
Asian	1035	19.1%	1065	17.5%	1090	17.4%	1100	17.1%	935	15.3%
Black	155	2.9%	145	2.4%	130	2.1%	135	2.1%	110	1.8%
Mixed	225	4.1%	230	3.8%	225	3.6%	200	3.1%	170	2.8%
Other	220	4.0%	240	4.0%	220	3.6%	210	3.2%	100	1.6%
Unknown	590	10.8%	565	9.3%	525	8.3%	485	7.5%	485	7.9%
<i>Disability</i>										
Known disability	260	5.5%	335	5.9%	280	4.9%	205	3.3%	205	3.3%
Cognitive/learning	85	1.8%	85	1.5%	90	1.5%	55	0.9%	70	1.1%
Mental health	60	1.2%	55	1.0%	45	0.8%	30	0.5%	30	0.5%
Sensory/Medical/Physical	75	1.6%	75	1.4%	85	1.5%	70	1.1%	90	1.5%
Other/multiple	45	0.9%	115	2.0%	65	1.1%	45	0.7%	15	0.2%
No known disability	4490	94.5%	5300	94.1%	5455	95.1%	6085	96.7%	5905	96.6%
<i>Russell Group</i>	4185	77.1%	4515	74.5%	4765	75.8%	4900	76.0%	4185	68.5%
<i>Location of HEI</i>										
England	4535	83.5%	5125	84.4%	5395	85.9%	5520	85.6%	5215	85.4%
Scotland	550	10.1%	545	8.9%	530	8.4%	535	8.3%	425	7.0%
Wales	195	3.6%	220	3.7%	215	3.4%	230	3.6%	265	4.3%
N Ireland	155	2.8%	180	2.9%	145	2.3%	160	2.5%	205	3.4%
<i>Mode of employment</i>										
Full time	4680	86.2%	5060	83.3%	5295	84.2%	5470	84.9%	5035	82.4%
Part time	750	13.8%	1010	16.7%	990	15.8%	975	15.1%	1075	17.6%

Appendix 3: Profiles for selected subjects, 2022/23 and 2018/19

	Total				Physics				Chemistry			
	2022/23		2018/19		2022/23		2018/19		2022/23		2018/19	
Population	11555		13405		1055		1275		825		1080	
Gender												
Female	4695	40.8%	5640	42.1%	245	23.1%	290	22.7%	275	33.4%	350	32.4%
Male	6800	59.1%	7760	57.9%	810	76.9%	985	77.3%	550	66.4%	730	67.6%
Other	10	0.1%	5	0.0%	0	0.0%	0	0.0%	0	0.2%	0	0.0%
Age												
< 35	6860	59.4%	8660	64.6%	745	70.3%	940	73.7%	575	69.8%	790	73.1%
35-49	4695	40.6%	4750	35.4%	315	29.7%	335	26.3%	250	30.2%	290	26.9%
Nationality												
UK	4125	35.7%	5070	37.8%	345	32.5%	425	33.3%	290	35.1%	415	38.4%
EU	2610	22.6%	3900	29.1%	270	25.4%	420	32.9%	160	19.5%	320	29.6%
Rest of World	4510	39.0%	4275	31.9%	415	39.1%	405	31.8%	350	42.6%	335	31.0%
Unknown	310	2.7%	160	1.2%	30	3.0%	25	2.0%	25	2.9%	10	0.9%
Ethnicity (UK only)												
White	3170	76.8%	4135	81.6%	280	81.6%	365	85.9%	230	79.3%	355	85.5%
Minority ethnic	625	15.2%	620	12.2%	30	7.9%	30	7.1%	40	13.5%	40	9.6%
Asian	365	8.8%	380	7.5%	20	5.2%	20	4.7%	25	8.6%	25	6.0%
Black	60	1.4%	65	1.3%	0	0.0%	0	0.0%	0	0.6%	0	0.0%
Mixed	120	2.9%	135	2.7%	5	1.5%	10	2.4%	10	4.1%	10	2.4%
Other	80	1.9%	40	0.7%	5	0.9%	0	0.0%	0	0.0%	5	1.2%
Unknown	340	8.2%	315	6.2%	35	10.5%	30	7.1%	20	7.2%	20	4.8%

	Total				Physics				Chemistry			
	2022/23		2018/19		2022/23		2018/19		2022/23		2018/19	
<i>Ethnicity (all nationalities)</i>												
White	6085	52.6%	8450	63.0%	565	53.6%	835	65.5%	420	50.8%	720	66.7%
Minority ethnic	4155	35.9%	3820	28.5%	335	31.5%	305	23.9%	320	38.5%	290	26.9%
Asian	2850	24.7%	2875	21.4%	250	23.8%	235	18.4%	240	29.0%	240	22.2%
Black	340	2.9%	260	1.9%	15	1.3%	5	0.4%	15	2.1%	15	1.4%
Mixed	445	3.8%	400	3.0%	30	2.9%	45	3.5%	30	3.5%	20	1.9%
Other	520	4.5%	285	2.1%	35	2.5%	20	1.6%	30	3.9%	15	1.4%
Unknown	1320	11.4%	1140	8.5%	160	14.9%	135	10.6%	90	10.8%	70	6.5%
<i>Disability</i>												
Known disability	505	5.0%	410	3.1%	45	4.9%	40	3.1%	30	4.3%	30	2.8%
Cognitive/learning	175	1.7%	125	0.9%	20	2.1%	15	1.2%	10	1.6%	10	0.9%
Mental health	115	1.1%	70	0.5%	5	0.7%	10	0.8%	5	0.8%	5	0.5%
Sens/Med/Phys	140	1.4%	135	1.0%	15	1.4%	10	0.8%	10	1.2%	10	0.9%
Other/multiple	75	0.7%	80	0.6%	5	0.8%	5	0.4%	5	0.7%	5	0.5%
No known disability	9610	95.0%	13000	96.9%	865	95.1%	1235	96.9%	705	95.7%	1050	97.2%
<i>Russell Group</i>	8695	75.2%	9700	72.4%	805	76.0%	945	74.1%	645	77.9%	820	75.9%
<i>Location of HEI</i>												
England	9685	83.8%	11480	85.6%	875	82.6%	1070	83.9%	680	82.0%	910	84.3%
Scotland	1175	10.2%	1045	7.8%	120	11.5%	125	9.8%	100	12.3%	80	7.4%
Wales	420	3.6%	520	3.9%	40	3.6%	40	3.1%	35	4.4%	65	6.0%
N Ireland	275	2.4%	365	2.7%	25	2.3%	40	3.1%	10	1.3%	25	2.3%
<i>Employment mode</i>												
Full time	10185	88.1%	11620	86.7%	995	94.1%	1205	94.5%	775	93.6%	1005	93.1%
Part time	1375	11.9%	1785	13.3%	60	5.9%	70	5.5%	55	6.4%	75	6.9%

	Total				Engineering				Computing & Maths			
	2022/23		2018/19		2022/23		2018/19		2022/23		2018/19	
Population	11555		13405		2030		2030		1405		1690	
Gender												
Female	4695	40.8%	5640	42.1%	530	26.0%	458	22.8%	375	26.6%	475	28.1%
Male	6800	59.1%	7760	57.9%	1490	73.9%	1550	77.2%	1015	72.4%	1215	71.9%
Other	10	0.1%	5	0.0%	0	0.1%	0	0.0%	0	0.1%	0	0.0%
Age												
< 35	6860	59.4%	8660	64.6%	1245	61.2%	1385	68.2%	875	62.1%	1060	62.5%
35-49	4695	40.6%	4750	35.4%	790	38.8%	645	31.8%	530	37.9%	635	37.5%
Nationality												
UK	4125	35.7%	5070	37.8%	510	25.1%	490	24.1%	385	27.4%	530	31.4%
EU	2610	22.6%	3900	29.1%	325	16.0%	455	22.4%	345	24.4%	500	29.6%
Rest of World	4510	39.0%	4275	31.9%	1180	58.1%	1075	53.0%	645	45.8%	640	37.9%
Unknown	310	2.7%	160	1.2%	20	0.9%	10	0.5%	35	2.3%	20	1.2%
Ethnicity (UK only)												
White	3170	76.8%	4135	81.6%	340	66.9%	355	72.4%	280	73.0%	420	79.2%
Minority ethnic	625	15.2%	620	12.2%	105	20.4%	90	18.4%	70	17.9%	75	14.2%
Asian	365	8.8%	380	7.5%	55	11.0%	60	12.2%	40	10.4%	45	8.5%
Black	60	1.4%	65	1.3%	15	2.5%	10	2.0%	5	1.8%	10	1.9%
Mixed	120	2.9%	135	2.7%	15	2.8%	10	2.0%	15	3.8%	15	2.8%
Other	80	1.9%	40	0.8%	20	4.1%	10	2.0%	5	1.8%	5	0.9%
Unknown	340	8.2%	315	6.2%	65	12.7%	45	9.2%	35	9.1%	35	6.6%

	Total				Engineering				Computing & Maths			
	2022/23		2018/19		2022/23		2018/19		2018/19		2018/19	
<i>Ethnicity (all nationalities)</i>												
White	6085	52.6%	8450	63.0%	755	37.2%	865	42.6%	685	48.9%	985	58.1%
Minority ethnic	4155	35.9%	3820	28.5%	1055	51.9%	965	47.5%	540	38.3%	555	32.7%
Asian	2850	24.7%	2875	21.4%	765	37.6%	775	38.2%	355	25.4%	410	24.2%
Black	340	2.9%	260	1.9%	80	3.9%	65	3.2%	55	3.8%	40	2.4%
Mixed	445	3.8%	400	3.0%	80	3.9%	55	2.7%	55	3.8%	60	3.5%
Other	520	4.5%	285	2.1%	130	6.5%	70	3.4%	75	5.2%	45	2.7%
Unknown	1320	11.4%	1140	8.5%	220	10.9%	200	9.9%	180	12.8%	155	9.1%
<i>Disability</i>												
Known disability	505	5.0%	410	3.1%	65	3.7%	40	2.0%	65	5.1%	65	3.8%
Cognitive/learning	175	1.7%	125	0.9%	30	1.7%	15	0.7%	25	1.8%	20	1.2%
Mental health	115	1.1%	70	0.5%	10	0.6%	5	0.2%	20	1.7%	10	0.6%
Sens/Med/Phys	140	1.4%	135	1.0%	20	1.1%	10	0.5%	15	1.1%	25	1.5%
Other/multiple	75	0.7%	80	0.6%	5	0.4%	10	0.5%	5	0.4%	10	0.6%
No known disability	9610	95.0%	13000	96.9%	1725	96.3%	1990	98.0%	1185	94.9%	1630	96.2%
<i>Russell Group</i>	8695	75.2%	9700	72.4%	1415	69.5%	1400	69.0%	1030	73.4%	1130	66.9%
<i>Location of HEI</i>												
England	9685	83.8%	11480	85.6%	1665	81.9%	1500	83.8%	1205	85.6%	1500	88.8%
Scotland	1175	10.2%	1045	7.8%	220	10.9%	180	10.1%	140	10.0%	110	6.5%
Wales	420	3.6%	520	3.9%	95	4.8%	70	3.9%	35	2.4%	40	2.4%
N Ireland	275	2.4%	365	2.7%	50	2.5%	40	2.2%	25	1.9%	40	2.4%
<i>Employment mode</i>												
Full time	10185	88.1%	11620	86.7%	1810	89.4%	1860	91.6%	1205	85.8%	1420	84.0%
Part time	1375	11.9%	1785	13.3%	225	10.6%	170	8.4%	200	14.2%	270	16.0%

